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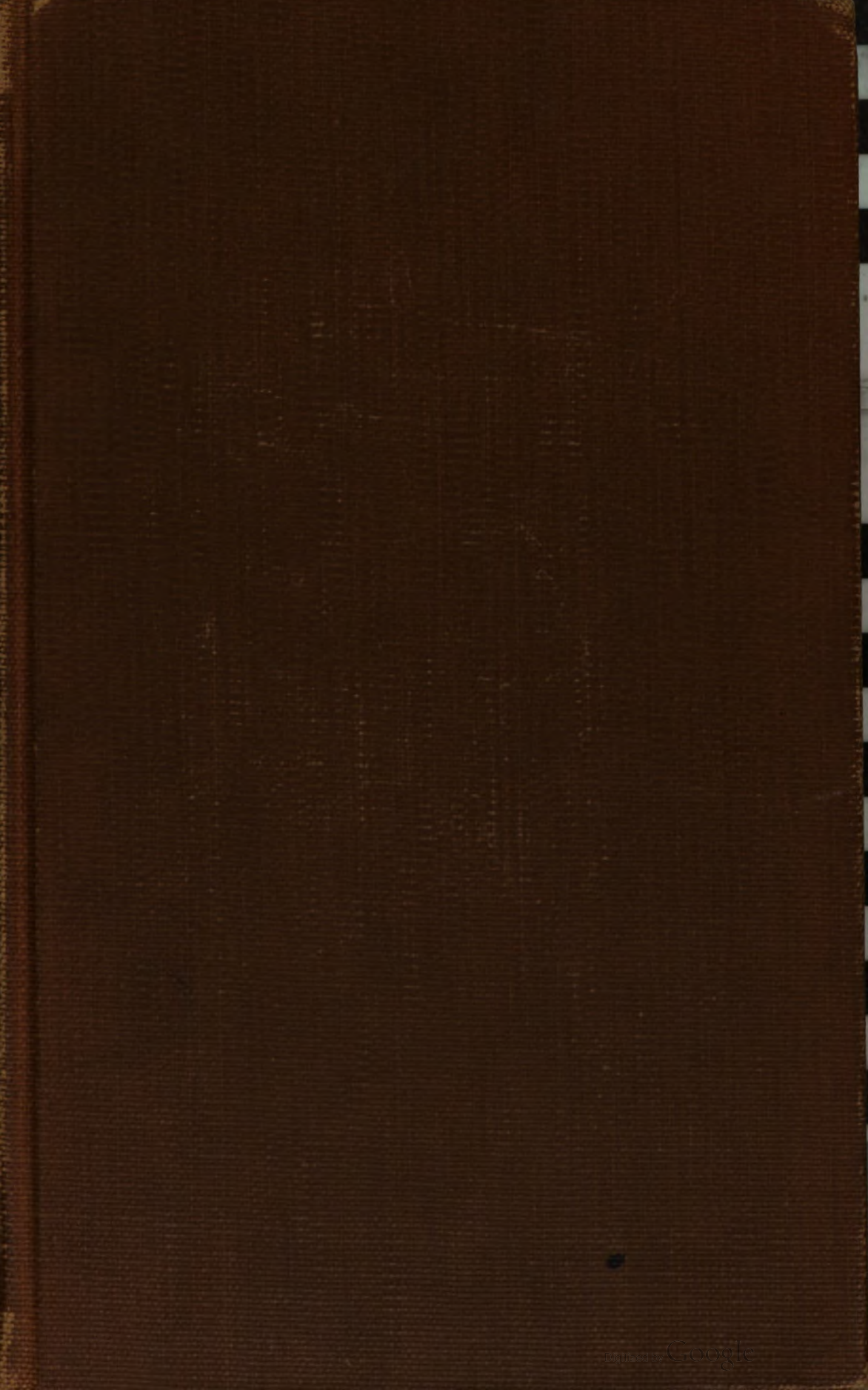
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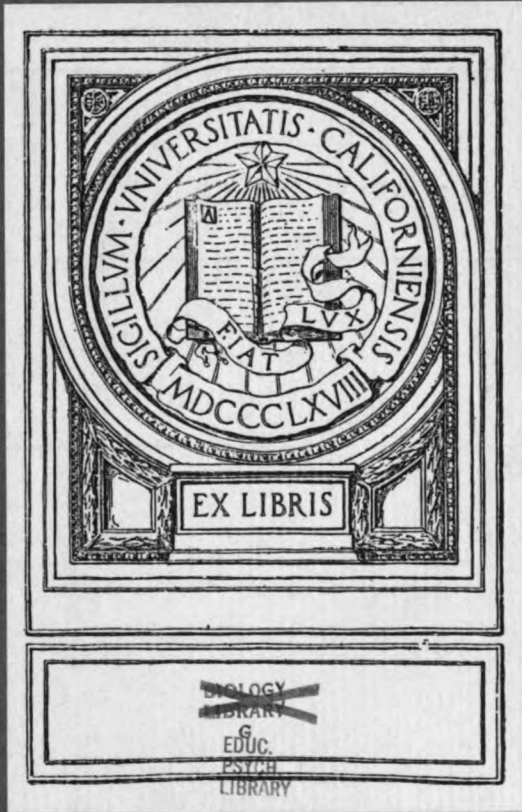
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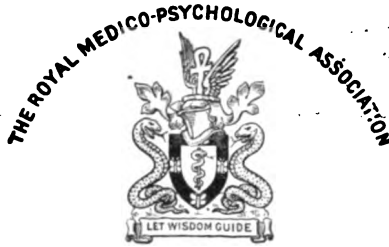
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"In adopting our title of the *Journal of Mental Science*, published by authority of the *Medico-Psychological Association*, we profess that we cultivate in our pages mental science of a particular kind, namely, such mental science as appertains to medical men who are engaged in the treatment of the insane. But it has been objected that the term mental science is inapplicable, and that the term mental physiology or mental pathology, or psychology, or psychiatry (a term much affected by our German brethren), would have been more correct and appropriate; and that, moreover, we do not deal in mental science, which is properly the sphere of the aspiring metaphysical intellect. If mental science is strictly synonymous with metaphysics, these objections are certainly valid; for although we do not eschew metaphysical discussion, the aim of this JOURNAL is certainly bent upon more attainable objects than the pursuit of those recondite inquiries which have occupied the most ambitious intellects from the time of Plato to the present, with so much labour and so little result. But while we admit that metaphysics may be called one department of mental science, we maintain that mental physiology and mental pathology are also mental science under a different aspect. While metaphysics may be called speculative mental science, mental physiology and pathology, with their vast range of inquiry into insanity, education, crime, and all things which tend to preserve mental health, or to produce mental disease, are not less questions of mental science in its practical, that is in its sociological point of view. If it were not unjust to high mathematics to compare it in any way with abstruse metaphysics, it would illustrate our meaning to say that our practical mental science would fairly bear the same relation to the mental science of the metaphysicians as applied mathematics bears to the pure science. In both instances the aim of the pure science is the attainment of abstract truth; its utility, however, frequently going no further than to serve as a gymnasium for the intellect. In both instances the mixed science aims at, and, to a certain extent, attains immediate practical results of the greatest utility to the welfare of mankind; we therefore maintain that our JOURNAL is not inaptly called the *Journal of Mental Science*, although the science may only attempt to deal with sociological and medical inquiries, relating either to the preservation of the health of the mind or to the amelioration or cure of its diseases; and although not soaring to the height of abstruse metaphysics, we only aim at such metaphysical knowledge as may be available to our purposes, as the mechanician uses the formularies of mathematics. This is our view of the kind of mental science which physicians engaged in the grave responsibility of caring for the mental health of their fellow-men may, in all modesty, pretend to cultivate; and while we cannot doubt that all additions to our certain knowledge in the speculative department of the science will be great gain, the necessities of duty and of danger must ever compel us to pursue that knowledge which is to be obtained in the practical departments of science with the earnestness of real workmen. The captain of a ship would be none the worse for being well acquainted with the higher branches of astronomical science, but it is the practical part of that science as it is applicable to navigation which he is compelled to study."—*Sir J. C. Bucknill, M.D., F.R.S. (Journ. Ment. Sci., vol. vii, 1861, p. 137).*

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1931

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- “The Journal of Mental Science.” Published Quarterly. Price 7/6. Postage extra. Binding Cases, price 2/- (post free), are obtainable from Messrs. Adlard & Son, Ltd., who also undertake binding, including case, for 4/6.
- General Index of the Journal, vol. lv to lxxviii (inclusive). Price 2/6. Post free.
- Catalogue of the Association’s Library. Price 2/- Post free.

FROM MESSRS. BAILLIÈRE, TINDALL & COX:

- “Handbook for Mental Nurses.” 7th edn. 1923. Price 6/- net.

FROM THE REGISTRAR, St. Andrew’s Hospital, Northampton:

- “Regulations” } for the Examinations for the Certificates of Proficiency
 “Rules” } in Mental Nursing and in Nursing Mental Defectives.
 “Syllabuses” } Price 2*d.* each. Postage ½*d.*

HONOURS ROLL.

Year.	GASKELL MEDAL AND PRIZE.	BRONZE MEDAL AND PRIZE.
1883	—	J. Wigglesworth.*
1884	—	S. R. Macphail.
1885	—	T. D. Greenlees.*
1886	—	—
1887	J. E. D. Mortimer.	J. Wigglesworth.
1888	—	—
1889	T. B. Hyslop.	—
1890	G. M. Robertson.	J. C. Mackenzie. W. J. Smythe.
1891	—	—
1892	N. Raw. G. R. Wilson.	G. M. Robertson.
1893	—	A. W. Campbell.
1894	C. Beadles.	—
1895	G. W. F. Macnaughton.	—
1896	W. R. Dawson.	J. Turner.
1897	C. H. Bond.	—
1898	—	J. R. Lord.
1899	—	F. G. Crookshank.
1900	M. Craig.	C. C. Easterbrook.
1901	W. H. B. Stoddart.	—
1902	G. H. Grills.	—
1903	—	—
1904	—	A. A. D. Townsend.
1905	—	—
1906	J. M. Rutherford.	C. J. Shaw.
1907	—	—
1908	—	S. C. Howard.
1909	H. Devine.	C. F. F. McDowall.
1910	—	H. Morton.
1911	J. G. P. Phillips.	G. H. Garnett.
1912	W. Boyd.	—
1913	W. R. Thomas.	D. McKinley Reid.
1914	—	J. C. Wootton.
1915	—	—
1916	—	—
1917	J. C. Woods.	—
1918	—	—
1919	J. Walker.	R. Eager.
1920	—	—
1921	—	—
1922	—	W. S. Dawson.
1923	J. T. H. Madill.	—
1924	Mary Barkas.	—
1925	W. S. Dawson.	—
1926	G. de M. Rudolf.	P. K. McCowan.
1927	Elizabeth Casson.	—
1928	F. R. Martin.	—
1929	A. Walk.	—
1930	G. W. T. H. Fleming.	Duncan Macmillan.

* Prize only.

MEDALS AND PRIZES

The Gaskell Gold Medal and Prize.

(Value not less than £30.)



This Medal and Prize was established, at the Annual Meeting held on August 9, 1886, in honour of Samuel Gaskell, Esq., F.R.C.S., at one time Medical Superintendent of the County Asylum, Lancaster, and afterwards for 17 years a Commissioner in Lunacy. Upon his death on March 16, 1886, his sister, Mrs. Holland, gave £1000 to the Association, and other members of the family contributed further sums amounting to £340. The interest of this sum is given annually as a prize to the candidate who most distinguishes himself in an Examination in the subjects hereunder mentioned.

The examination must be held in England according to the terms of the Trust.

(1) Candidates must produce evidence: (a) Of having attained the age of 23. (b) Of having been qualified Medical Officers in one or more mental hospitals or clinics in psychiatry in the United Kingdom or elsewhere in the British Empire for at least two years. (c) Of possessing the Certificate in Psychological Medicine of this Association or a degree or diploma in Psychological Medicine of one of the Universities or Examining Boards having the power to grant medical qualifications registrable in the British Isles or elsewhere in the British Empire.

(2) Candidates will be examined in: (a) Psychology. (b) Anatomy, Histology and Physiology of the Nervous System, reproductive and endocrine glands; Pathology of the above, especially in relation to mental disorders. (c) The diagnosis, prognosis, treatment and legal relations of mental disorders. (d) Clinical cases.

The Bronze Medal and Prize.

(Value Ten Guineas.)



The Bronze Medal and Prize was established at the Annual Meeting held on August 2, 1882, and is awarded to any assistant medical officer of a mental hospital (public or private) for the best dissertation on a clinical or pathological subject relating to mental disorders.

The following is an abstract of the conditions :

- (1) The dissertation to be written in English.
- (2) Each dissertation to be distinguished by a motto or device, and accompanied by a sealed envelope containing the name and residence of the author, and having on the outside a motto or device corresponding with that on the dissertation.
- (3) The dissertation shall not exceed 10,000 words in length.
- (4) The dissertation and every accompanying drawing and preparation will become the property of the Association, to be published in the Journal at the discretion of the Editors.
- (5) The dissertations not approved, with their accompanying drawings and preparations, will, upon application within one year, be returned, together with the sealed envelopes unopened.
- (6) The dissertations not approved, with the accompanying drawings and preparations if not claimed within one year will become the property of the Association.
- (7) The dissertations for the year must be delivered to the Registrar before April 30.
- (8) No prize will be awarded if none of the dissertations is of sufficient merit.

Divisional Prizes for Assistant Medical Officers.

(Two Prizes of £10 and £5 respectively.)

The proposal to award Divisional Prizes under the conditions set out below emanated from the Irish Division and was adopted at the Annual Meeting held on July 13, 1911.

(1) Two prizes of £10 and £5 respectively will be awarded annually by the Association (provided sufficient merit be shown) for the best paper read during the preceding calendar year at a Divisional Meeting by an Assistant Medical Officer or Assistant Physician in a Psychiatric or Neurological Institution or Service. (See also Regulation, No. 7.)

(2) Competitors must be members of the Association.

(3) Only one paper by a competitor can be entered during any competitive year. The same applies to a paper entered by more than one author.*

(4) Only papers certified by the Secretary of the Division (in the absence of the Secretary, the Chairman of the Meeting) to have been read at a meeting of the Division and to be eligible for this competition can be entered. Divisional Secretaries are to withhold their certificates in cases where there has occurred material alterations or additions.

(5) Papers certified as eligible for the competition shall be forwarded to the Registrar not later than April 30 of the following year. They shall be submitted to the Examiners for the Certificate in Psychological Medicine for report and then adjudicated on by the President. Publication shall not invalidate a paper for adjudication.†

(6) The results shall be announced, and the prizes awarded, if any, by the President at the Annual Meeting in the year following the competitive year.

(7) Papers by more than one author can be entered and any prize awarded be divided among the authors.

(8) If in any competitive year one or two papers only are submitted for competition the Council may withhold either or both prizes; or it may, after considering the report of the Adjudicator, and if in its opinion the paper or papers are of outstanding merit, award a first or second or both prizes, at its discretion.

THE CERTIFICATE IN PSYCHOLOGICAL MEDICINE.

This Certificate was founded at the Annual Meeting held on August 4, 1885, and the first examinations were held in 1886.

Candidates must be at least twenty-one years of age, and must produce a certificate of having at least three months' clinical experience of mental disorders, or of having attended a course of lectures on insanity and the practice of a mental hospital (where there is clinical teaching) for a like period, or they shall give such proof of experience in mental disorders as shall, in the opinion of the President, be sufficient.

The examination is held yearly, and is in three parts: (1) Written. (2) Oral. (3) Practical.

Candidates must be registered under the Medical Act (1858) before the certificate is bestowed.

The fee for the examination is £3 3s., and intending candidates should communicate with the Registrar who will supply date and place of examination.

Candidates failing in the examination may present themselves at the next or subsequent examinations on payment of a fee of £1 1s.

* This means that the joint authors (though separately eligible) cannot enter another paper in the competitive year.

† The original MS., certified in accordance with Regulation No. 4, is to be submitted. Only under exceptional circumstances can a certified reprint of a published paper be accepted, but a reprint, where possible, should accompany the certified original MS.

THE INSIGNIA OF THE NURSING CERTIFICATE.

The Certificate of Proficiency in Mental Nursing was founded at the Annual Meeting held on July 24, 1890.

The Nursing Medal.



The Nursing Badge.

The Nursing Badge was founded at the Annual Meeting held on July 11, 1928.



HONORARY CERTIFICATE IN MENTAL NURSING.

1928. H.R.H. PRINCESS MARY, VISCOUNTESS LASCELLES, D.B.E.

LIST OF CHAIRMEN.

1841. Dr. Blake, Nottingham General Asylum.
 1842. Dr. de Vitre, Lancaster Asylum.
 1843. Dr. Conolly, Hanwell Asylum.
 1844. Dr. Thurnam, The Retreat.
 1847. Dr. Wintle, Warneford House.
 1848. William Ley, M.R.C.S., Littlemore Asylum.
 1851. Dr. Conolly, Hanwell Asylum.
 1852. Dr. Wintle, Warneford House.
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LIST OF PRESIDENTS.

1854. A. J. Sutherland, M.D., St. Luke's Hospital, London.
 1855. J. Thurnam, M.D., Wilts County Asylum.
 1856. J. Hitchman, M.D., Derby County Asylum.
 1857. Forbes Winslow, M.D., Sussex House, Hammersmith.
 1858. John Conolly, M.D., Hanwell Asylum.
 1859. Sir Charles Hastings, D.C.L., Worcester.
 1860. J. C. Bucknill, M.D., Devon County Asylum.
 1861. Joseph Lalor, M.D., Richmond Asylum, Dublin.
 1862. John Kirkman, M.D., Suffolk County Asylum.
 1863. David Skae, M.D., Royal Asylum, Edinburgh.
 1864. Henry Munro, M.D., Brook House.
 1865. Wm. Wood, M.D., Kensington House.
 1866. W. A. F. Browne, M.D., Commissioner in Lunacy for Scotland.
 1867. C. A. Lockhart Robertson, M.D., Haywards Heath Asylum.
 1868. W. H. O. Sankey, M.D., Sandywell Park, Cheltenham.
 1869. T. Laycock, M.D., Edinburgh.
 1870. Robert Boyd, M.D., Wells Asylum.
 1871. Henry Maudsley, M.D., The Lawn, Hanwell.
 1872. Sir James Coxe, M.D., Commissioner in Lunacy for Scotland.
 1873. Harrington Tuke, M.D., Chiswick House.
 1874. T. L. Rogers, M.D., Rainhill Asylum.
 1875. J. F. Duncan, M.D., Dublin.
 1876. W. H. Parsey, M.D., Warwick County Asylum.
 1877. G. Fielding Blandford, M.D., London.
 1878. Sir J. Crichton-Browne, M.D., Lord Chancellor's Visitor in Lunacy.
 1879. J. A. Lush, M.D., Fisherton House.
 1880. G. W. Mould, M.R.C.S., Royal Asylum, Cheadle.
 1881. D. Hack Tuke, M.D., London.
 1882. Sir W. T. Gairdner, M.D., Glasgow.
 1883. W. Orange, M.D., State Criminal Lunatic Asylum, Broadmoor.
 1884. Henry Rayner, M.D., Hanwell Asylum.
 1885. J. A. Eames, M.D., District Asylum, Cork.
 1886. Sir Geo. H. Savage, M.D., Bethlem Royal Hospital.
 1887. Sir Fred. Needham, M.D., Barnwood House.
 1888. Sir T. S. Clouston, M.D., Royal Asylum, Edinburgh.
 1889. H. Hayes Newington, F.R.C.P., Ticehurst House.
 1890. David Yellowlees, M.D., Royal Asylum, Glasgow.
 1891. E. B. Whitcombe, M.R.C.S., City Asylum, Birmingham.
 1892. Robert Baker, M.D., The Retreat.
 1893. J. Murray Lindsay, M.D., Derby County Asylum.
 1894. Conolly Norman, F.R.C.P.I., Richmond Asylum, Dublin.
 1895. David Nicolson, C.B., M.D., State Criminal Lunatic Asylum, Broadmoor.
 1896. William Julius Mickle, M.D., Grove Hall.
 1897. Thomas W. McDowall, M.D., Northumberland Asylum.
 1898. A. R. Urquhart, M.D., James Murray's Royal Asylum, Perth.

1899. J. B. Spence, *O.B.E.*, M.D., Burntwood Asylum, Lichfield.
 1900. Fletcher Beach, M.B., London.
 1901. Oscar T. Woods, M.D., District Asylum, Cork.
 1902. J. Wiglesworth, M.D., Rainhill Asylum.
 1903. Ernest W. White, *C.B.E.*, M.B., City of London Asylum, Stone.
 1904. R. Percy Smith, M.D., London.
 1905. T. Outterson Wood, M.D., London.
 1906. Sir Robert Armstrong-Jones, *C.B.E.*, M.D., Claybury Asylum.
 1907. P. W. MacDonal, M.D., Dorchester County Asylum.
 1908. Chas. A. Mercier, M.D., Flower House.
 1909. W. Bevan-Lewis, M.Sc., West Riding Asylum, Wakefield.
 1910. Sir John Macpherson, M.D., Commissioner in Lunacy for Scotland.
 1911. Wm. R. Dawson, *O.B.E.*, M.D., Inspector of Lunatic Asylums, Dublin.
 1912. J. Greig Soutar, M.B., Barnwood House.
 1913. James Chambers, M.D., The Priory.
 1914-18. David G. Thomson, *C.B.E.*, M.D., Norfolk County Asylum.
 1918. John Keay, *C.B.E.*, M.D., Bangour Village.
 1919. Bedford Pierce, M.D., The Retreat.
 1920. William F. Menzies, M.D., Cheddleton Mental Hospital.
 1921. Sir Hubert Bond, *K.B.E.*, M.D., Commissioner, Board of Control.
 1922. G. M. Robertson, M.D., Royal Mental Hospital, Morningside, Edinburgh.
 1923. Edwin Goodall, *C.B.E.*, M.D., Cardiff City Mental Hospital.
 1924. Michael J. Nolan, L.R.C.P. & S.Irel., Downpatrick Asylum.
 1925. Sir Frederick W. Mott, *K.B.E.*, M.D., London.
 1926. John R. Lord, *C.B.E.*, M.D., Horton Mental Hospital, Epsom.
 1927. Hamilton Marr, M.D., Commissioner, General Board of Control for Scotland.
 1928. J. Shaw Bolton, D.Sc., M.D., West Riding Mental Hospital, Wakefield.
 1929. Nathan Raw, *C.M.G.*, M.D., F.R.C.S.E., F.R.S.E., Lord Chancellor's Visitor in Lunacy.
 1930. T. Saxty Good, *O.B.E.*, M.A., M.R.C.S., L.R.C.P., Oxford County and City Mental Hospital, Littlemore.

LIST OF MAUDSLEY LECTURERS.

1920. Sir J. Crichton-Browne, LL.D., D.Sc., M.D., F.R.S.
 1921. Sir F. W. Mott, *K.B.E.*, LL.D., M.D., F.R.C.P., F.R.S.
 1922. Sir M. Craig, *C.B.E.*, M.A., M.D., F.R.C.P.
 1923. Charles Kirk Clarke, LL.D., M.D.
 1924. J. Carswell, F.R.F.P.S.
 1925. Joseph Shaw Bolton, D.Sc., M.D., F.R.C.P.
 1926. George M. Robertson, M.D., F.R.C.P.E., F.R.C.S.E.
 1927. Edwin Goodall, *C.B.E.*, M.D., F.R.C.P.
 1928. Sir John Macpherson, *C.B.*, M.D., F.R.C.P.E.
 1929. Charles E. Spearman, Ph.D., F.R.S.
 1930. Sir Henry Alfred McCardie.
 1931. Sir Hubert Bond, *K.B.E.*, LL.B., D.Sc., M.D., F.R.C.P.

HONORARY MEMBERS.

1928. Bleuler, Eugen, Prof. Dr., Zollikerstrasse 98, Zollikon bei Zürich, Switzerland.
1900. Blumer, G. Alder, M.D., L.R.C.P.Edin., Superintendent-Emeritus, Butler Hospital; 196, Blackstone Boulevard, Providence, R.I., U.S.A. (*Ord. Mem.*, 1890.)
1928. Bond, Sir Hubert, *K.B.E.*, LL.B., D.Sc., M.D., C.M.Edin., F.R.C.P. Lond., M.P.C., Commissioner, Board of Control, Caxton House West, Westminster, S.W. 1. (*General Secretary*, 1906-12.) (PRESIDENT, 1921-22.) (Emeritus Lect. on Psychiat., Middlx. Hosp.) (*Ord. Mem.* 1892).
1900. Bresler, Johannes, Sanitätsrat Dr., Director of the Provincial Mental Hospital, Kreuzburg, Oberschlesien, Germany. (Editor of the *Psychiatrisch-neurologische Wochenschrift*.) (*Corr. Mem.*, 1896.)
1902. Brush, Edward N., M.D., Superintendent-Emeritus, Sheppard and Enoch Pratt Hospital, Towson, Maryland; 2012, Greenberry Road, Mount Washington, Baltimore, Md., U.S.A.
1925. Chamberlain, Rt. Hon. Arthur Neville, *M.P.*, 37, Eaton Square, London, S.W. 1.
1909. Collins, Sir Wm. Job, *K.C.V.O.*, B.Sc., M.D., M.S., F.R.C.S., 1, Albert Terrace, Regent's Park, London, N.W. 1.
1912. Considine, Thomas Ivory, L.R.C.P., F.R.C.S.Irel., Medical Superintendent, Central Criminal Asylum, Dundrum, co. Dublin.
1918. Cooke, Sir (Edward) Marriott, *K.B.E.*, M.B., Honorary Commissioner, Board of Control; 9, Colherne Court, South Kensington, S.W. 5. (*Ord. Mem.*, 1878.)
1876. Crichton-Browne, Sir J., LL.D., D.Sc., M.D.Edin., F.R.S., 45, Hans Place, London, S.W. 1. (PRESIDENT, 1878.) (*Ord. Mem.*, 1863.)
1930. Cushing, Harvey, *C.B.*, A.M., LL.D., Sc.D., Litt.D., M.D., M.Ch., F.R.C.S., Professor of Surgery, Harvard University, U.S.A.
1924. Dawson, Lt.-Col. W. R., *O.B.E.*, B.A., M.D., B.Ch.Dubl., F.R.C.P.Irel., D.P.H., M.P.C., 18, Brock Street, Bath. (*Co-Editor*, 1920-21.) (PRESIDENT, 1911-12.) (*Ord. Mem.*, 1894.)
1925. Drummond, Sir David, *C.B.E.*, M.A., D.C.L., M.D., *J.P.*, 6, Saville Place, Newcastle-on-Tyne.
1923. Ellis, Henry Havelock, L.S.A., 24, Holmdene Avenue, Herne Hill, S.E. 24.
1922. l'Hermitte, Dr. Jacques Jean, Médecin de l'Hospice Paul Brousse, Paris; 9, rue Marbeuf, Paris VIII^e, France.
1930. Janet, Pierre, M.D., Member of the Institute of France; Professor of Psychology, College of France; 54, Rue de Varenne, Paris VII^e.
1930. von Jauregg, Hofrat Prof. Julius R. Wagner, M.D., Professor of Psychiatry, University of Vienna; 1, Landesgerichtstr. 18, Vienna.
1924. McDougall, William, LL.D., M.B., F.R.S., Professor of Psychology in Duke University, Durham, North Carolina, U.S.A.
1928. Macmillan, Rt. Hon. Lord, M.A., LL.D., Lord of Appeal in Ordinary and Member of the Judicial Committee of the Privy Council; 44, Grosvenor Road, Westminster, S.W. 1.
1910. Macpherson, Sir John, *C.B.*, M.D., C.M., F.R.C.P.Edin., "Hillside," Cleeve, nr. Bristol. (*Ord. Mem.*, 1886.) (PRESIDENT, 1910-11.)
1921. Maudsley, Sir Henry Carr, *K.C.M.G.*, *C.B.E.*, M.D., B.S., F.R.C.P., Consulting Physician, Melbourne Hospital, Victoria; 8, Collins Street, Melbourne.
1926. Meyer, Adolf, M.D., Psychiatrist in Chief, The Johns Hopkins Hospital, Baltimore, Md., U.S.A.
1922. Pactet, Dr. François Florentine, Médecin en chef de l'Asile de Villejuif; 94, Avenue de la République, Villejuif, Seine, France.

1929. Pavlov, Ivan Petrovitch, M.D., Member of the Russian Academy of Sciences, Director of the Physiological Laboratories, Institute of Experimental Medicine and Academy of Science, Leningrad.
1927. Robertson, George Matthew, M.D., C.M., F.R.C.P. Edin., Hon. F.R.C.S. Edin., M.P.C., Professor of Psychiatry, University of Edinburgh; Tipperlinn House, Morningside Place, Edinburgh. (*Ord. Mem.*, 1887.) (*Vice-Chairman, Research and Clinical Committee since 1927.*) (PRESIDENT, 1922-23.)
1927. Rolleston, Sir Humphry Davy, *Bt.*, K.C.B., D.C.L., LL.D., D.Sc., M.D., F.R.C.P., Physician in Ordinary to H.M. the King; Regius Professor of Physic, University of Cambridge; Southfield, Trumpington Road, Cambridge.
1923. Rose, Lt.-Col. Sir Arthur, *D.S.O.*, Chairman, General Board of Control for Scotland, 25, Palmerston Place, Edinburgh.
1924. Sandhurst, Rt. Hon. Lord, Barrister-at-Law; Lord Chancellor's Visitor in Lunacy; Edgebrook, Sheringham, Norfolk.
1911. Semelaigne, Dr. René, 59, Boulevard de Montmorency, Paris XVI*, France. (*Corr. Mem.*, 1893.)
1929. Sherrington, Sir Charles Scott, *O.M.*, G.B.E., M.A., LL.D., D.Sc., M.D., F.R.C.P., F.R.C.S., F.R.S., Waynflete Professor of Physiology, Oxford; 9, Chadlington Road, Oxford.
1927. Smith, Robert Percy, M.D., B.S.Lond., F.R.C.P.; 42, Albion Street, London, W. 2. (*Ord. Mem.*, 1885.) (*General Secretary*, 1896-97.) (*Chairman, Educational Committee*, 1899-1903.) (PRESIDENT, 1904-05.)
1922. Smith, William Charles Clifford, Esq., *O.B.E.*, F.R.I.B.A., M.I.C.E., *J.P.*, Dudley Lodge, Wallington, Surrey.
1929. Tanzi, Eugenio, M.D., Professor of Psychiatry, Direttore, Clinica Psichiatrica di S. Salvi, Firenze, Italy.
1901. Toulouse, Dr. Edouard, Médecin des Asiles de la Seine; 1, Rue Cabanis, Paris (XIV*), France.
1923. Willis, Sir Frederick James, *K.B.E.*, *C.B.*, Church House, Bramley, Guildford.
1926. Winkler, C., M.D., 35, Heerenstraat, Utrecht, Holland. (*Corr. Mem.*, 1924.)

CORRESPONDING MEMBERS.

1928. Bliss, Malcolm Andrews, M.D., Consultant in Neuro-Psychiatry, St. Luke's Hospital; 301, Humboldt Buildings, St. Louis, Minn., U.S.A.
1911. Boedeker, Geheimer Sanitätsrat, Prof. Justus Karl Edmund, Director, Zehlenhof Asylum; Margareten Strasse, 8, Berlin.
1929. Bouman, K. Herman, M.D., Professor of Psychiatry and Director of the University Psychiatric Clinic, Jan Luykenstraat 24, Amsterdam.
1923. Briggs, L. Vernon, M.D., 64, Beacon Street, Boston, Mass., U.S.A.
1929. Buscaino, V. M., M.D., Professor of Psychiatry, University of Catania, Sicily.
1897. Buschan, Sanitätsrat Dr. med et phil G., Friedrich Carlstrasse 7, Stettin, Germany.
1930. Campbell, Charles Macfie, M.D., Professor of Psychiatry, Harvard Medical School; Director, Boston Psychopathic Hospital; 74, Fenwood Road, Boston, Massachusetts, U.S.A.
1927. Charpentier, René, M.D., Secrétaire Général de la Société Médico-Psychologique de Paris; 119, rue Perrouet, Neuilly s/Seine (Seine), France.
1904. Coroleū, Wilfrid, Medico forense del distrito de la Barceloneta, Aribau, 31, Barcelona, Spain.
1924. Cotton, Henry A., A.M., M.D., Medical Director, Emeritus and Director of Research, State Hospital, Trenton, New Jersey, U.S.A.

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1896. Cowan, F. M., M.D., 109, Perponcher Straat, The Hague, Holland.
1929. Ebaugh, Franklin G., A.B., M.D., Professor of Psychiatry, University of Colorado; Director, Colorado Psychiatric Hospital, University of Colorado School of Medicine Hospitals; 4200, East Ninth Avenue, Denver, Colorado, U.S.A.
1930. Evensen, Dr. Hans, Medical Director, Gaustad State Hospital, Vinderen, Norway; Commissioner in Legal Medicine for Norway; President, Norwegian Psychiatric Society.
1911. Falkenberg, Sanitätsrat, Dr. Wilhelm, Direktor der Berliner Torenanstalt, Herzberge, Berlin-Lichtenberg.
1907. Ferrari, Giulio Cesare, M.D., Director, Manicomio Provinciale, Imola, Bologna, Italy.
1930. Flournoy, Dr. Henri, Consultant in Nervous Affections, etc.; 6, Rue de Mounetier, Geneva, Switzerland.
1911. Friedländer, Prof. Dr. Adolf Albrecht, Haus Sonnblick, Littenweiler, bei Freiburg i/Baden, Germany.
1901. Gommès, Dr. Marcel, 5, Rue Parrot, Paris (XII^e).
1930. Haškovec, Prof. Dr. Ladislav, Professor of Nervous Diseases in the Charles University, Prague, Czecho-Slovakia.
1928. Kappers, C. O. Ariens, M.D., Director, Dutch Central Institution for Brain Research, Amsterdam.
1928. Kirby, George H., LL.D., M.D., Professor of Psychiatry, Columbia University; Director, Psychiatric Institute, New York City, U.S.A.
1922. Kure, Prof. Schuzo, Tokyo University, Japan.
1930. Miyake, Dr. Koichi, Professor of Psychiatry, Tokio Imperial University; Director, Tokio Municipal Matsuzawa Psychopathic Hospital, Japan.
1909. Moreira, Prof. Dr. Juliano, Directeur General de l'Assistance aux Aliénés; Praia da Saudade 288, Rio de Janeiro, Brazil.
1922. Morowoka, Dr. T., Owada, 102, Shibuya, Tokyo, Japan.
1929. Pameijer, J. H., M.D., Director, Maasoord (City of Rotterdam) Mental Hospital, Poortugaal.
1928. Pighini, Giacomo, M.D., Professor of Psychiatry and Director, Laboratori Scientifici Istituto Psichiatrico di S. Lazzaro, S. Maurizio, Reggio Emilia, Via De Amicis 10, Italy.
1909. Pilcz, Prof. Dr. Alexander, VIII/2 Alserstrasse 43, Vienna, Austria.
1930. Piltz, Dr. Jan, Professor of Neurology and Psychiatry, Director, Neurological and Psychiatric Clinic, and Dean, Faculty of Medicine, University of Cracow; President, Neurological Society of Cracow, Poland.
1929. Pratt, G. K., M.D., Assistant Medical Director, National Committee for Mental Hygiene; 370, Seventh Avenue, New York, U.S.A.
1922. Sano, Dr., Directeur de la Colonie de Gheel, Belgium.
1929. Scheer, W. M. van der, M.D., Director, Santpoort (Province of North Holland) Mental Hospital, Meerenberg.
1930. Strecker, Edward A., M.D., Professor of Nervous and Mental Diseases, Jefferson Medical College; 111, North Forty-ninth Street, Philadelphia, U.S.A.
1929. Stuurman, F. J., M.D., Secretary, Dutch Association for Psychiatry and Neurology; Oegstgeest, near Leyden, Holland.
1927. Targowla, René, M.D., *Chev. Leg. Hon.*, 169, Rue de L'Université VII^e, Invalides 14-04, Paris.
1929. Thom, Douglas A., M.D., Professor of Mental Hygiene, Tuft Medical School; 520, Commonwealth Avenue, Boston, Mass., U.S.A.
1930. Weygandt, Dr. phil. et med. Wilhelm, Professor of Psychiatry and Director, Psychiatric Clinic, University of Hamburg; Friedrichsbergerstr. 60, Hamburg.
1929. Wiersma, E. D., Professor of Psychiatry and Director of the University Psychiatric Clinic, Groningen.
1930. Williams, Frankwood E., D.Sc., M.D.; Editor, *Mental Hygiene and Mental Hygiene Bulletin*; 370, Seventh Avenue, New York, U.S.A.
1928. Wimmer, August, M.D., Professor of Psychiatry, University of Copenhagen, Denmark.

ORDINARY MEMBERS OF THE ASSOCIATION.

*Alphabetical List of Ordinary Members of the Association on January 1, 1931,
with the year in which they joined.*

1928. Abd-el-Hakeem, Mohammed, M.B., B.Ch.Cairo, D.P.M., Assistant Medical Officer, Mental Hospital, Khanka, Egypt.
1910. Adam, George Henry, M.R.C.S., L.R.C.P.Lond., Resident Physician, Malling Place, West Malling, Kent.
1919. Adey, J. K., M.B., C.M.Melb., Sunbury, Victoria, Australia.
1886. Agar, Samuel Hollingsworth, jun., B.A.Camb., L.S.A., M.R.C.S.Eng., Hurst House, Henley-in-Arden.
1923. Ahern, John Maurice, M.B., B.Ch.R.U.I., L.R.C.P.&S.Irel., The Elms, Parkhurst, Newport, Isle of Wight.
1923. Ainsworth, Cyrus Gerald, M.A., LL.B., M.B., B.Ch.Camb., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Graylingwell Mental Hospital, Chichester.
1926. Albiston, Norman Arthur, M.B., B.S.Syd., D.P.M., 32, Darling Road, East Malvern, Victoria, Australia.
1924. Alexander, Douglas Reid, M.R.C.S., L.R.C.P.Lond., D.P.M., Deputy Medical Superintendent, Colney Hatch Mental Hospital, N. 11.
1899. Alexander, Hugh de Maine, M.D., C.M.Edin., Medical Superintendent, Kingseat Mental Hospital, Newmachar, Aberdeen.
1899. Allman, Dorah Elizabeth, M.B., B.Ch.R.U.I., Assistant Medical Officer, District Asylum, Armagh.
1929. Anderson, John Colquhoun, B.Sc., M.B., Ch.B.Glasg., Dipl. Psych., 2, Foremount Terrace, Highburgh Road, Glasgow, W. 2
1926. Anderson, John Ford, M.D., C.M.Aberd., M.R.C.P.Lond., L.R.C.S. Edin., 28, Loudoun Road, London, N.W. 8.
1898. Anderson, John Sewell, M.R.C.S., L.R.C.P.Lond., Medical Superintendent, City Mental Hospital, Willerby, Hull.
1918. Anderson, William Kirkpatrick, M.D., Ch.B., F.R.F.P.S.Glasg., 2, Woodside Crescent, Glasgow. (Lect. on Ment. Dis., Andr. Coll., Glasg.)
1912. Annandale, James Scott, M.B., Ch.B.Aberd., D.P.M., Senior Assistant Physician, Royal Mental Hospital, Aberdeen.
1904. Archdale, Mervyn Alex., M.B., B.S.Durh., D.P.M., Medical Superintendent, Sunderland Mental Hospital, Ryhope.
1905. Archdall, Mervyn Thomas, L.S.A., L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., St. Denys, New Milton, Hants.
1930. Armitage, Bernard William Francis, M.A., M.R.C.S., L.R.C.P., Assistant Medical Officer, Croydon Mental Hospital, Upper Warlingham, Surrey.
1930. Armstrong, Robert William, B.Sc., M.D., B.Ch.Belf., D.P.M., Assistant Medical Officer, Hanwell Mental Hospital, Southall.
1882. Armstrong-Jones, Sir Robert, *C.B.E.*, D.Sc.Wales, M.D., B.S., F.R.C.P. Lond., F.R.C.S.Eng., F.S.A., *D.L.*, *J.P.*, Lord Chancellor's Visitor-in-Lunacy, 9, Bramham Gardens, London, S.W. 5 (and Plas Dinas, Carnarvon, North Wales). (*Gen. Secretary, 1897-1906.*) (*PRESIDENT, 1906-7.*) (Gresham Prof. of Physic.)
1930. Ashby, William Ross, B.A., M.B., B.Ch.Cantab., M.R.C.S., L.R.C.P., Assistant Medical Officer, Leavesden Mental Hospital, Leavesden, Watford.
1927. Atkin, Isaac, M.D., M.R.C.S., L.R.C.P.Lond., D.P.M., Assistant Medical Officer, Hants County Mental Hospital, Knowle, Farnham.
1910. Auden, George Augustus, M.A., M.D., B.Ch.Camb., Ph.D.Birm., F.R.C.P.Lond., D.P.H., F.S.A., School Medical Officer, Education Office, Council House, Margaret Street, Birmingham.

1891. Aveline, Henry Talbot Sydney, M.D.Durh., M.R.C.S., L.R.C.P.Lond., M.P.C., Medical Superintendent, Somerset and Bath County Mental Hospital, Cotford, nr. Taunton. (*Secretary, S.W. Division, 1905-11.*)
1922. Back, Frederick, M.R.C.S., L.R.C.P.Lond., D.P.M., Deputy Medical Superintendent, Sunderland Mental Hospital, Ryhope.
1926. Bailey, Josiah Reginald, M.B., Ch.B.Glasg., Medical Superintendent, Gogarburn Certified Institution, Corstorphine, Edinburgh.
1909. Bain, John, M.A., M.B., Ch.B.Glasg., Medical Superintendent, Derby Borough Mental Hospital, Rowditch.
1913. Bainbridge, Charles Frederick, M.B., Ch.B.Edin., Assistant Medical Officer, Devon County Mental Hospital, Exminster.
1906. Baird, Harvey, M.D., Ch.B.Edin., Medical Superintendent, Periteau House, Winchelsea, Sussex.
1922. Banbury, Percy, M.R.C.S., L.R.C.P.Lond., D.P.M., Medical Superintendent, Borough Mental Hospital, Ipswich.
1930. Barber, Leonard, M.B., B.S.Durh., L.R.C.P.&S.Edin., L.R.F.P.&S. Glasg., D.P.M., Assistant Medical Officer, City Mental Hospital, Fishponds, Bristol.
1922. Barclay, Rachel Mary, M.A., LL.B., M.D.Edin., Dipl. Psych., 2, W. Crosscauseway, Edinburgh.
1904. Barham, Guy Foster, M.A., M.D., B.Ch.Camb., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Claybury Mental Hospital, Woodford Bridge, Essex.
1919. Barkas, Mary Rushton, M.Sc.N.Z., M.D., B.S., M.R.C.S., L.R.C.P.Lond., D.P.M., Medical Superintendent, The Lawn, Lincoln.
1927. Barkas, Thomas Cook, O.B.E., M.B., B.S.Durh., Resident Medical Officer, Middleton Hall, Middleton St. George, co. Durham.
1923. Barnes, Francis Gregory Lawson, M.B., B.S., M.R.C.S., L.R.C.P.Lond., D.P.M., Deputy Medical Superintendent, Ewell Colony, Epsom.
1910. Bartlett, George Norton, M.B., B.S., M.R.C.S., L.R.C.P.Lond., Gosford House, Watlington, nr. Oxford. (*Secretary, S.W. Division, 1916-22.*)
1901. Baskin, J. Loughheed, M.D.Brux., L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., Bagliffe, Bagley Wood, Kennington, Berks.
1902. Baugh, Leonard Dieckmann Hamilton, M.B., Ch.B.Edin., The Pleasaunce, York.
1892. Beadles, Cecil F., M.R.C.S., L.R.C.P.Lond., Gresham House, Egham Hill, Egham, Surrey.
1921. Beaton, Thomas, O.B.E., M.D., B.S., F.R.C.P.Lond., Medical Superintendent, City Mental Hospital, Milton, Portsmouth. (*Assistant Editor, 1926-27, and Co-Editor of Journal since 1927.*) (Lect. on Ment. Dis., Bethlem Royal Hosp.)
1913. Bedford, Percy William Page, M.D., Ch.B.Edin., Dipl. Psych., Medical Superintendent, Dorset County Mental Hospital, Herrison, near Dorchester.
1909. Beeley, Arthur, M.Sc.Leeds, M.D., B.S., M.R.C.S., L.R.C.P.Lond., D.P.H., Assistant Medical Officer of Health, East Sussex; 4, de Warrenne Road, Lewes, Sussex.
1922. Bell, Andrew Allan, M.B., Ch.B., F.R.F.P.S.Glasg., D.P.M., Pathologist and Assistant Medical Officer, Govan District Asylum, Hawkhead, Cardonald, N.B.
1914. Bennett, James Widderspoon, M.R.C.S., L.R.C.P.Lond., Dunkerry Lodge, Minchhead, Somerset.
1914. Benson, John Robinson, F.R.C.S.Eng., L.R.C.P.Lond., Resident Physician, Fiddington House, Market Lavington, Wilts, and Laverstock House, Salisbury.
1899. Beresford, Edwyn Henry, M.R.C.S., L.R.C.P.Lond., 20, Champion Road, Putney, London, S.W. 15.

1922. Berkeley-Hill, Owen Alfred Rowland, M.A., M.D., B.Ch.Oxon., M.R.C.S., L.R.C.P.Lond., Lt.-Col. *I.M.S.*, Medical Superintendent, Ranchi Mental Hospital for Europeans, Kanké, Bihar and Orissa, India.
1912. Berncastle, Herbert Melbourne, M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Croydon Mental Hospital, Upper Warmingham, Surrey.
1927. Berry, Richard James Arthur, M.D.Edin. & Melb., F.R.C.S., F.R.S. Edin., Director of Medical Services, Stoke Park Colony, Stapleton, Bristol; "Rufford," Canford Lane, Westbury-on-Trym, Bristol.
1920. Birch, William Somerset, M.C., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, The Mental Hospital, Bridgetown; "Rosemont," Bridgetown, British West Indies.
1894. Blachford, James Vincent, C.B.E., M.D., B.S.Durh., M.R.C.S., L.R.C.P.Lond., M.P.C., Milverton House, Long Ashton, Somerset.
1898. Blair, David, M.A., M.D., C.M.Glasg., Medical Superintendent, Lancashire County Mental Hospital, Prestwich, Manchester. (Lect. on Ment. Dis., Univ. of Manchester.)
1919. Blake, Stanley, L.R.C.P.&S.Irel., Assistant Medical Officer, Grange-gorman Mental Hospital, Dublin.
1918. Blandford, Walter Foliott, B.A.Camb., M.R.C.S., L.R.C.P.Lond., 35, Gunterstone Road, W. 14.
1900. Bolton, Joseph Shaw, D.Sc., M.D., B.S., F.R.C.P.Lond., Medical Director, West Riding Mental Hospital, Wakefield. (Prof. of Ment. Dis., Univ. of Leeds.) (PRESIDENT, 1928-29.)
1922. Bostock, John, M.B., B.S., M.R.C.S., L.R.C.P.Lond., D.P.M., Lauriston, Wickham Terrace, Brisbane, Queensland, Australia.
1918. Bower, Cedric William, L.M.S.S.A., Physician-Superintendent, Springfield House, near Bedford.
1926. Boyd, William, M.B., Ch.B.Edin., D.P.H., D.P.M., Medical Superintendent, Fife and Kinross District Asylum, Cupar, Fife.
1898. Boyle, A. Helen A., M.D.Bru.x., L.R.C.P.&S.Edin., 9, The Drive, Hove, Sussex.
1926. Braithwaite, Joseph, M.B., Ch.B.Edin., D.P.M., Assistant Medical Officer, Cumberland and Westmorland Mental Hospital, Garlands, Carlisle.
1922. Bramwell, Edwin, M.D., F.R.C.P.Edin. & Lond., F.R.S.Edin., 23, Drumsheugh Gardens, Edinburgh. (Physician, Royal Infirmary, and Prof. of Clin. Med., Univ. of Edin.)
1911. Brander, John, M.D., Ch.B.Edin., M.R.C.P.Lond., D.P.M., Medical Superintendent, Colney Hatch Mental Hospital, New Southgate, N. 11.
1925. Brennan, Richard Dominick, M.B., B.Ch.N.U.I., Assistant Medical Officer, District Mental Hospital, Waterford.
1930. Bristowe, Hubert C., M.D.Lond., M.R.C.S., L.R.C.P.Lond., M.P.C., Hon. Major *R.A.M.C.*, Medical Officer, Yatton Hall Home for Feeble-Minded Children; Wrington, Somerset.
1922. Brock, Arthur John, M.D., Ch.B.Edin., Medical Superintendent, Garth Hill House, North Queensferry, Fife.
1924. Brown, Basil William, M.B., B.S.Lond., L.M.S.S.A., D.P.M., The Priory, Roehampton, London, S.W. 15.
1905. Brown, Harry Egerton, O.B.E., M.D., Ch.B.Glasg., M.P.C., Physician-Superintendent, Mental Hospital, Pietermaritzburg, Natal.
1908. Brown, Robert Dods, M.D., Ch.B., F.R.C.P.Edin., D.P.H., Dipl. Psych., Medical Superintendent, Royal Mental Hospital, Aberdeen.
1912. Brown, William, M.D., C.M.Glasg., M.P.C., Medical Officer, Stoke Park Colony; 1, Manor Road, Fishponds, Bristol.
1916. Brown, William, D.Sc.Lond., M.A., M.D., B.Ch.Oxon., F.R.C.P.Lond., 88, Harley Street, London, W. 1. (Wilde Reader in Mental Philosophy, Univ. Oxford.) (Lect. on Psycho-therapy, King's Coll. Hosp.)

1917. Bruce, Alexander Ninian, D.Sc., M.D., F.R.C.P.Edin., 8, Ainslie Place, Edinburgh. (Lect. on Neurol., Univ. of Edin.)
1928. Bruce, David Kennedy, M.B., Ch.B.Glasg., Senior Assistant Medical Officer, Storthes Hall Mental Hospital, Kirkburton, near Huddersfield.
1893. Bruce, Lewis C., M.C., M.D., F.R.C.P.Edin., M.P.C., Medical Superintendent, Perth District Asylum, Druid Park, Murthly. (*Secretary, Scottish Division, 1901-1907.*) (*Co-Editor of Journal, 1911-1916.*)
1927. Brunlees, Oswald, L.R.C.P. & S.Edin., Deputy Medical Superintendent, Isle of Wight Mental Hospital, Whitecroft, Newport.
1913. Brunton, George Llewellyn, M.D., Ch.B.Edin., Medical Superintendent, City Mental Hospital, Mapperley Hill, Nottingham.
1920. Bryce, William Henderson, M.B., C.M.Edin., Gifford Bank, Gifford, East Lothian.
1912. Buchanan, William Murdoch, M.B., Ch.B.Glasg., Medical Superintendent, Kirklands Mental Hospital, Bothwell, Lanarkshire. (*Secretary, Scottish Division since 1920.*)
1912. Burke, Joseph Dominick Gabriel, M.B., B.Ch.R.U.I., Deputy Medical Superintendent, St. Audrey's Hospital, Melton, Suffolk.
1928. Burke, Noel Hawley Michael, M.R.C.S., L.R.C.P.Lond., D.P.M., D.M.R.E.Camb., Assistant Medical Officer, Fountain Mental Hospital, The Grove, Tooting, S.W. 17.
1924. Bushe, Charles Kendal, O.B.E., B.A., M.D., B.Ch.Dubl., Surg.-Capt., R.N., c/o Admiralty Medical Department, London, S.W. 1.
1921. Buzzard, Sir Edward Farquhar, Bart., K.C.V.O., M.A., M.D., B.Ch.Oxon., F.R.C.P.Lond., Physician to H.M. The King; Regius Professor of Medicine, Oxford University; 85, Banbury Road, Oxford.
1928. Calder, Flora Hannah Macdonald, M.A., M.D., D.P.M.Edin., 14, Dalhousie Street, Edinburgh.
1921. Caldicott, Charles Holt, M.B.E., M.B., M.R.C.S., L.R.C.P.Lond., Grantbourne, Chobham, Surrey.
1928. Caldwell, William Alexander, M.R.C.S., L.R.C.P.Lond., D.P.M., Assistant Medical Officer, West Park Mental Hospital, Epsom.
1925. Cameron, Donald Ewan, M.B., Ch.B.Glasg., D.P.M., Brandon Hospital for Mental Diseases, Brandon, Manitoba, Canada.
1928. Cameron, Viola Cameron, M.R.C.S., L.R.C.P.Lond., D.P.M., Assistant Medical Officer, Springfield Mental Hospital Annexe, Kingston Road, New Malden, Surrey.
1894. Campbell, Alfred Walter, M.D., C.M.Edin., M.P.C., Macquarie Chambers, 183, Macquarie Street, Sydney, New South Wales.
1897. Campbell, Robert Brown, M.D., C.M., F.R.C.P.Edin., Medical Superintendent, Stirling District Mental Hospital, Larbert. (*Secretary, Scottish Division, 1910-20, and Chairman 1929-30.*)
1930. Cannon, H. C. A. Tandy, Surgeon Lt.-Commander R.N. (Ret.), L.R.C.P.&S.I., Resident Physician, Moorcroft House, Hillingdon, Middlesex.
1927. Carey, Catherine, M.B., B.Ch.N.U.I., Assistant Medical Officer, Farnham House, Finglas, co. Dublin.
1905. Carre, Henry, L.R.C.P.&S.Irel., Medical Superintendent, Glasgow District Mental Hospital, Woodilee, Lenzie, N.B.
1891. Carswell, John, F.R.F.P.S.Glasg., L.R.C.P.Edin., J.P., 6, Montagu Place, W. 1.
1928. Cassin, Patrick Joseph, M.D., B.Ch.N.U.I., D.M.D., Assistant Medical Officer, Mental Hospital, Kilkenny, Ireland.
1922. Casson, Elizabeth, M.D., Ch.B.Brist., D.P.M., Dorset House, Clifton, Bristol.
1928. Cates, Henry Joseph, M.D.Lond., Medical Superintendent, hwoods House, Winterbourne, Bristol.

1888. **Chambers, James, M.A., M.D.R.U.I., M.P.C.,** The Priory, Roehampton, London, S.W. 15. (*Assistant Editor, 1900-05, and Co-Editor of Journal, 1905-1914.*) (*Treasurer since 1917.*) (PRESIDENT, 1913-14.)
1911. **Chambers, Walter Duncanon, M.A., M.D., Ch.B., F.R.C.P.Edin.** M.P.C., Physician Superintendent, James Murray's Royal Asylum; Murray House, Perth.
1928. **Chapman, Theonie Renée, M.B., B.S.Durh.,** Assistant Medical Officer, Northumberland Mental Hospital, Morpeth.
1928. **Chennell, Eileen Anne, M.R.C.S., L.R.C.P.Lond., D.P.M.,** Assistant Medical Officer, Holloway Sanatorium, Virginia Water, Surrey.
1923. **Chevens, Leslie Charles Frederick, M.R.C.S., L.R.C.P.Lond., D.P.M.,** Assistant Medical Officer, Cheshire County Mental Hospital, Parkside, Macclesfield.
1917. **Chisholm, Percy, L.R.C.P.&S.Edin., L.R.F.P.S.Glasg.,** Medical Superintendent, Queen Mary Hospital, Hammer Springs, New Zealand.
1907. **Chislett, Charles Game Angus, M.B., Ch.B., F.R.F.P.S.Glasg.,** Medical Superintendent, Stoneyetts, Chryston, Lanark.
1921. **Cholmeley, Mountague Adye, M.R.C.S., L.R.C.P.Lond., D.P.M.** (Retired), Heigham Hall, Norwich.
1920. **Clark, Ronald Murray, M.B., C.M.Edin.,** Medical Superintendent, Lancashire County Mental Hospital, Whittingham, Preston.
1907. **Clarke, Geoffrey, M.D.Lond.,** Medical Superintendent, London County Mental Hospital, Bexley, Kent.
1907. **Clarkson, Robert Durward, B.Sc., M.D., C.M., F.R.C.P.Edin.,** Medical Officer, Scottish National Institute for the Education of Imbecile Children; The Park, Larbert, Stirlingshire. (Lect. on Mental Deficiency, Univ. of Edin.)
1925. **Cobb, Geoffrey Francis, M.R.C.S., L.R.C.P.Lond., D.P.M., M.P.C.,** Deputy Medical Superintendent, The Manor, Epsom.
1900. **Cole, Sydney John, M.A., M.D., B.Ch.Oxon.,** Medical Superintendent, Wilts County Mental Hospital, Devizes.
1930. **Colerman, Stanley Maurice, M.R.C.S., L.R.C.P., D.P.M.,** Senior Assistant Medical Officer, Dorset County Mental Hospital, Herrison, Dorchester.
1906. **Collier, Walter Edgar, M.R.C.S., L.R.C.P.Lond.,** Senior Assistant Medical Officer, Kent County Mental Hospital, Barming Heath, Maidstone.
1903. **Collins, Michael Abdy, O.B.E., M.D., B.S., M.R.C.S., L.R.C.P.Lond.,** Medical Superintendent, Kent County Mental Hospital, Chartham Downs. (*Hon. General Secretary, 1912-18.*) (*Vice-Chairman, Educational Committee, 1919-27.*)
1910. **Conlon, Thomas Peter, L.R.C.P.&S.Irel.,** Resident Medical Superintendent, District Mental Hospital, Monaghan.
1921. **Connell, Ernest Henry, M.B., Ch.B.Edin., D.P.M., 7, Greenhill Gardens,** Edinburgh.
1920. **Connell, Oliver George, M.C., L.R.C.P.&S.Irel.,** Medical Superintendent, St. Andrew's Hospital, Thorpe, Norwich.
1914. **Connolly, Victor Lindley, M.C., M.B., B.Ch.Belf., D.P.M.,** Medical Superintendent, Hants County Mental Hospital, Park Prewett, Basingstoke.
1927. **Cook, Leslie Colin, M.R.C.S., L.R.C.P.Lond., D.P.M.,** Assistant Medical Officer, London County Mental Hospital, Bexley, Kent.
1910. **Coombes, Percival Charles, M.R.C.S., L.R.C.P.Lond.,** Medical Superintendent, Surrey County Mental Hospital, Netherne, nr. Coulsdon.
1930. **Cooper, Hugh Astley, M.B., B.S.Lond., M.R.C.S., L.R.C.P.Lond., D.P.M.,** Assistant Medical Officer, West Park Mental Hospital, Epsom.
1927. **Cooper, James Woodman Astley, L.S.A., L.R.C.S., L.R.C.P.,** Medical Superintendent, Middleton Hall Private Mental Hospital, and Almora Hall, Middleton St. George, Durham.
1928. **Copeland, Cecil Leonard, M.B., Ch.B.Liverp., D.P.M.,** Assistant Medical Officer, West Riding Mental Hospital, Wakefield.

1903. Cormac, Harry Dove, M.B., M.S. Madras, D.P.M., Medical Superintendent, Cheshire County Mental Hospital, Parkside, Macclesfield; Parkside House, Macclesfield. (Lect. on Ment. Dis., Univ. of Manch.)
1891. Corner, Harry, M.D., M.R.C.S., L.R.C.P.Lond., M.P.C., Brook House, Southgate, London, N. 14.
1910. Coupland, William Henry, L.R.C.S.&P.Edin., L.R.F.P.S.Glasg., Medical Superintendent, Royal Albert Institution; Albert House, Haverbreaks, Lancaster.
1930. Cowie, Charles George, M.A., M.B., C.M., M.P.A., "Bonaccord," Westminster Road, Branksome Park, Bournemouth.
1911. Cox, Donald Maxwell, M.R.C.S., L.R.C.P.Lond., Assistant Medical Officer, Hereford County Mental Hospital, Burghill.
1926. Coyne, William Joseph, M.D., B.Ch.N.U.I., D.P.M., Physician, Chiswick House, Pinner; "Clontarf," Barrow Point Avenue, Pinner, Middlesex.
1924. Craig, Alexander, M.B., Ch.B.Aberd., D.P.M., Assistant Physician, Royal Mental Hospital, Aberdeen.
1893. Craig, Sir Maurice, C.B.E., M.A., M.D., B.Ch.Camb., F.R.C.P.Lond., M.P.C., 4, Cambridge Gate, Regent's Park, London, N.W. 1. (*Secretary, Educational Committee, 1905-8; Chairman, Educational Committee, 1912-19.*)
1924. Craig, Roy Neville, M.D.Durh., M.R.C.S., L.R.C.P.Lond., D.P.M., Heath Court, Barton Road, Torquay.
1925. Creak, Eleanor Mildred, M.B., B.S., M.R.C.P., D.P.M., Assistant Medical Officer, The Maudsley Hospital, Denmark Hill, London, S.E. 5.
1911. Crichlow, Charles Adolphus, M.B., Ch.B.Glasg., Senior Assistant Medical Officer, Bangour Village, Uphall, Liulithgowshire.
1930. Crichton-Miller, Hugh, M.A., M.D.Edin., M.D.Pavia, Hon. Director, Tavistock Square Clinic, 51, Tavistock Square, London, W.C. 1; 146, Harley Street, W. 1.
1915. Crothwaite, Frederick Douglas, M.B., Ch.B.Edin., D.P.H., Physician Superintendent, West Koppies Mental Hospital, Pretoria, South Africa.
1923. Crow, Norah Annie, M.A.Edin., M.D., B.S.Lond., "Kingsclere," Harrington Road, Brighton.
1919. Cuthbert, James Harvey, M.B., Ch.B.Edin., D.P.M., Medical Superintendent, West Ham Mental Hospital, Goodmayes, Essex.
1930. Cutts, George Lambert, M.R.C.S.Eng., L.R.C.P.Lond., L.D.S.Eng., D.P.M., Assistant Medical Officer, Long Grove Mental Hospital, Epsom, Surrey; Farmfield, Horton Lane, Epsom.
1907. Daniel, Alfred Wilson, B.A., M.D., B.Ch.Camb., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Hanwell Mental Hospital, Southall, Middlesex. (*Secretary, Educational Committee, 1920-27.*)
1926. Darlington, Arthur, B.A., M.B., Ch.B.Dubl., D.P.H., D.P.M., Deputy Medical Superintendent, Somerset and Bath Mental Hospital, Wells.
1930. Das, Banarsi, M.B., B.S.Punjab, D.P.M., Medical Superintendent, Mental Hospital, Agra, U.P., India; c/o Imperial Bank of India, 22, Old Broad Street, E.C. 2.
1896. Davidson, Andrew, M.D., C.M.Aberd., M.P.C., 221, Macquarie Street, Sydney, New South Wales.
1925. Davidson, Thomas Wishart, M.B., Ch.B.Glasg., D.P.M., Assistant Medical Officer and Pathologist, City Mental Hospital, Humberstone, Leicester.
1922. Davie, Thomas Macnaughton, M.C., M.D., Ch.B.Edin., D.P.M., Barrister-at-Law, Medical Superintendent, East Riding Mental Hospital, Beverley, Yorks.
1928. Davies, Stuart Wyndham, M.R.C.S., L.R.C.P.Lond., Medical Officer, H.M. Prison, Wormwood Scrubs, W. 12.

1921. **Davies-Jones, Charles William Saunderson, M.B., Ch.B.Edin.,** First Assistant Medical Officer, County and City Mental Hospital, Littlemore, Oxford.
1920. **Dawson, William Siegfried, M.A., M.D., B.Ch.Oxon., M.R.C.P.Lond., M.R.C.S.Eng., D.P.M.,** Prof. of Psychiat., University of Sydney, New South Wales, Australia.
1926. **Deane, Frederick John, M.B., Ch.B.Edin., D.P.M.,** Medical Inspector, Ministry of Home Affairs, Northern Ireland; "Beaumont," Whitewell, Belfast.
1925. **Delany, John James, L.R.C.P.&S.Irel.,** 68, Wellington Road, Dublin.
1929. **Denyssen, John Abraham Felix, M.R.C.S., L.R.C.P.Lond.,** Assistant Medical Officer, Banstead Mental Hospital, Sutton, Surrey.
1901. **De Steiger, Adele Isabella, M.D.Lond.,** Dormansland, Lingfield, Surrey.
1905. **Devine, Henry, O.B.E., M.D., B.S., F.R.C.P.Lond., M.R.C.S.Eng., M.P.C.,** Medical Superintendent, Holloway Sanatorium, Virginia Water, Surrey; The Ridge, Virginia Water, Surrey. (*Assistant Editor, 1916-1920, and Co-Editor of Journal, 1920-27.*) [Lect. on Psychol., Maudsley Hosp.]
1904. **Devon, James, L.R.C.P.&S.Edin., F.R.F.P.S.Glasg.,** 3, Lockharton Gardens, Edinburgh.
1924. **Devon, Martha Davidson, L.R.C.P. & S.Edin., L.R.F.P.S.Glasg.,** Isle of Eigg, Inverness-shire.
1925. **Dhunjibhoy, Jal Eduji, M.B., B.S.Bomb., Capt., I.M.S.,** Medical Superintendent, The Indian Mental Hospital, Kankè, Ranchi, Bihar and Orissa, India; c/o Lloyds Bank, 6, Pall Mall, S.W. 1.
1921. **Dick, Alexander, M.C., M.B., Ch.B.Glasg.,** Deputy Medical Superintendent, Glasgow District Mental Hospital, Woodilee, Lenzie, N.B.
1922. **Dickson, James, M.C., M.B., Ch.B.Edin.,** Browne House, Hemstell Road, Southchurch, Southend-on-Sea.
1915. **Dillon, Frederick, M.D., Ch.B.Edin.,** Medical Superintendent, Northumberland House, Finsbury Park, London, N. 4.
1909. **Dillon, Kathleen, L.R.C.P.&S.Irel.,** Assistant Medical Officer, District Asylum, Mullingar.
1905. **Dixon, J. Francis, M.A., M.D., B.Ch.Dubl., M.P.C.,** Medical Superintendent, City Mental Hospital, Humberstone, Leicester.
1879. **Dodds, William John, D.Sc., M.D., C.M.Edin.,** 19, Marina Road, Prestwick, Ayrshire.
1892. **Donelan, John O'Conor, L.R.C.P.&S.Irel., M.P.C.,** Medical Superintendent, Grangegorman Mental Hospital; St. Dymphna's, North Circular Road, Dublin. (Lect. on Ment. Dis., Univ. of Dubl.)
1928. **Douglas-Morris, Ernest Mannering, L.M.S.S.A.,** Neurologist, Ministry of Pensions Clinic, Nottingham; Tykeford Abbey Nursing Home, Newport Pagnell, Bucks.
1919. **Drake-Brockman, Henry George, M.R.C.S., L.R.C.P.Lond.,** Medical Superintendent, St. Luke's Hospital, Middlesbrough.
1916. **Drummond, William Blackley, M.D., C.M., F.R.C.P.Edin.,** Garth Hill, Queensferry, Fife.
1921. **Drury, Kenneth Kirkpatrick, M.C., B.A., M.D., B.Ch.Dubl., D.P.M.,** Medical Superintendent, Leicester and Rutland Mental Hospital, Narborough, near Leicester.
1907. **Dryden, Arthur Mitchell, M.B., Ch.B.Edin.,** Medical Superintendent, Glasgow District Mental Hospital, Gartloch, Gartcosh.
1902. **Dudgeon, Herbert Wm., M.D., B.S.Durh., M.R.C.S., L.R.C.P.Lond.,** Director of the Lunacy Department of Public Health, and Director of Abbassia Mental Hospital, Egypt.
1899. **Dudley, Francis, L.R.C.P.&S.Irel.,** Medical Superintendent, Cornwall County Mental Hospital, Bodmin.
1926. **Duncan, Archibald Glen, M.D., B.S., M.R.C.S., L.R.C.P.Lond., D.P.M.,** Assistant Medical Officer, Essex County Mental Hospital, Severalls, Colchester.
1922. **Duncan, William Arthur, M.B., Ch.B.Edin.,** Assistant Medical Officer, East Sussex County Mental Hospital, Hellingly, Sussex.

1923. Dunne, John, M.B., B.Ch.R.U.I., D.M.D., District Mental Hospital, Sligo.
1922. Dunscombe, Nicholas Dunscombe, M.A., M.B., B.Ch.Camb., L.M.S.S.A., D.P.H., Barrister-at-Law, Medical Officer of Health; **Town Hall, Bexhill, Sussex.**
1923. Dwyer, Patrick Joseph, M.B., B.Ch.R.U.I., Deputy Medical Superintendent, Portrane Mental Hospital, Dublin.
1906. Eager, Richard, *O.B.E.*, M.D., Ch.B.Aberd., M.P.C., Medical Superintendent, Devon County Mental Hospital, Exminster.
1891. Earls, James Henry, M.D., M.Ch.R.U.I., L.S.A., D.P.H., M.P.C., Barrister-at-Law; Fenstanton, Christchurch Road, Streatham Hill, London, S.W. 2.
1921. East, Guy Roland, M.D., B.S., B.Hy.Durh., D.P.H., Medical Superintendent, Northumberland County Mental Hospital, Cottingham, Morpeth.
1907. East, Wm. Norwood, M.D., M.R.C.S., M.R.C.P.Lond., M.P.C., One of His Majesty's Commissioners of Prisons; Prison Commission, Home Office, Whitehall, Westminster, S.W. 1.
1895. Easterbrook, Charles C., M.A., M.D., F.R.C.P.Edin., M.P.C., *J.P.*, Physician-Superintendent, Crichton Royal Institution, Dumfries.
1924. Eddison, Herbert Wilfred, M.A., M.D.Camb., M.R.C.S., L.R.C.P.Lond., D.P.M., Medical Superintendent, Wonford House Hospital, Exeter.
1928. Edleston, Harry, M.B., B.Ch.Leeds, D.P.M., Moorside House, 721, Leeds Road, Bradford, Yorks.
1895. Edgerley, Samuel, M.A., M.D., C.M.Edin., M.P.C., Medical Superintendent, West Riding Mental Hospital, Menston, Leeds.
1897. Edwards, Francis Henry, M.D.Bru.x., M.R.C.P.Lond., "Cherchefelle," Reigate, Surrey.
1924. Edwards, Thomas Lloyd, L.R.C.P.&S Edin., L.R.F.P.S.Glasg., D.P.M., Assistant Medical Officer, Glamorgan County Mental Hospital, Bridgend.
1919. Eggleston, Henry, M.B., B.S.Durh., M.P.C., 21, Pinner Hill Road, Pinner, Middlesex.
1901. Elgee, Samuel Charles, *O.B.E.*, L.R.C.P.&S.Irel., Medical Superintendent, Cane Hill Mental Hospital, Coulsdon, Surrey.
1889. Elkins, Frank Ashby, M.D., C.M.Edin., M.P.C., Hornead, 21, Parkside Drive, Watford, Herts.
1908. Ellison, Arthur, M.R.C.S., L.R.C.P.Lond., 120, Domestic Street, Holbeck, Leeds.
1901. Erskine, Wm. J. Adams, M.D., C.M.Edin., Medical Superintendent, Isle of Wight Mental Hospital, Whitecroft, Newport.
1926. Esson, Walter Louis, M.A., M.B., Ch.B.Aberd., 21, Oldham Road, Miles Platting, Manchester.
1895. Eurich, Frederick Wilhelm, M.D., C.M.Edin., Lanshawe Cottage, Ilkley, Yorks. (Prof. of For. Med., Univ. of Leeds.)
1909. Eustace, William Neilson, L.R.C.S.&P.Irel., Resident Medical Officer, "Lisrouagh," Glasnevin, Dublin.
1918. Evans, Albert Edward, M.B., B.S.Lond., M.R.C.S., L.R.C.P.Lond., D.P.H., Commissioner, Board of Control, Caxton House West, Westminster, S.W. 1; 11, Weymouth Avenue, Mill Hill, N.W. 7.
1927. Ewan, Grey Lamont, *J.P.*, B.Sc., M.B., Ch.M.Sydney, D.P.M., Medical Superintendent, The Mental Hospital, Stockton, nr. Newcastle, New South Wales.
1891. Ewan, John Alfred, M.A.St.And., M.D., C.M.Edin., M.P.C., Greylees, Godalming, Surrey.
1930. Ewen, John Harold, M.R.C.S.Eng., L.R.C.P.Lond., D.P.M., Assistant Medical Officer, Surrey County Mental Hospital, Netherne, Coulsdon, Surrey.
1914. Ewing, Cecil Wilmot, L.R.C.P.&S.Irel., D.P.M., Medical Superintendent, Storthes Hall Mental Hospital, Kirkburton, nr. Huddersfield.

1929. **Fairbairn**, William Ronald Dodds, M.A., M.D., Ch.B.Edin., Dipl. Psych., Psychologist, Jordanburn Nerve Hospital; 18, Lansdowne Crescent, Edinburgh. (Lect. on Psych., Univ. of Edin.)
1925. **Fairweather**, Anne, M.D., B.S.Durh., D.P.M., The Red House, Haydon Bridge, Northumberland.
1908. **Fenton**, Henry Felix, M.B., Ch.B.Edin., Medical Superintendent, Worcester County and City Mental Hospital, Powick.
1930. **Fenwick**, Philip Cuthbert Collingwood, L.M.S.S.A., Assistant Medical Officer, East Sussex Mental Hospital, Hellingly.
1928. **Finiefs**, Leonidas Aristodimos, M.R.C.S., L.R.C.P.Lond., M.D.Paris, Assistant Medical Officer, Three Counties Mental Hospital, Arlesey, Beds.
1889. **Finlay**, David, M.D., C.M.Glasg., Medical Superintendent, Glamorgan Mental Hospital, Bridgend.
1906. **Firth**, Arthur Marcus, M.A., M.D., B.Ch.Edin., Deputy Medical Superintendent, Worcester County Mental Hospital, Barnesley Hall, Bromsgrove.
1930. **Fisher**, John William, M.R.C.S., L.R.C.P., D.P.H., D.P.M., Temporary Assistant Medical Officer, Devon Mental Hospital; Sunny Cottage, Shaldon, near Teignmouth, S. Devon.
1903. **Fitzgerald**, Alexis, L.R.C.P.&S.Irel., Medical Superintendent, District Mental Hospital, Waterford.
1929. **FitzGerald**, Edward Joseph, M.B., B.Ch.N.U.I., Assistant Medical Officer, Lancashire County Mental Hospital, Winwick, Warrington.
1908. **Fitzgerald**, James Francis, L.R.C.P.&S.Irel., Assistant Medical Officer, District Mental Hospital, Clonmel.
1928. **Fitzgerald**, John, M.B., B.Ch.N.U.I., M.D., D.M.D., Assistant Medical Officer, Grangegorman Mental Hospital, Dublin.
1930. **Fitzgerald**, John Joseph, M.D.Durh.&Brux., Assistant Physician, Mental Hospital, Cork; Mile House, Cork.
1930. **Fitzgerald**, Nora May, M.B., B.Ch., B.A.O., Grangegorman Mental Hospital, Dublin.
1921. **Fleming**, Gerald William Thomas Hunter, M.R.C.S., L.R.C.P.Lond., D.P.M., Deputy Medical Superintendent, Dorset County Mental Hospital, Herrison, near Dorchester.
1904. **Fleming**, Wilfrid Louis Remi, M.R.C.S., L.R.C.P.Lond., *J.P.*, Suffolk House, Pirbright, Surrey.
1925. **Flind**, James, M.B., Ch.B.Glasg., Senior Assistant Medical Officer, Peckham House, London, S.E. 15.
1930. **Forbes**, Donald John, M.B., Ch.B.St. And., Medical Superintendent, Baldovan Certified Institution, Craignull House, by Dundee.
1927. **Ford-Robertson**, William Marsden, M.D., Ch.B.Edin., Assistant Medical Officer, Pathologist and Bacteriologist, St. Andrew's Hospital; 66, Billing Road, Northampton.
1911. **Forrester**, Archibald Thomas William, M.D., B.S., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Warwick County Mental Hospital, Hatton.
1926. **Forrester**, Robert Cairns, M.B., Ch.B.Edin., Assistant Medical Officer, Caterham Mental Hospital, Caterham, Surrey.
1916. **Forsyth**, Charles Wesley, M.D., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Winson Green Mental Hospital, Birmingham. (Clin. Lect. on Ment. Dis., Univ. of Birm.)
1913. **Forward**, Ernest Lionel, M.R.C.S., L.R.C.P.Lond., D.C.M.S. Ministry of Pensions, 1, Sanctuary Buildings, London, S.W. 1.
1930. **Fox**, Edward Arthur Haslam, M.B., Ch.B., D.P.M., Assistant Medical Officer, Cheshire County Mental Hospital, Parkside, Macclesfield.
1925. **Fox**, Francis Elliot, B.A.Camb., M.R.C.S., L.R.C.P.Lond., Medical Officer, Brislington House, Bristol.
1920. **Fox**, J. Tylor, M.A., M.D., B.Ch.Camb., M.R.C.S., L.R.C.P.Lond., D.P.M., Medical Superintendent, Lingfield Epileptic Colony; The Homestead, Lingfield, Surrey.

1923. Franklin, Marjorie Ellen, M.B., B.S., M.R.C.S., L.R.C.P.Lond., D.P.M., Assistant, London Clinic for Psycho-Analysis; 86, Harley Street, London, W. 1.
1919. Fraser, Kate, B.Sc., M.D., Ch.B.Glasg., D.P.H., Deputy Commissioner, General Board of Control, Scotland; 25, Palmerston Place, Edinburgh.
1928. Fraser, William, B.Sc., M.B., Ch.B.Glasg., D.P.H., D.P.M., Deputy Medical Superintendent, North Riding Mental Hospital, York.
1921. Fuller, Hugh Hercus Cavendish, M.B., Ch.B.Edin., 22, Iverna Gardens, W. 8.
1902. Fuller, Lawrence Otway, M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Three Counties Mental Hospital, Arlesey, Beds.
1928. Gall, Herbert, M.R.C.S., L.R.C.P.Lond., Major, R.A.M.C., Officer-in-Charge, "D" Block, Royal Victoria Hospital, Netley.
1928. Gallacher, Charles Eddie, M.R.C.S., L.R.C.P.Lond., Talfourd House, 28, Mount Pleasant Road, Hastings.
1927. Gamble, Florence Margaret, M.D., B.S., M.R.C.P.Lond., D.P.M., Assistant Medical Officer, Warwick County Mental Hospital, Hatton.
1906. Gane, Edward Palmer Steward, M.D.Durh., M.R.C.S., L.R.C.P.Lond., Castle Green, Llansawel, Llandilo, Carmarthen.
1928. Gardner, Dorothy Margaret, M.B., B.Ch.Belf., D.P.H., Assistant Medical Officer, Belfast Mental Hospital, Purdysburn, Belfast.
1912. Garry, John William, M.B., B.Ch.N.U.I., Assistant Medical Superintendent, District Mental Hospital, Ennis, co. Clare.
1912. Gavin, Lawrence, M.B., Ch.B., L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., Medical Superintendent, District Asylum, Mullingar.
1896. Geddes, John William, M.B., C.M.Edin., 7, Bedford Row, Worthing.
1930. Gemmell, Daniel Topping, L.R.C.P.&S.I., L.R.T.P.&S.G., D.P.M., Dornhurst, Halstead, Essex.
1923. Gibson, George Herbert Rae, D.S.O., M.D., F.R.C.P.Edin., L.C.P.S. Brit. Columbia, Dipl. Psych.; Deputy Commissioner, General Board of Control, Scotland; 23, Cluny Terrace, Edinburgh.
1919. Gifford, John, B.A.Cape, M.B., Ch.B.Edin., D.P.M., Deputy Medical Superintendent, Lancashire County Mental Hospital, Winwick, Warrington.
1921. Gilfillan, John Aitken, M.D., Ch.B., F.R.F.P.S.Glasg., D.P.M., Deputy Medical Superintendent, North Riding Mental Hospital, Clifton, York; Hillside, Drymen, Stirlingshire.
1899. Gilfillan, Samuel James, O.B.E., M.A., M.B., C.M.Edin., Medical Superintendent, Bailbrook House, Bath.
1923. Gillespie, Isabella Annie, M.B., B.Ch.Edin., D.P.M., Senior Assistant Medical Officer, Cheshire County Mental Hospital, Upton, Chester.
1921. Gillespie, Robert Dick, M.D., Ch.B.Glasg., M.R.C.P.Lond., D.P.M., 25, Upper Wimpole Street, London, W. 1. (Lect. on Psychiat. Med., Guy's Hosp.)
1920. Gillis, Kurt, M.B., Ch.B.Edin., Assistant Physician-Superintendent, Mental Hospital, Bloemfontein, South Africa.
1897. Gilmour, John Rutherford, M.B., C.M., F.R.C.P.Edin., M.P.C., Medical Superintendent, West Riding Mental Hospital, Scalebor Park, Burley-in-Wharfedale, Yorks. (*Secretary, N. and M. Division, 1920-28, and Chairman since 1929.*)
1906. Gilmour, Richard Withers, M.B., B.S.Durh., M.R.C.S., L.R.C.P.Lond., Physician-in-Charge, St. Luke's Hospital; 39, Harley Street, London, W. 1. (Lect. on Psychiat., Midlxx. Hosp.)
1929. Glaister, John Norman, M.B., B.S., M.R.C.S., L.R.C.P.Lond., Assistant Medical Officer, Northumberland House, N.4, Physician, British Hospital for Nervous and Mental Disorders; 2, Devonshire Place, London, W. 1.
1927. Goitein, Percy L., M.B., B.S., M.R.C.S., L.R.C.P.Lond., D.P.M., Deputy Medical Superintendent, City Mental Hospital, Canterbury.

1923. **Golla, Frederick Lucien, M.A., M.B., B.Ch.Oxon., F.R.C.P.Lond.,** Director of the Laboratory and Pathologist, London County Mental Hospitals, The Maudsley Hospital, Denmark Hill, London, S.E. 5; The Dene, Sunninghill, Berks. (Lect. on Physiol. and Pathol. of the Nervous System, Maudsley Hospital.)
1897. **Good, Thomas Saxty, O.B.E., M.A.Oxon., M.R.C.S., L.R.C.P.Lond.,** Medical Superintendent, County and City Mental Hospital, Littlemore, Oxford. (PRESIDENT, 1930-31.) (Lect. on Psychiatry, Univ. of Oxford.)
1889. **Goodall, Edwin, C.B.E., M.D., B.S., F.R.C.P.Lond., M.P.C.,** "Fairlawn," Kingsway, Hove, Sussex. (*Assistant Editor*, 1894-5; *Editor*, 1894-98.) (PRESIDENT, 1923-24.)
1920. **Gordon, George, M.B., C.Bh.Glasg.,** 14, Guessens Court, Welwyn Garden City, Herts.
1928. **Gordon, Ronald Grey, D.Sc., M.D., F.R.C.P.Edin.,** 9, The Circus, Bath.
1901. **Gostwyck, Cecil Hubert Gostwyck, M.B., Ch.B., F.R.C.P.Edin.,** Dipl. Psych., M.P.C., Deputy Medical Superintendent, Rampton State Institution, Retford, Notts.
1923. **Gough, Isabel Falconer, M.B., Ch.B., L.R.C.P.&S.Edin., L.R.F.P.S.** Glasg., D.P.M., Three Corner Park, Calstock, Cornwall.
1928. **Grace, Pierce, L.R.C.P.&S.I.,** Resident Medical Superintendent, District Mental Hospital, Portlaoighise (Maryborough), Leix.
1914. **Graham, Norman Bell, M.C., B.A.R.U.I., M.B., B.Ch.Belf., D.P.M.,** Senior Assistant Medical Officer, Purdysburn Villa Colony, Belfast.
1918. **Graham, Samuel John, L.R.C.P.&S.Edin., L.R.F.P.S.Glasg.,** Resident Medical Superintendent, Purdysburn Villa Colony, Belfast.
1908. **Graham, William Shepherd, M.B., B.Ch.R.U.I.,** Senior Assistant Medical Officer, Somerset and Bath Mental Hospital, Cotford, near Taunton.
1921. **Grant, Alastair Robertson, M.D., Ch.B.Aberd.,** Deputy Medical Superintendent, Lancashire County Mental Hospital, Whittingham, Preston.
1925. **Grant, John King, M.B., Ch.B.Aberd.,** Assistant Physician, Royal Asylum, Montrose.
1930. **Grant, Penuel Grant, M.B., Ch.B., D.P.H.,** Assistant Medical Officer, East Riding Mental Hospital, Beverley, Yorks.
1915. **Graves, Thomas Chivers, B.Sc., M.D., B.S.Lond., F.R.C.S.Eng.,** L.R.C.P.Lond., M.R.C.V.S., Medical Superintendent, Rubery Hill and Hollymoor Mental Hospitals, Northfield, Birmingham.
1916. **Gray, Cyril, L.R.C.P.&S.Edin., L.R.F.P.S.Glasg.,** Senior Assistant Medical Officer, City Mental Hospital, Gosforth, Newcastle-upon-Tyne.
1928. **Gray, James, M.B., Ch.B.Edin.,** Assistant Medical Officer, "Jemima-ville," Poyntzfield-by-Cononbridge, Ross-shire.
1921. **Gray, Joseph Anthony Wenceslaus Pereira, M.D.Brux., M.R.C.S.,** L.R.C.P.Lond., Visitor of Licensed Houses; 3, Northernhay Place, Exeter.
1909. **Greene, Thomas Adrian, L.R.C.S.&P.Irel., J.P.,** Medical Superintendent, District Mental Hospital, Carlow.
1922. **Gregorson, Albert William, M.D., Ch.B., F.R.F.P.S.Glasg.,** Physician and Deputy Superintendent, North Middlesex Hospital, Edmonton, London, N. 18; 112, Brownlow Road, New Southgate, N. 11.
1927. **Grierson, Hugh Arrowsmith, M.C., M.B., B.S.Lond.,** Medical Officer, H.M. Prison, Leeds.
1926. **Griffiths, Gwenvron Mary, M.D., M.R.C.P.Lond.,** Pendre, Newport, Pembrokeshire.
1901. **Grills, Galbraith Hamilton, M.D., B.Ch.R.U.I., D.M.D., M.P.C.,** Medical Superintendent, Cheshire County Mental Hospital, Upton, Chester.
1923. **Grossman, Simon, M.R.C.S., L.R.C.P.Lond.,** c/o South Africa House, Strand, W.C. 2.

1922. Guppy, Francis Henry, *M.C.*, *M.R.C.S.*, *L.R.C.P.Lond.*, *D.P.M.*, Deputy Medical Superintendent, Brighton Mental Hospital, Haywards Heath, Sussex.
1894. Halsted, Harold Cecil, *M.D.Durh.*, *L.S.A.*, *M.R.C.S.*, *L.R.C.P.Lond.*, Manor Road, Selsey, Sussex.
1928. Hamilton, John Gerard, *M.B.*, *B.S.*, *M.R.C.S.*, *L.R.C.P.Lond.*, Assistant Medical Officer, Holloway Sanatorium, Virginia Water, Surrey.
1920. Hancock, Allen Coulter, *M.C.*, *M.B.*, *B.S.*, *M.R.C.S.*, *L.R.C.P.Lond.*, *D.P.H.*, *D.P.M.*, Medical Superintendent, Kent County Mental Hospital, Barming Heath, Maidstone.
1929. Handley, Richard, *M.B.*, *Ch.B.Manch.*, *D.P.M.*, Carver Avenue, Prestwich, Manchester.
1930. Hannesson, Hannes, *B.Sc.*, *M.R.C.S.*, *L.R.C.P.Lond.*, London Hospital, Whitechapel Road, E. 1.
1923. Hardcastle, Douglas Noël, *M.R.C.S.*, *L.R.C.P.Lond.*, *D.P.M.*, c/o Westminster Bank, Birkenhead.
1920. Harding, Edward Palmer, *L.R.C.P.&S.Irel.*, Deputy Medical Superintendent, East Riding Mental Hospital, Beverley.
1920. Harper, Raymond Sydney, *M.R.C.S.*, *L.R.C.P.Lond.*, 36, First Avenue, Hove, Sussex.
1904. Harper-Smith, George Hastie, *M.A.*, *M.D.Camb.*, *M.R.C.S.*, *L.R.C.P.Lond.*, Medical Superintendent, Brighton Mental Hospital; Galagate, Haywards Heath, Sussex.
1931. Harris, John Borrie, *L.R.C.P.&S.E.*, *L.R.F.P.&S.G.*, The Retreat, Armagh, Northern Ireland.
1924. Harris, John Stuart, *M.D.*, *Ch.B.Edin.*, *M.R.C.P.Lond.*, *D.P.M.*, Senior Assistant Medical Officer, The Maudsley Hospital, Denmark Hill, London, S.E. 5.
1928. Harris, Noel Gordon, *M.B.*, *B.S.*, *M.R.C.S.*, *L.R.C.P.Lond.*, *D.P.M.*, Assistant Medical Officer, Springfield Mental Hospital, near Tooting, S.W. 17.
1898. Harris-Liston, Llewellyn, *M.D.Bru.x.*, *L.S.A.*, *M.R.C.S.*, *L.R.C.P.Lond.*, Fairholm, Cobden Street, Darlington.
1930. Harrison, Geoffrey J., *L.R.C.P.&S.I.*, Assistant Medical Officer, St. Edmondsbury, Lucan, co. Dublin.
1928. Harrowes, William McConnachie, *M.B.*, *Ch.B.*, Glasg., Deputy Medical Superintendent, Murray Royal, Perth.
1905. Hart, Bernard, *M.D.*, *F.R.C.P.Lond.*, *M.R.C.S.Eng.*, 94, Harley Street, London, W. 1. (Lect. on Ment. Dis., Univ. Coll. Hosp.)
1892. Haslett, William John Handfield, *M.R.C.S.*, *L.R.C.P.Lond.*, *M.P.C.*, *J.P.*, Resident Medical Superintendent, Halliford House, Sunbury-on-Thames.
1930. Haworth, Norah Alice, *M.A.Camb.*, *M.R.C.S.Eng.*, *L.R.C.P.Lond.*, *D.P.M.*, Assistant Medical Officer, Severalls Mental Hospital, Colchester.
1923. Hayes, Edmund Duncan Tranchell, *B.A.*, *M.D.*, *B.Ch.Dubl.*, *D.P.M.*, Senior Assistant Medical Officer, County Mental Hospital, Berry Wood, Northampton.
1924. Hayes, Henry Douglas, *M.D.*, *Ch.B.Edin.*, *D.P.M.*, The Mental Hospital, Porirua, Wellington, New Zealand.
1920. Haynes, Horace Guy Lankester, *M.R.C.S.*, *L.R.C.P.Lond.*, Littleton Hall, Brentwood, Essex. (*Secretary, Parliamentary Committee since 1929.*)
1927. Healey, Frederick Henry, *B.Sc.*, *M.B.*, *Ch.B.Birm.*, *D.P.M.*, Assistant Medical Officer, Cheshire County Mental Hospital, Upton, Chester.
1920. Henderon, Cyril John, *M.B.Durh.*, Assistant Medical Officer, The Royal Albert Institution, Lancaster.

1929. **Henderson, David, M.D., Ch.B.Glasg.,** Assistant Medical Officer and Pathologist, Stafford County Mental Hospital, Cheddleton; The Hollies, Cheddleton, near Leek.
1916. **Henderson, David Kennedy, M.D., Ch.B.Edin., F.R.F.P.S.Glasg.,** Physician Superintendent, Glasgow Royal Mental Hospital, Gartnavel; 2, Whittinghame Gardens, Glasgow. (Lect. on Ins., Univ. of Glasg.)
1905. **Henderson, George, M.A., M.B., Ch.B.Edin.,** 25, Commercial Road, Peckham, London, S.E. 15.
1923. **Henderson, Norman Keane, B.A., LL.B.Camb., M.B., Ch.B.Edin., D.P.H., D.P.M.,** Medical Superintendent, Kesteven Mental Hospital, Greylees, Sleaford, Lincs.
1930. **Hennelly, Thomas John, M.B., B.Ch., B.A.O.N.U.I.,** Assistant Medical Officer, Surrey County Mental Hospital, Brookwood, Woking.
1924. **Hensman, Henry Saumarez, L.M.&S.Madras, M.R.C.S., L.R.C.P.Lond., M.P.C.,** Medical Superintendent, Government Mental Hospital, Kilpauk, Madras.
1924. **Herbert, James Edward, M.B., B.Ch.R.U.I.,** Senior Assistant Medical Officer, District Asylum, Omagh.
1925. **Heron, John, M.B., Ch.B.Edin., D.P.M.,** 78, Bonaly Road, Edinburgh.
1929. **Hewitt, Edward John Campbell, M.B., Ch.B.Edin., D.P.M.,** Assistant Medical Officer and Pathologist, Napsbury Mental Hospital, St. Albans, Herts.
1929. **Hext, Catherine Mary, M.B., B.S., M.R.C.P., Lond. D.P.M.,** Assistant Medical Officer, Maudsley Hospital, Denmark Hill, S.E. 5.
1912. **Higson, William Davies, M.B., Ch.B.Liverp., D.P.H.,** Medical Officer, H.M. Prison; 17, Walton Park, Liverpool.
1900. **Hollander, Bernard, M.D.Freib., M.R.C.S., L.R.C.P.Lond.,** 57, Wimpole Street, London, W. 1.
1929. **Holmes, Eric Gordon, M.A., M.B., B.Ch.Camb.,** Assistant to the Downing Professor of Medicine, Examiner in Pharmacology, Cambridge; Pharmacological Laboratory, Cambridge.
1925. **Home, Bruce Fordyce, L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., B.Psych.,** c/o D.M.S., Lagos, Nigeria.
1925. **Honan, Bernard Francis, L.R.C.P.&S.Irel., D.P.M.,** Assistant Medical Officer, Down County Mental Hospital, Downpatrick.
1920. **Hooper, Reginald Arthur, M.B., B.S.Durh.,** Medical Superintendent, City Mental Hospital, Fulford, Yorks.
1929. **Hopkins, Edwin Lancelot, M.R.C.S., L.R.C.P.Lond., D.P.H., D.P.M.,** Deputy Medical Superintendent, West Park Mental Hospital, Epsom, Surrey.
1926. **Hopwood, Joseph Stanley, M.B., B.S., M.R.C.S., L.R.C.P.Lond.,** Medical Officer, State Criminal Lunatic Asylum, Broadmoor.
1926. **Horton, Phyllis Mary, M.R.C.S., L.R.C.P.Lond., D.P.M.,** Wye House, Buxton.
1918. **Horton, Wilfred Winnall, M.D., C.M.Edin.,** Medical Superintendent, Wye House, Buxton.
1926. **Hosie, William, M.B., Ch.B.Glasg.,** Assistant Medical Officer, Derby County Mental Hospital, Mickleover.
1894. **Hotchkis, Robert Dunmore, M.A.Glasg., M.D., B.S.Durh., M.R.C.S., L.R.C.P.Lond., M.P.C.,** Medical Superintendent, Renfrew District Mental Hospital, Dykebar, Paisley.
1928. **Howie, James Erskine, M.D., Ch.B.Liverp., M.R.C.S., L.R.C.P.Lond., D.P.M.,** Assistant Medical Officer, Lancashire County Mental Hospital, Prestwich, Manchester.
1900. **Hughes, Percy T., M.B., C.M.Edin., D.P.H.,** Medical Superintendent, Worcester County Mental Hospital, Barnesley Hall, Bromsgrove. (Lect. on Ment. Dis., Univ. of Birm.)
1904. **Hughes, William Stanley, M.B., B.S., M.R.C.S., L.R.C.P.Lond.,** Medical Superintendent, Salop County Mental Hospital, Bicton Heath, Shrewsbury.

1897. Hunter, David, M.A., M.B., B.Ch.Camb., L.S.A., Medical Superintendent, The Coppice, Nottingham. (*Secretary, S.E. Division, 1910-1913.*)
1912. Hunter, George Yeates Cobb, M.R.C.S., L.R.C.P.Lond., M.P.C., I.M.S. (Ret.), c/o Messrs. Grindlay & Co., 54, Parliament Street, London, S.W. 1.
1928. Hunter, James Dewar Hunter, M.B., Ch.B.N.Z., Dipl. Psych., Senior Assistant Medical Officer, Mental Hospital, Seacliffe, Otago, New Zealand.
1904. Hunter, Percy Douglas, M.R.C.S., L.R.C.P.Lond., D.P.M., Deputy Medical Superintendent, Three Counties Mental Hospital, Arlesey.
1911. Hutton, Isabel Emslie, M.D., Ch.B.Edin., Hon. Physician, British Hospital for Mental and Nervous Disorders; 6, Montagu Place, London, W. 1.
1888. Hyslop, Theo. Bulkeley, M.D., C.M., M.R.C.P., L.R.C.S., F.R.S.Edin., M.P.C., 5, Portland Place, London, W. 1. (*Chairman, Library Committee, 1926-27.*)
1926. Illingworth, Reginald Ernest, L.R.C.P.&S., L.D.S.Edin., D.Psy.Durh., Deputy Medical Superintendent, Northumberland County Mental Hospital, Cottingwood, Morpeth.
1915. Ingall, Frank Ernest, L.R.C.P.Lond., F.R.C.S.Eng., D.P.H., Public Health Offices, Clarence Street, Southend-on-Sea.
1926. Ironside, Archibald Jennings, M.A., M.B., Ch.B.Aberd., Newlands House, Tooting Bec Common, S.W. 17.
1906. Irwin, Peter Joseph, L.R.C.P.&S.Irel., Medical Superintendent, District Mental Hospital, Limerick.
1920. Jackson, John Luke, M.B., B.Ch.Belf., Medical Superintendent, Hants County Mental Hospital, Knowle, Fareham.
1927. Jacob, Frank Harwood, M.D., F.R.C.P.Lond., Hon. Physician, General Hospital; 32, Regent Street, Nottingham.
1927. Jacobson, Jack Nathan, M.R.C.S., L.R.C.P.Lond., D.P.M., Assistant Medical Officer, Tooting Bec Mental Hospital, London, S.W. 17.
1914. James, George William Blomfield, M.C., M.D., B.S.Lond., L.S.A., D.P.M., Physician, Moorcroft House, Hillingdon, Uxbridge; 25, Upper Berkeley Street, W. 1. (*Secretary, Parliamentary Committee, 1926-29.*) (Lect. on Ment. Dis., St. Mary's Hosp.)
1922. Jarrett, Reginald Fitzroy, F.R.F.P.S.Glas., L.M.S.S.A., Medical Superintendent, Brentry Certified Institution, Westbury-on-Trym, Bristol.
1908. Jeffrey, Geo. Rutherford, M.D., Ch.B.Glasg., F.R.C.P., F.R.S.Edin., M.P.C., Medical Superintendent, Bootham Park, York.
1925. Jenkins, John Alexander, M.B., Ch.B.Glasg., Senior Assistant Medical Officer, Mental Hospital, Larbert.
1924. Jenkins, Reginald Edward, L.M.S.S.A., Egmont House, Brighton Road, Sutton.
1893. Johnston, Gerald Herbert, L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., Brooke House, Upper Clapton, London, E. 5.
1928. Johnston, James McLaughlan, M.B., Ch.B.Edin., Assistant Medical Officer, Mental Hospital, Westgreen, Dundee; May Lodge, Summerfield, Leith.
1905. Johnston, Thomas Leonard, L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., Leadonham, Lincs.

1928. **Karneneff**, Vladimir, M.R.C.S., L.R.C.P.Lond., Assistant Medical Officer, Hants County Mental Hospital, Knowle, Farcham, Hants.
1879. **Kay**, Walter Smith, M.D., C.M.Edin., M.R.C.S.Eng., Granby Hotel, Harrogate.
1927. **Kearney**, Joseph, M.B., B.Ch.N.U.I., Portrane Mental Hospital, Donabate, Co. Dublin.
1886. **Keay**, John, C.B.E., M.D., C.M.Glasg., F.R.C.P.Edin., Medical Superintendent, Bangour Village, Uphall, Linlithgowshire. (PRESIDENT 1918.) (*Chairman, Educational Committee, 1920-27.*) (Lect. on Ment. Dis., Roy. Colls., Edin.)
1907. **Keene**, George Henry, M.D., B.Ch.Dubl., Medical Superintendent, Stewart Institution, Palmerston; 14, Palmerston Park, Dublin.
1909. **Keith**, William Brooks, M.C., M.D., Ch.B.Aberd., M.P.C., Medical Superintendent, St. Audry's Hospital, Melton; Redwald House, Melton, Suffolk. (*Secretary, Parliamentary Committee, 1921-26.*)
1924. **Kelly**, Daniel Lane, L.R.C.P.&S.Irel., Inspector of Mental Hospitals, Local Government Department; 52, Grosvenor Road, Rathgar, Dublin.
1930. **Kelly**, John Vincent, M.B., B.Ch., D.P.M., Assistant Medical Officer, District Mental Hospital, Castlebar, Ireland.
1899. **Kennedy**, Hugh T. J., L.R.C.P.&S.Irel., Medical Superintendent, District Mental Hospital, Enniscorthy.
1897. **Kerr**, Hugh, M.A., M.D., C.M.Glasg., Medical Superintendent, Bucks County Mental Hospital, Stone, Aylesbury.
1902. **Kerr**, Neil Thomson, M.B., C.M.Edin., J.P., Medical Superintendent, Lanark District Mental Hospital, Hartwood, N.B. (*Chairman, Scot. Div., 1930-31.*)
1920. **Key**, Gordon James, M.B., Ch.B.Aberd., Assistant Medical Superintendent, Valkenberg Mental Hospital, Observatory Road, Cape Town, South Africa.
1923. **el Kholy**, Mohamed Kamel, M.R.C.S., L.R.C.P.Lond., D.P.M., Medico-Legal Department, Bab-el-Khalk, Cairo, Egypt.
1920. **Kimber**, William Joseph Teil, M.R.C.S., L.R.C.P.Lond., D.P.M., Medical Superintendent, Herts County Mental Hospital, Hill End, St. Albans. (*Secretary, Educational Committee, 1927-30.*)
1903. **King**, Frank Raymond, B.A.Camb., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Peckham House, Peckham, London, S.E. 15.
1902. **King-Turner**, Arthur Charles, M.B., C.M.Edin., Medical Superintendent, The Retreat, Fairford, Gloucestershire.
1915. **Kirwan**, Richard R., M.B., B.Ch.R.U.I., Assistant Medical Officer, West Riding Mental Hospital, Menston, Leeds.
1919. **Knight**, Mary Reid, M.A., M.B., Ch.B.Glasg., Assistant Medical Officer Paisley Mental Hospital, Riccarton, N.B.
1914. **Ladell**, Robert George Macdonald, M.B., Ch.B.Vict., Medical Officer, Ministry of Pensions, 395, Coventry Road, Small Heath, Birmingham.
1923. **Laing**, John Kidd Collier, M.B., B.S.Melb., D.P.M., Medical Superintendent, Darenth Training Colony, Dartford, Kent.
1925. **Landers**, John Joseph, M.B., B.Ch.N.U.I., D.P.H., Medical Officer, H.M. Prison; 164, Ducane Road, Wormwood Scrubs, W. 12.
1896. **Langdon-Down**, Reginald L., M.A., M.B., B.Ch.Camb., Normansfield, Hampton Wick, Middlesex.
1919. **Langton**, Peregrine Stephen Brackenbury, M.B., B.S., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Royal Earlswood Institution, Redhill, Surrey.
1925. **Lascelles**, William James, M.B., B.Ch.Belf., D.P.M., Assistant Medical Officer, Claybury Mental Hospital, Woodford Bridge, Essex.
1919. **Latham**, Oliver, M.B., C.M.Syd., Pathologist, Mental Hospitals Laboratory, Medical School, Newtown University, Sydney, N.S.W.

1892. Lawless, George Robert, L.R.C.P., F.R.C.S.Irel., Medical Superintendent, District Asylum, Armagh.
1929. Laws, John Joseph, M.R.C.S., L.R.C.P.Lond., D.P.M., Assistant Medical Officer, Horton Mental Hospital, Epsom.
1915. Leech, Henry Brougham, B.A., M.D., B.Ch.Dubl., Deputy Medical Superintendent, Warwick County Mental Hospital, Hatton. (*Acting Registrar 1923-24.*)
1909. Leech, John Frederick Wolseley, B.A., M.D., B.Ch.Dubl., D.P.M., Assistant Medical Officer, Wilts County Mental Hospital, Devizes.
1899. Leeper, Richard R., L.R.C.P., F.R.C.S.Irel., M.P.C., Medical Superintendent, St. Patrick's Hospital, Dublin. (*Secretary. Irish Division, 1911-29, and Chairman since 1929.*)
1906. Leggett, William, B.A., M.D., B.Ch.Dubl., Medical Officer, Smithson Mental Hospital, Greenock.
1927. Levinson, Reuben, M.B., Ch.B.Edin., D.P.H., D.P.M., Assistant Medical Officer, West Ham Mental Hospital, Goodmayes, Essex.
1930. Lewis, Edmund Oliver, M.A.Camb., D.Sc.Lond., M.R.C.S., L.R.C.P.Lond., Inspector under the Board of Control; 29, Highbury New Park, N. 5.
1916. Lewis, Edward, F.R.F.P.S.Glasg., L.R.C.P.&S.Edin., Medical Superintendent, Hensol Castle Institution, Pontyclun, Glamorgan.
1924. Lewis, John Biddulph Strafford, M.A.Camb., M.R.C.S., L.R.C.P.Lond., D.P.M., Assistant Medical Officer, Colney Hatch Mental Hospital, New Southgate, London, N. 11.
1920. Lilly, George Austen, M.C., M.A., M.D.Camb., M.R.C.S., L.R.C.P.Lond., D.P.M., Deputy Medical Superintendent, Banstead Mental Hospital, Sutton, Surrey.
1927. Lindsay, Thomas, M.D., F.R.C.S.Edin., D.P.M., Medical Superintendent, Caterham Mental Hospital; The Pines, Caterham, Surrey.
1908. Litteljohn, Edward Salterne, M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Manor Certified Institution, Epsom.
1925. Littlejohn, Mary Victoria, M.B., Ch.B.Aberd., D.P.M., 16, Northgate Street, Warwick.
1921. Livesay, Arthur William Bligh, M.B., C.M., F.R.C.S.Edin., Assistant Medical Officer, St. Andrew's Hospital, Thorpe, Norwich.
1922. Logan, Frederick Colquhoun, M.B., Ch.B., F.R.F.P.S.Glasg., Medical Superintendent, County and City Mental Hospital, Gloucester; Lindi, Horton Road, Gloucester.
1898. Lord, John Robert, C.B.E., M.D., C.M., F.R.C.P.Edin., Medical Superintendent, Horton Mental Hospital, Epsom; Horton House, Epsom. (*Member, General Nursing Council, England and Wales.*) (*Assistant Editor, 1900-11, and Co-Editor of Journal since 1911.*) (*Secretary, Post-Graduate Study Committee, 1920-26.*) (*Chairman, Research and Clinical Committee since 1927.*) (*PRESIDENT, 1926-27.*) (*Lect. on Clin. Psychiat. Lond. Sch. Med. Women.*)
1924. Lornie, Peter, M.D., Ch.B.Edin., Senior Assistant Medical Officer, Monmouth County Mental Hospital, Abergavenny.
1924. Lothian, Douglas B. M., M.B., Ch.B.Edin., D.P.M., Assistant Medical Officer, Rampton State Institution, Retford; Loanstone House, Penicuik, Midlothian.
1929. Love, Gwyneth Duncan, M.B., Ch.B.Edin., Assistant Physician, Bootham Park, York.
1923. Lovell, Clement, M.D., B.S.Lond., Pathologist, Bethlem Royal Hospital, Monk's Orchard, Beckenham, Kent; Beach Road, Emsworth, Hants.
1906. Lowry, James Arthur, M.D., B.Ch.R.U.I., Medical Superintendent, Surrey County Mental Hospital, Brookwood.
1928. Lawson, William, M.B., Ch.B.St. Andr., Medical Officer, Moat House, Tamworth; 9, Colehill, Tamworth, Staffordshire.
1926. Lucas, Edmund Stanley Sayer, M.R.C.S., L.R.C.P.Lond., I.M.S., c/o Grindlay & Co., Bombay, India.

1926. Lucas, Rosalie Evelyn, M.B., Ch.B.Brist., M.R.C.S., L.R.C.P.Lond., Assistant Psychiatrist, Child Guidance Clinic, Tudor Lodge, Canonbury Place, London, N. 1.
1929. Luff, Mary Constance, M.B., B.S., M.R.C.S., L.R.C.P.Lond., D.P.M., Research Worker, Medical Research Council; Clinical Assistant, Tavistock Clinic; 35, Weymouth Street, London, W. 1.
1923. Lyon, Thomas Malcolm Murray, M.D., C.M.Edin., *J.P.*, 46, Palmerston Place, Edinburgh.
1930. Lyons, Bernard, M.B., B.Ch., B.A.O.N.U.I., Assistant Medical Officer, District Mental Hospital, Enniscorthy, Co. Wexford.
1920. McAlister, William Malcolm, M.A., M.B., Ch.B., F.R.C.P.Edin., Dipl. Psych., Deputy Physician-Superintendent, Royal Mental Hospital, Morningside, Edinburgh. (Lect. on Psychiat., Univ. of Edin.)
1906. Macarthur, John, M.R.C.S., L.R.C.P.Lond., D.P.M., Medical Superintendent, Lincoln County Mental Hospital, Bracebridge Heath.
1923. Macaulay, Douglas Ian Otto, M.D., Ch.B.Edin., D.P.M., Medical Superintendent, Chiswick House, Pinner, Middlesex.
1880. MacBryan, Henry Crawford, L.R.C.P.&S.Edin., Kingsdown House, Box, Wilts.
1926. MacCallum, Alexander Grigor, M.B., Ch.B.Glasg., 15, Woodbourne Avenue, Streatham, S.W. 16.
1929. Maccallum, Archibald Montgomery, M.B., Ch.B.Glasg., Assistant Medical Officer, Ipswich Mental Hospital, Ipswich.
1929. MacCalman, Douglas Robert, M.B., Ch.B.Glasg., Alderdale, Carr Bridge, Inverness-shire.
1929. McCartan, William, M.D.Belf., D.P.H., D.P.M., Assistant Medical Officer, West Park Mental Hospital, Epsom.
1900. McClintock, John, L.R.C.P.&S.Edin., Resident Medical Superintendent, Grove House, Church Stretton, Salop.
1922. McCord, Robert Neil Ballagh, M.B., B.Ch.Belf., D.P.M., Senior Assistant Medical Officer, Surrey County Mental Hospital, Brookwood.
1927. McCoull, George, M.B., B.S.Durh., L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., Medical Officer, Prudhoe Hall Colony for Mental Defectives; Tyne View, Prudhoe-on-Tyne.
1920. McCowan, Peter Knight, M.D., Ch.B.Edin., M.R.C.P.Lond., D.P.M., Medical Superintendent, Cardiff City Mental Hospital, Whitchurch. (Lect. in Ment. Dis. Univ. of Wales.)
921. McCutcheon, Archibald Munn, M.B., Ch.B., F.R.F.P.S.Glasg., Medical Superintendent, Monyhull Colony, King's Heath, Birmingham.
901. MacDonald, James Hogg, M.B., Ch.B., F.R.F.P.S.Glasg., Medical Superintendent, Glasgow District Asylum, Hawkhead, Cardonald, Glasgow. (Lect. on Psychol. Med., Univ. of Glasgow.)
1884. MacDonald, P. W., M.D., C.M.Aberd., *J.P.*, Grasmere, Radipole, Weymouth. (*First Secretary, S.W. Division, 1894-1905.*) (PRESIDENT 1907-8.)
1911. MacDonald, Ranald, O.B.E., M.D., Ch.B.Edin., D.P.M., Medical Superintendent, Coton Hill Mental Hospital, Stafford.
1928. Macdonald, Robert William, M.B., Ch.B.Glasg., Medical Officer, Ministry of Pensions, Kirkburton, Huddersfield.
1905. MacDonald, William Fraser, M.B., Ch.B.Edin., M.P.C., Olive Lodge, Polworth Terrace, Edinburgh.
1905. McDougall, Alan, M.D., Ch.B.Vict., M.R.C.S., L.R.C.P.Lond., Medical Director, The David Lewis Colony, Warford, Alderley Edge, Cheshire.
1928. McDougall, John, M.B., Ch.B.Glasg., Senior Assistant Physician, Crichton Royal, Dumfries.
1906. McDowall, Colin Francis Frederick, M.D., B.S.Durh., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Ticehurst House, Ticehurst, Sussex. (*Secretary, Library Committee since 1922.*)

1870. McDowall, Thomas W., M.D., L.R.C.S.Edin., "Burwood," Wadhurst, Sussex. (PRESIDENT, 1897-8.)
1895. Macfarlane, Neil M., C.B.E., M.D., C.M.Aberd., 565, West Street, Durban, Natal, South Africa.
1924. Macfarlane, Robert Melvin, M.B., Ch.B.Edin., D.P.H., D.P.M., Assistant Medical Officer, West Ham Mental Hospital, Goodmayes, Essex.
1923. McGarvey, John, M.B., B.Ch.Belf., D.P.M., Medical Superintendent, Somerset and Bath Mental Hospital, Wells.
1922. McGeorge, Margaret Turner, M.B., Ch.B.Glasg., 35, Glenesk Road, Eltham, S.E. 9.
1928. MacGillp, Finlay Duncan, M.B., Ch.B.St. Andr., Assistant Medical Officer, Durham County Mental Hospital, Winterton, Ferryhill, co. Durham.
1925. McGlashan, William Reid, M.A., M.B., Ch.B.Aberd., D.P.M., Deputy Medical Superintendent, Derby County Mental Hospital, Mickleover.
1925. MacGowan, Agnes Mildred, M.B., Ch.B.Edin., D.P.M., Assistant Medical Officer and Pathologist, Bangour Village, Uphall, Linlithgowshire.
1929. McGrath, Annie Margaret, B.C., M.R.C.S., L.R.C.P., Pathologist, Herts County Mental Hospital, Hill End, St. Albans.
1921. McGrath, Mathew Joseph, M.B., B.Ch.R.U.I., D.P.M., Deputy Medical Superintendent, West Riding Mental Hospital; Gortmore, Bar Lane, Stanley, nr. Wakefield.
1902. McGregor, John, M.B., Ch.B.Edin., Deputy Medical Superintendent, Glamorgan County Mental Hospital, Bridgend.
1924. McInnes, John, M.B., Ch.B.Glasg., D.P.M., Assistant Medical Officer, City Mental Hospital, Willerby, Hull.
1921. McKail, Robert Buchanan Forbes, M.B., Ch.B.Glasg., D.P.M., Deputy Medical Superintendent, Calderstones Certified Institution, Whalley, near Blackburn.
1924. Mackay, George Wiillam John, M.B., Ch.B.Edin., D.P.M., Assistant Medical Officer, City Mental Hospital, Nottingham.
1929. MacKay, John, M.B., Ch.B.Glasg., Assistant Medical Officer, Cheadle Royal, Cheadle, Cheshire.
1914. Mackay, Magnus Ross, M.C., M.B., Ch.B.Edin., Medical Superintendent, Newport Borough Mental Hospital, Caerleon, Mon.
1891. Mackenzie, Henry James, M.B., C.M.Edin., M.P.C., 254, Bishopsthorpe Road, York.
1927. Mackenzie, Ivy, M.A., B.Sc., M.D., F.R.F.P.S.Glasg., Consulting Physician, Glasgow District Board of Control; 10, Woodside Terrace, Glasgow, C. 3.
1911. Mackenzie, John Cosserat, M.B., Ch.B.Edin., Assistant Medical Officer, Stafford Mental Hospital, Burntwood, Lichfield.
1926. Mackenzie, John Muir, M.B., Ch.B.Glasg., D.P.M., Assistant Medical Officer, Rubery Hill Mental Hospital, Northfield, Birmingham.
1927. Mackenzie, Murdo, M.B., B.S., M.R.C.P.Lond., Senior Assistant Physician, Bethlem Royal Hospital, Monk's Orchard, Beckenham, Kent.
1930. Mackenzie, Myra, M.B., Ch.B.Aberd., Assistant Medical Officer, The Lawn, Lincoln.
1903. Mackenzie, Theodore Charles, M.D., Ch.B., F.R.C.P.Edin., M.P.C., Medical Superintendent, District Asylum, Inverness.
1921. Mackie, George, D.S.O., M.D., Ch.B.Edin., Thornyhill, Abbey Road, Great Malvern.
1930. Maclachlan, Sarah Hodgson, M.B., Ch.B.Glasg., Director, Scottish Western Asylums' Pathological Scheme; 20, Royal Terrace, Glasgow, C. 3.
1926. McLaren, Mary Evelyn, M.B., Ch.B.Edin., Dipl. Psych., Assistant Physician, Royal Mental Hospital, Morningside, Edinburgh.

1927. Macleod, John, M.B., Ch.B.Edin., Assistant Medical Officer, Glasgow District Mental Hospital, Woodlilee, Lenzie, N.B.
1921. Macleod, Neil, M.D.Edin., D.P.M., Medical Superintendent, The Retreat, York.
1925. McManus, Hugh Charles, M.B., Ch.B.Vict., D.P.M., The Hall, Wedmore, Somerset.
1930. McMenamin, Francis de Sales, M.C., M.B., Ch.B.Edin., 38, Lower Baggot Street, Dublin.
1929. Macmillan, Duncan, B.Sc., M.D.Edin., D.Psych., Assistant Physician, Crichton Royal Institution, Dumfries.
1904. Macnamara, Eric Danvers, M.A., M.D., B.Ch.Camb., F.R.C.P.Lond., 87, Harley Street, London, W. 1.
1925. MacNiven, Angus, M.B., Ch.B.Glasg., M.R.C.P.Edin., D.P.M., Assistant Physician, Royal Mental Hospital, Morningside, Edinburgh.
1910. MacPhail, Hector Duncan, O.B.E., M.A., M.D., Ch.B.Edin., Medical Superintendent, City Mental Hospital, Gosforth, Newcastle-upon-Tyne. (Lect. on Psychol. Med., Univ. of Durh.)
1922. Macphail, Iain Ross, L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., 11, Dryden Place, Edinburgh.
1901. McRae, Douglas, M.D., C.M., F.R.C.P.Edin., J.P., Physician-Superintendent, Glengall Hospital; Glengall House, Ayr, N.B. (*Assistant Editor 1915-20; Co-Editor of the Journal since 1920.*)
1922. McWilliam, William, M.D., Ch.B., F.R.F.P.S.Glasg., D.P.M., Senior Assistant Medical Officer, District Asylum, Inverness.
1925. Madgwick, John Reginald Alexander, M.B., B.S., M.R.C.S., L.R.C.P.Lond., D.P.M., Assistant Medical Officer, Long Grove Mental Hospital, Epsom, Surrey.
1923. Madill, Joseph Thomas Herbert, B.A.N.U.I., M.B., B.Ch.Edin., F.R.F.P.S.Glasg., D.P.M., M.P.C., Medical Superintendent, Cumberland and Westmorland Mental Hospital, Carlisle.
1929. Mahony, Elizabeth Maud, M.B., Ch.B., B.A.O.N.U.I., Assistant Medical Officer, Mental Hospital, Monaghan, Ireland.
1928. Main, Dorothy Mary, M.B., Ch.B.Glasg., Assistant Medical Officer, City Mental Hospital, Willerby, Hull.
1908. Mapother, Edward, M.D., B.S.Lond., F.R.C.P.Lond., F.R.C.S.Eng., Medical Superintendent, The Maudsley Hospital, Denmark Hill, London, S.E. 5; 19, Queen Anne Street, London, W. 1. (Lect. in Psych. Med., King's Coll. Hosp.)
1903. Marnan, John, B.A., M.B., B.Ch.Dubl., c/o Smith, Fircroft, Long Levens, Gloucester.
1896. Marr, Hamilton, M.D., C.M., F.R.F.P.S.Glasg., M.P.C., Commissioner, General Board of Control for Scotland; 10, Succoth Avenue, Edinburgh. (*Secretary, Scottish Division, 1907-10.*) (PRESIDENT, 1927-28.)
1929. Marsh, Rex Godfrey Blake, M.R.C.S., L.R.C.P.Lond., D.P.M., Assistant Medical Officer, Claybury Mental Hospital, Woodford Bridge, Essex.
1926. Martin, Alexander Reid, M.B., B.Ch.Belf., D.P.M., Assistant Physician, Sheppard and Pratt Hospital, Townson, Baltimore, Md., U.S.A.
1922. Martin, Frederick Robertson, M.D., Ch.B.Glasg., D.P.M., c/o Mental Hospitals Department, Wellington, New Zealand.
1896. Martin, James Charles, L.R.C.S.&P.Irel., J.P., Medical Superintendent, District Mental Hospital, Letterkenny, Donegal.
1930. Martin, John James Black, M.A., M.B., B.Ch., D.P.M., Assistant Medical Officer, Helledon Mental Hospital, Norwich.
1907. Martin, Mary Edith, L.S.A., L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., M.P.C., 11, The Drive, Hove, Sussex.
1914. Martin, Samuel Edgar, M.B., Ch.B.Edin., Barrister-at-Law, Medical Superintendent, The Old Manor, Salisbury. (*Secretary, South-Western Division since 1930.*)

1911. Martin, William Lewis, *O.B.E., M.A., B.Sc., M.B., C.M.Edin., D.P.H.*, Dipl. Psych., M.P.C., Certifying Physician in Lunacy, Edinburgh Parish Council; 56, Bruntsfield Place, Edinburgh.
1921. Masefield, William Gordon, *M.R.C.S., L.R.C.P.Lond., D.P.M.*, Medical Superintendent, Essex County Mental Hospital, Brentwood. (*Secretary, Educational Committee since 1930.*)
1911. Mathieson, James Moir, *M.B., Ch.B.Aberd.*, Assistant Medical Officer, South Yorks Mental Hospital, Wadsley, Sheffield.
1926. May, George Francis, *M.D., C.M.McGill, L.M.S.S.A.*, Medical Superintendent, Durham County Mental Hospital, Winterton, Ferry-Hill.
1926. Menzies, Duncan, *M.A., M.B., Ch.B.Aberd., D.P.M.*, Assistant Medical Officer, Somerset and Bath Mental Hospital, Wells.
1890. Menzies, William F., *B.Sc., M.D., C.M.Edin., F.R.C.P.Lond.*, Medical Superintendent, Stafford County Mental Hospital, Cheddleton, Leek. (*PRESIDENT, 1920-21.*)
1877. Merson, John, *M.A., M.D., C.M.Aberd.*, Willerby, Brayton Road, Selby.
1910. Middlemiss, James Ernest, *F.R.F.P.S.Glasg., M.R.C.S., L.R.C.P.Lond., M.P.C.*, "The Crest," Scott Hall Road, Chapel-Allerton, Leeds.
1928. Mill, Laura Margaret Dorothea, *M.B., Ch.B.Glasg.*, Public Health Office, 23, Montrose Street, Glasgow.
1929. Miller, Emanuel, *M.A.Camb., M.R.C.S., L.R.C.P.Lond., D.P.M.*, Neurological Specialist, Ministry of Pensions; 28, Wimpole Street, London, W. 1.
1930. Miller, Frederick Richard Lanfear, *M.R.C.S., L.R.C.P.Lond., D.T.M.* and H., Medical Officer, East African Medical Service; Muthari Mental Hospital, P.O. Box 663, Nairobi, Kenya.
1925. Miller, Josephine Alcorn Carson, *L.R.C.P.&S.Irel.*, Oxhey Grove, Hatch End, Middlesex.
1924. Miller, Robert Stewart, *M.D., Ch.B.Glasg.*, Director, Khanka Mental Hospital, Cairo, Egypt.
1893. Mills, John, *M.B., B.Ch.R.U.I., D.M.D.*, Medical Superintendent, District Mental Asylum, Ballinasloe, Ireland.
1923. Minski, Louis, *M.D., B.S.Durh., M.R.C.P.Lond., D.P.M.*, Assistant Medical Officer, Maudsley Hospital; 6, Minster Road, Shoot-up-Hill, London, N.W. 2.
1922. Molony, Charles Bernard, *M.B., Ch.B.N.U.I.*, Assistant Medical Officer, District Mental Hospital, Limerick.
1910. Monnington, Richard Caldicott, *M.D., Ch.B.Edin., D.P.H., D.P.M.*, Neurologist, Ministry of Pensions; 33, New Street, Salisbury.
1915. Monrad-Krohn, G. H., *B.A., M.D., B.S.Oslo, F.R.C.P.Lond., M.R.C.S. Eng., M.P.C.*, Rikshospitalet, Oslo, Norway. (*Prof. of Med., Royal Frederick University, Oslo.*)
1925. Moran, Patrick, *M.B., B.Ch.Belf.*, *D.P.M.*, Assistant Medical Officer, District Mental Hospital, Mullingar.
1917. Morris, Bedlington Howel, *M.B., B.S.Durh.*, Inspector-General of Hospitals, South Australia; "Tros-y-Parc," Pembroke Street, St. Peter's, Adelaide, South Australia.
1925. Morris, John Vincent, *B.A., M.B., B.Ch.Dubl.*, Assistant Medical Officer, St. Andrew's Hospital, Thorpe, Norwich.
1896. Mould, Gilbert Edward, *M.R.C.S., L.R.C.P.Lond.*, The Grange, Rotherham, Yorks.
1927. Moulson, Norman, *M.D., B.S., M.R.C.S., L.R.C.P.Lond., D.P.M.*, Assistant Medical Officer, Severalls Mental Hospital, Colchester.
1914. Moyes, John Murray, *M.B., Ch.B.Edin., D.P.M.*, Tue Brook Villa, Liverpool, E.
1919. Mules, Annie Shortridge, *M.R.C.S., L.R.C.P.Lond.*, Court Hall, Kenton, South Devon.

1907. Mules, Bertha Mary, M.D., B.S.Durh., Court Hall, Kenton, South Devon.
1929. Mullin, Bartholomew Joseph, M.C., L.R.C.P.&S.Irel., D.P.H., D.P.M., Deputy Medical Superintendent, Wonford House Hospital, Exeter.
1929. Munro, Thomas Arthur, M.B., Ch.B., Dipl. Psych., Assistant Physician (Temporary), Royal Edinburgh Hospital for Mental and Nervous Disorders, Craig House, Edinburgh; 20, Merchiston Gardens, Edinburgh.
1925. Murdoch, James Wilson, M.B., Ch.B.Aberd., Senior Assistant Medical Superintendent, Central Mental Hospital, Tanjong Rambutan, Perak, Federated Malay States.
1929. Muthiah, Asainavagam Richard, L.M.S.Singapore, Assistant Physician, Central Mental Hospital, Tanjong Rambutan, Perak, Federated Malay States.
1903. Navarra, Norman, M.R.C.S., L.R.C.P.Lond., D.P.M., Deputy Medical Superintendent, City of London Mental Hospital, Stone, Dartford.
1910. Neill, Alex. William, M.D., Ch.B.Edin., Physician-Superintendent, The Warneford Hospital, Oxford.
1903. Nelis, William F., M.D.Durh., L.R.C.P.Edin., L.R.F.P.S.Glasg., The Chalet, New Road, Teignmouth.
1920. Nicol, William Drew, M.B., B.S., M.R.C.S., L.R.C.P.Lond., D.P.M., Deputy Medical Superintendent, Horton Mental Hospital, Epsom.
1923. Nicole, J. Ernest, L.M.S.S.A., D.P.M., Senior Assistant Medical Officer, Lancashire County Mental Hospital, Winwick, Warrington.
1923. Nicoll, James, M.D., C.M.Edin., D.P.H., Medical Superintendent, Fountain Children's Mental Hospital, Tooting Grove, London, S.W. 17.
1869. Nicolson, David, C.B., LL.D., M.D., C.M.Aberd., M.R.C.P.Edin., Hanley, Park Road, Camberley, Surrey. (PRESIDENT, 1895-6.)
1920. Nix, Sidney, M.D., B.S.Durh., L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., Deputy Medical Superintendent, Graylingwell Mental Hospital, Chichester.
1922. Noble, Ralph Athelstane, M.B., Ch.M.Syd., D.P.M., Hon. Physician, Psychiatric Clinic, Royal Prince Alfred Hospital, Sydney, Australia; "Harley," 143, Macquarie Street, Sydney, N.S.W., Australia.
1888. Nolan, Michael James, L.R.C.P.&S.Irel., M.P.C., J.P., Medical Superintendent, Down County Mental Hospital, Downpatrick. Consulting Visitor-in-Lunacy to the Lord Chief Justice, N. Ireland, and to the Chief Justice, Irish Free State. (PRESIDENT, 1924-25.)
1909. Norman, Hubert James, M.B., Ch.B.Edin., D.P.H., Medical Superintendent, Camberwell House Mental Hospital, Peckham Road, London, S.E. 5; Northcotes, 79, West Hill, Sydenham, London, S.E. 26. (Lect. on Ment. Dis., Westm. Hosp.)
1923. Noronha, Frank, M.B., C.M.Madras, D.P.M., Superintendent, Mental Hospital, Bangalore City, India.
1926. Northcote, Muriel L. M., M.B., B.S., M.R.C.S., L.R.C.P.Lond., D.P.M., Assistant Medical Officer, City Mental Hospital, Whitechurch, Cardiff.
1930. O'Brien, Eveleen J., M.B., B.Ch., B.A.O.N.U.I., D.P.M., Assistant Medical Officer, Portrane Mental Hospital, Donabate, Co. Dublin.
1929. O'Connell, Daniel Joseph, M.B., B.Ch.N.U.I., D.P.M., Assistant Medical Officer, St. Andrew's Hospital, Northampton.
1924. Odium, Doris Maude, M.A.Oxon., B.A.Lond., M.R.C.S., L.R.C.P.Lond., D.P.M., 42, Harley Street, London, W. 1.

1918. Ogilvie, William Mitchell, M.B., C.M.Aberd., " Monymusk," 2, Riselaw Terrace, Edinburgh.
1901. Ogilvy, David, B.A., M.D., B.Ch.Dubl., Medical Superintendent, Long Grove Mental Hospital, Epsom.
1911. Oliver, Norman Henry, M.R.C.S., L.R.C.P.Lond., Barrister-at-Law, Medical Superintendent, Ministry of Pensions Hospital; Latchmere, Ham Common, Surrey.
1922. O'Flaherty, Very Rev. Claude, M.B., Ch.B.Edin., The College, Millport, Buteshire.
1920. O'Neill, Arthur, *O.B.E.*, M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Napsbury Mental Hospital, St. Albans, Herts.
1924. O'Reilly, James Joseph, M.B., B.Ch.Belf., D.P.M., Assistant Medical Officer, Park Prewett Mental Hospital, Basingstoke.
1930. O'Riordan, John Joseph, M.B., Ch.B., D.P.M., Assistant Medical Officer, North Riding Mental Hospital, York.
1902. Orr, David, M.D., C.M.Edin., M.P.C., 88, Thirlestane Road, Edinburgh.
1910. Orr, James Henry Cubitt, M.D., Ch.B.Edin., Medical Superintendent, Midlothian and Peebles Asylum, Rosslyn Castle.
1916. Overbeck-Wright, Alexander William, M.D., Ch.B.Aberd., D.P.H., M.P.C., Lt.-Col. *I.M.S.*, Superintendent, Asylum House, Agra, U.P., India. *Address:* c/o Messrs. King, King & Co., Bombay, India.
1928. Paddle, Kenneth Cecil Laurence, *M.C.*, M.R.C.S., L.R.C.P.Lond., D.P.M., Senior Assistant Medical Officer, Caterham Mental Hospital, Caterham, Surrey.
1930. Page, William Robert, B.A., M.B., Ch.M.Sydney, D.P.M. Lond., Hon. Psychiatrist, Sydney Hospital, Sydney; Hon. Psychiatrist, St. Vincent's Hospital, Sydney; 221, Macquarie Street, Sydney, N.S.W., Australia.
1905. Paine, Frederick, M.D.Bru.x., M.R.C.P.Lond., M.R.C.S.Eng., D.P.M., Deputy Medical Superintendent, Claybury Mental Hospital, Woodford Bridge, Essex.
1927. Pal, Sachindra Bhushan, B.A., L.M.S.Calc., Senior Assistant Physician, Central Mental Hospital, Tanjong Rambutan, Federated Malay States.
1927. Parasuram, Govindarajpuram Rampattar, B.A., L.M.S.Madras, M.R.C.P.Edin., Deputy Medical Superintendent, Government Mental Hospital, Madras.
1920. Parkin, George Gray, M.D., Ch.B.Vict., Deputy Medical Superintendent, Cheshire County Mental Hospital, Parkside, Macclesfield.
1920. Parnis, Henry William, B.Sc., M.D.Malta, M.R.C.S., L.R.C.P.Lond., D.P.M., Deputy Medical Superintendent, Bexley Mental Hospital, Bexley, Kent.
1916. Patch, Charles James Lodge, *M.C.*, L.R.C.P.& S.Edin., L.R.F.P.S., Glasg., Capt. *I.M.S.*, 8, Jail Road, Lahore, India.
1929. Paterson, Arthur Spencer, B.A.Oxon., M.B., Ch.B., M.R.C.P.Edin., 39, George Square, Edinburgh.
1930. Paton, Thomas, M.B., Ch.B.Glasg., D.P.M., Assistant Medical Officer, Brookwood Mental Hospital, Surrey.
1899. Patrick, John, M.B., Ch.B.R.U.I., Medical Superintendent, District Asylum, Omagh.
1928. Patterson, Edward Cecil, M.B., B.Ch.Belf., Assistant Medical Officer, Devon Mental Hospital, Exminster.
1907. Peachell, George Ernest, M.D., B.S., M.R.C.S., L.R.C.P.Lond., M.P.C., Whitechurch, Blandford.
1929. Pearce, John Dalziel Wyndham, M.A., M.B., Ch.B.Edin., Assistant Medical Officer, City Mental Hospital, Leicester.
1920. Fearn, Oscar Phillips Napier, I.S.A., M.R.C.S., L.R.C.P.Lond., D.P.M., Deputy Medical Superintendent, Cane Hill Mental Hospital, Coulsdon, Surrey.

1913. Penny, Robert Augustus Greenwood, M.R.C.S., L.R.C.P.Lond., Assistant Medical Officer, Devon County Mental Hospital, Exminster.
1927. Perera, Clement Osmund, M.R.C.S., L.R.C.P.Lond., D.P.M., Assistant Medical Superintendent, Mental Hospital, Angoda, Ceylon.
1928. Perk, David, M.D.Leeds, D.P.M., Assistant Medical Officer, West Riding Mental Hospital, Menston, near Leeds.
1929. Peters, Gordon Frank, M.B., B.S., M.R.C.S., L.R.C.P.Lond., D.P.M., Assistant Medical Officer, Horton Mental Hospital, Epsom, Surrey.
1911. Petrie, Alfred Alexander Webster, M.D., B.S., M.R.C.P.Lond., M.D., F.R.C.S.Edin., D.P.M., Medical Superintendent, Banstead Mental Hospital, Sutton, Surrey. (Lect. on Ment. Dis. Charing Cross Hosp. and West Lond. Post-Grad. College.)
1908. Phillips, John George Porter, M.D., B.S., M.R.C.S., F.R.C.P.Lond., M.P.C., Resident Physician - Superintendent, Bethlem Royal Hospital, Monk's Orchard, Beckenham, Kent; 19, Cavendish Square, London, W. 1. (*Secretary, Educational Committee, 1913-20.*) Lect. on Ment. Dis., St. Bart.'s Hosp.)
1910. Phillips, John Robert Parry, O.B.E., M.R.C.S., L.R.C.P.Lond., Kingsdown House, Box, Wilts.
1906. Phillips, Nathaniel Richard, M.D.Brux., M.R.C.S., L.R.C.P.Lond., D.P.M., Medical Superintendent, Monmouth County Mental Hospital, Abergavenny.
1905. Phillips, Norman Routh, M.D.Brux., M.R.C.S., L.R.C.P.Lond., D.P.M., Deputy Medical Superintendent, St. Andrew's Hospital, Northampton.
1921. Phillips, Philip Gordon, L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., Bryn, The Avenue, Collingham, Leeds.
1924. Pickworth, Frederick Alfred, B.Sc., M.B., B.S., M.R.C.S., L.R.C.P.Lond., A.I.C.(exam.), Ph.C., Director, Joint Board of Research for Mental Diseases, City and University of Birmingham; Hollymoor Mental Hospital, Northfield, Birmingham.
1891. Pierce, Bedford, M.D., F.R.C.P.Lond., "Bankcroft," Douglas Road, Harpenden, Herts. (*Secretary, N. and M. Division, 1900-8.*) (PRESIDENT, 1919-20.)
1888. Pietersen, James F. G., M.R.C.S., L.R.C.P.Lond., Ashwood House, Kingswinford, near Dudley, Stafford.
1896. Planck, Charles, M.A.Camb., M.R.C.S., L.R.C.P.Lond., "Pontresina," Perrymount Road, Haywards Heath, Sussex.
1839. Pope, George Stevens, L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., Park House, Eaton Road, Norwich.
1927. Porteus, Harold Burnet, M.B., Ch.B.Edin., D.P.H., D.P.M., Wing-Cdr. R.A.F.; c/o Royal Society of Medicine, 1, Wimpole Street, W. 1.
1913. Potts, William A., M.A.Camb., M.D.Edin. & Birm., M.R.C.S., L.R.C.P.Lond., Medical Officer, Birmingham Committee for the Care of the Feeble-Minded; 118, Hagley Road, Edgbaston, Birmingham.
1923. Power, Thomas Declan, B.A., M.D., B.Ch.Dubl., M.R.C.P.Lond., D.P.H., D.P.M., Deputy Medical Superintendent, Essex County Mental Hospital, Brentwood.
1921. Poynder, Ernest George Thornton, M.R.C.S., L.R.C.P.Lond., D.P.M., Medical Superintendent, Plymouth Mental Hospital, Blackadon, Ivybridge, Devon.
1918. Prideaux, Joseph Francis Engledue, M.R.C.S., L.R.C.P.Lond., D.C.M.S.; Ministry of Pensions, 1, Sanctuary Buildings, Great Smith Street, London, S.W. 1.
1928. Quine, Margaret Annette, M.B., B.S., M.R.C.S., L.R.C.P.Lond., D.P.M., Assistant Medical Officer, Lancashire County Mental Hospital, Winwick, Warrington, Lancs.

1930. Rae, James Burnett, M.B., Ch.B.Aberd., Hon. Physician in Charge of the Department of Psychological Medicine, Croydon General Hospital; 82, Harley Street, W. 1.
1928. Raitt, William John, M.B., Ch.B.Aberd., Dipl. Psych., Assistant Physician, Crichton Royal, Dumfries.
1894. Rambaut, Daniel F., M.A., M.D., B.Ch.Dubl., Medical Superintendent, St. Andrew's Hospital; Priory Cottage, Northampton. (*Registrar since 1924.*)
1889. Raw, Nathan, C.M.G., M.D., B.S., M.R.C.P.Lond., F.R.C.S., F.R.S. Edin., L.S.Sc.Durh., M.P.C., Lord Chancellor's Visitor; 30, Clarendon Court, Maida Vale, London, W. 9. (*Chairman, Parliamentary Committee since 1926.*) (PRESIDENT, 1929-30.)
1913. Read, Charles Stanford, M.D., M.R.C.S., L.R.C.P.Lond., 71, Harley Street, London, W. 1. (Lect. on Psychol. Med., Bethlem Royal Hospital.)
1920. Read, Walter Woolfe, M.D.Brux., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Berks County Mental Hospital, Moulsoford, Wallingford.
1930. Rees, John Rawlings, M.A., M.D.Camb., D.P.H., Deputy Director, The Tavistock Square Clinic; 14, Wimpole Street, W. 1.
1927. Rees, Rufus Price, M.R.C.S., L.R.C.P.Lond., D.P.M., Senior Assistant Medical Officer, Joint Counties Mental Hospital, Carmarthen.
1927. Rees, Thomas Percy, B.Sc., M.B., B.Ch.Wales, M.R.C.P.Lond., M.R.C.S. Eng., D.P.M., Senior Assistant Medical Officer, Croydon Mental Hospital, Upper Warlingham, Surrey.
1911. Reeve, Ernest Frederick, M.B., B.S., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Lancashire County Mental Hospital, Rainhill, nr. Liverpool. (Lect. on Ment. Dis., Univ. of Liverp.)
1911. Reid, Daniel McKinley, M.D., Ch.B., F.R.F.P.S.Glasg., Medical Superintendent, City Mental Hospital, Exeter.
1910. Reid, William, M.A.St.And., M.B., Ch.B.Edin., Medical Superintendent, Stafford Mental Hospital, Burntwood, Lichfield.
1923. Retallack-Moloney, Herbert Thomas, M.R.C.S., L.R.C.P.Lond., D.P.M., Assistant Medical Officer, Hanwell Mental Hospital, Southall.
1899. Rice, David, M.D.Brux., M.R.C.S., L.R.C.P.Lond., D.P.H., Medical Superintendent, City Mental Hospital, Hellsdon, Norwich.
1929. Rich, Gilbert J., A.B., A.M., Ph.D.Cornell, M.D.Chicago, Institute for Child Guidance, 145, East 57th Street, New York City, U.S.A.
1897. Richard, William John, M.A., M.B., C.M., F.R.F.P.S.Glasg., Medical Superintendent, South General Hospital; Merryflats House, Govan, Glasgow.
1922. Riches, Reginald George, M.R.C.S., L.R.C.P.Lond., D.P.M., Deputy Medical Superintendent, Hanwell Mental Hospital, Southall, Middlesex.
1920. Rickman, John, M.A., M.D., B.Ch.Camb., Chief Assistant, Mental Out-Patients, St. Thomas's Hospital; 37, Devonshire Place, London, W. 1.
1911. Robarts, Henry Howard, M.D., Ch.B.Edin., D.P.H., Medical Officer, East Lothian Mental Hospital, Ennerdale, Haddington, N.B.
1922. Robb, John Robert Beith, L.R.C.P.&S.Edin., F.R.F.P.S.Glasg., Deputy Medical Superintendent, Glasgow District Mental Hospital, Gartloch, Gartcosh, N.B.
1921. Roberts, Edward Douglas Thomas, M.R.C.S., L.R.C.P.Lond., D.P.M., Assistant Medical Officer, Herts County Mental Hospital, Hill End, St. Albans.
1903. Roberts, Norcliffe, O.B.E., M.D., B.S.Durh., D.P.M., Medical Superintendent, West Park Mental Hospital, Epsom.
1927. Robertson, David, M.D., Ch.B.Glasg., Junior Assistant Physician, Bethlem Royal Hospital, Monk's Orchard, Beckenham, Kent.
1908. Robertson, George Dunlop, L.R.C.S.&P.Edin., L.R.F.P.S.Glasg., Dipl. Psych., Senior Assistant Physician, Lanark District Mental Hospital, Hartwood, N.B.

1929. Robertson, James Andrew, M.B., Ch.B.Edin., 17, Beanfield Avenue, Coventry.
1920. Robinson, William, M.D., Ch.B.Leeds, D.P.M., Medical Superintendent, City of London Mental Hospital, Stone, Dartford.
1922. Rodger, Kenneth Mann, M.B., Ch.B.Glasg., D.P.M., Deputy Medical Superintendent, Salop County Mental Hospital, Bicton Heath.
1914. Rodger, Murdoch Mann, M.D., Ch.B.Glasg., Dechmont, Helouan, Egypt.
1930. Rodger, Thomas Ferguson, B.Sc., M.B., Ch.B.Glasg., Assistant Physician, Glasgow Royal Mental Hospital, Gartnavel.
1908. Rodgers, Frederick Millar, O.B.E., M.D., Ch.B.Vict., D.P.H., Medical Superintendent, Lancashire County Mental Hospital, Winwick, Warrington.
1895. Rolleston, Lancelot William, C.B.E., M.B., B.S.Durh., M.R.C.S., L.R.C.P. Lond., Queen Anne's Mansions, St. James's Park, London, S.W. 1.
1922. Rollins, Ernest Edward, B.A., M.B., R.Ch.Dubl., Resident Medical Officer, Brooke House, Upper Clapton, London, E. 5.
1924. Rose, Edward Snow, M.R.C.S. L.R.C.P.Lond., D.P.M., Lansdowne House, Romsey, Hants.
1888. Ross, Chisholm, M.D.Syd., M.B., C.M.Edin., 225, Macquarie Street, Sydney, New South Wales.
1910. Ross, Donald, M.B., Ch.B., M.R.C.P.Edin., M.P.C., J.P., Medical Superintendent, Argyll and Bute Asylum; Tigh-na-Linne, Lochgilphead, Argyll. (*Vice-Chairman, Educational Committee since 1927.*)
1923. Ross, Thomas Arthur, M.D., C.M., F.R.C.P.Edin., M.R.C.P., Medical Director, Cassel Hospital, Swaylands, Penshurst, Kent.
1899. Rotherham, Arthur, M.A., M.B., B.Ch.Camb., Commissioner, Board of Control, Caxton House West, Westminster, S.W. 1; Elm House, Marshall Road, Farncombe, Surrey.
1922. Roy, John Allen Chisholm, M.B., Ch.B.Vict., Medical Superintendent, Royal Hospital, Cheadle, Cheshire.
1924. Rudolf, Gerald de Montjoie, M.R.C.P.Lond., D.P.H., D.P.M., Senior Assistant Medical Officer, Leavesden Mental Hospital, Abbott's Langley, Herts.
1929. Russell, David, M.B., Ch.B.Glasg., Assistant Medical Officer, Straits Settlements Mental Hospital, Singapore.
1923. Russell, John, M.B.; Ch.B.Glasg., D.P.M., Assistant Medical Officer, West Riding Mental Hospital, Menston, Leeds.
1912. Russell, John Ivison, M.B., Ch.B., F.R.F.P.S.Glasg., D.P.M., M.P.C., Medical Superintendent, North Riding Mental Hospital, Clifton, York. (*Secretary, N. and M. Division since 1929.*)
1915. Russell, William, M.C., M.D., Ch.B.Edin., Dip. Psych., D.T.M., Physician Superintendent, Witrand Institution, Potchefstroom, South Africa.
1912. Rutherford, Cecil, B.A., M.B., B.Ch.Dubl., Assistant Medical Officer, Holloway Sanatorium, Virginia Water, Surrey.
1907. Rutherford, Henry Richard Charles, F.R.C.S., L.R.C.P.Irel., D.P.H., Medical Superintendent, Farnham House, Finglas, co. Dublin.
1896. Rutherford, James Mair, M.B., C.M., F.R.C.P.Edin., M.P.C., Brislington House, Bristol.
1922. Ruthven, Morton Wood, M.B., Ch.B.Edin., D.T.M., Assistant Medical Officer, Banstead Mental Hospital, Sutton, Surrey.
1902. Sall, Ernest Frederick, M.R.C.S., L.R.C.P.Lond., Medical Superintendent, City Mental Hospital, Canterbury.
1908. Samuels, William Frederick, L.M., L.Ch.Dubl., Medical Superintendent, Central Mental Hospital; St. Dymphna's, Tanjong Rambutan, Perak, Federated Malay States.
1923. Sang, Janet Adeline Agnes, L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., Assistant Medical Officer, Lancashire County Mental Hospital, Prestwich, Manchester.
1894. Sankey, Edward Hugh Octavius, M.A., M.B., B.Ch.Camb., Resident Medical Licensee, Boreatton Park, Baschurch, Salop.

1928. Scholberg, Harold Alfred, M.B., M.R.C.S., L.R.C.P.Lond., D.P.H., 3, St. Andrew's Crescent, Cardiff.
1926. Scoresby-Jackson, Margaret, M.D., B.S.Durh., Clinical Assistant, Neurological Department, Guy's Hospital; 28, Weymouth Street, Portland Place, London, W. 1.
1925. Scott, Francis Leonard, M.R.C.S., L.R.C.P.Lond., D.P.M., Deputy Medical Superintendent, Bracebridge Mental Hospital, Lincoln.
1930. Scott, James, M.B., B.Ch., Assistant Medical Officer, District Mental Hospital, Carlow, Ireland.
1911. Scroope, Gervase Wm. Mavy, M.B., B.Ch.Dubl., Assistant Medical Officer, Central Criminal Asylum, Dundrum, co. Dublin.
1880. Seccombe, George Samuel, M.R.C.S., L.R.C.P.Lond., c/o Lloyds Bank, Threadneedle Street, London, E. C. 3.
1925. Selkirk, Elizabeth Thompson, M.B., Ch.B.Edin., Deputy Medical Superintendent, Hollymoor Mental Hospital, Northfield, Birmingham.
1929. Selling, Lowell Sinn, B.A.Mich., M.A.Columbia, D.N.B., Sc.M.New York, M.D.Bellevue; Institute for Juvenile Research, 907, South Lincoln Street, Chicago, Ill., U.S.A.
1912. Sergeant, John Noel, M.B., B.S., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Newlands House, Tooting Bec Common, London, S.W. 17. (*Secretary, South-Eastern Division since 1913.*)
1925. Shand, George Ernest, M.D., Ch.B.Aberd., D.P.H., Deputy Medical Superintendent, Winson Green Mental Hospital, Birmingham; 307, Gillott Road, Edgbaston, Birmingham.
1930. Sharpe, John Smith, M.B., Ch.B.Glasg., Assistant Medical Officer (Biochemist), County Mental Hospital, Stafford.
1901. Shaw, Benjamin Henry, M.D., B.Ch.R.U.I., Medical Superintendent, County Mental Hospital, Stafford. (*Secretary, Research and Clinical Committee since 1927.*)
1905. Shaw, Charles John, M.D., Ch.B., F.R.C.P.Edin., J.P., Medical Superintendent, Royal Asylum, Montrose.
1904. Shaw, Patrick, L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., Medical Superintendent, Hospital for Insane, Ballarat, Victoria, Australia.
1909. Shaw, William Samuel Jagoe, M.D.Belf., M.B., B.Ch.R.U.I., Lt.-Col. I.M.S. (ret.), Calcote House, Sandicotes Road, Parkstone, Dorset.
1920. Shearer, Christina Hamilton, M.B., Ch.B.Glasg., Senior Medical Officer, Cassel's Hospital, Swaylands, Penshurst, Kent.
1928. Shepherd, Andrew, M.B., Ch.B.Glasg., D.P.M., Assistant Medical Officer, Hill End Mental Hospital, St. Albans, Herts.
1923. Shepherd, Charles Ernest Alan, M.R.C.S., L.R.C.P.Lond., D.P.M., Senior Assistant Medical Officer, Hants County Mental Hospital, Knowle, Fareham.
1927. Shera, Arthur Geoffrey, M.A., M.D., B.Ch.Camb., M.R.C.S., L.R.C.P.Lond., 10, Upperton Gardens, Eastbourne. (Pathologist to the Eastbourne Hospitals and to the East Sussex County Mental Hospital, Hellingly.)
1928. Sheridan, Alfred, L.R.C.P.&S.Irel., Resident Medical Superintendent, Mayo County Mental Hospital, Castlebar, Ireland.
1914. Sherlock, Edward Birchall, B.Sc., M.D.Lond., D.P.H., Barrister-at-Law, 41, Tregunter Road, London, S.W. 10.
1914. Shield, Hubert, M.C., M.B., B.S.Durh., c/o Glyn, Mills & Co., 3, Whitehall Place, S.W. 1.
1929. Shilvoek, William Henry, B.Sc., M.B., Ch.B.Birm., Assistant Medical Officer, Rubery Hill Mental Hospital, Birmingham.
1923. Shore, George William, M.D.Lond., D.P.H., D.P.M., Assistant Medical Officer, Springfield Mental Hospital, nr. Tooting, London, S.W. 17.
1922. Shortt, Jane Elder, M.B., Ch.B.Glasg., Valleyfields, Alingdon, Lanarkshire.
1928. Silverston, Joseph Denzil, M.B., B.S.Durh., Deputy Medical Superintendent, County Mental Hospital, Lancaster.
1930. Simpson, Thomas Edward Norman, M.R.C.S., L.R.C.P.Lond., Assistant Medical Officer, The City Mental Hospital, Fishponds, Bristol.

1928. Sinclair, Arthur Crawford, M.D.Belf., D.P.M., Assistant Medical Officer, County Mental Hospital, Brentwood, Essex.
1891. Skeen, James Humphry, M.B., C.M.Aberd., M.P.C., Medical Superintendent, New Saughton Hall, Polton, Midlothian.
1921. Skene, Leslie Henderson, M.C., M.B., Ch.B.Edin., Dipl.Psych., Medical Superintendent, Mental Hospital, Union Mills, Isle of Man.
1925. Skottowe, James Stewart Ian, M.D.Glasg., D.P.M., Deputy Medical Superintendent, City Mental Hospital, Whitechurch, Cardiff.
1914. Slaney, Chas. Newnham, M.R.C.S., L.R.C.P.Lond., Medical Officer, H.M. Borstal Institution, Feltham, Middlesex.
1901. Slater, George Nathan Ocroft, M.D., M.R.C.S., L.R.C.P.Lond., D.P.M., Senior Assistant Medical Officer, Essex County Mental Hospital, Brentwood.
1928. Smith, Arthur Wallace Herbert, M.R.C.S., L.R.C.P.Lond., D.P.M., Assistant Medical Superintendent, Central Mental Hospital, Tanjong Rambutan, Perak, Federated Malay States.
1910. Smith, Gayton Warwick, M.D.Lond., B.S.Durh., M.R.C.S., L.R.C.P.Lond., D.P.H., Senior Assistant Medical Officer, Springfield Mental Hospital, nr. Tooting, London, S.W. 17.
1905. Smith, George William, O.B.E., M.B., Ch.B.Edin., Wyke House, Isleworth, Middlesex.
1926. Smith, Gordon John, M.B., Ch.B.Aberd., Assistant Physician, Royal Mental Hospital, Morningside, Edinburgh.
1923. Smith, Herbert, M.R.C.S., L.R.C.P.Lond., Deputy Medical Superintendent, City Mental Hospital, Fishponds, Bristol.
1899. Smith, John Grimmond, M.D., C.M.Edin., Medical Superintendent, Hereford County Mental Hospital, Burghill.
1920. Smith, Maurice Hamblin, M.A.Camb., M.D.Durh., M.R.C.S., L.R.C.P.Lond., Medical Officer, H.M. Prison, Birmingham. (Lect. on Crim., Univ. of Birn.)
1913. Smith, Thomas Cyril, M.B., Ch.B.Edin., Deputy Medical Superintendent, County Mental Hospital, Barnwood, Gloucester.
1921. Smyth, John Francis, M.D., B.Ch.N.U.I., D.P.M., 2, Claremont Road, Leamington Spa.
1899. Smyth, Walter Samuel, M.B., B.Ch.R.U.I., Assistant Medical Superintendent, District Asylum, Antrim.
1926. Snell, Harvie Kennard, M.D., B.S., M.R.C.S., L.R.C.P.Lond., D.P.H., Medical Officer, H.M. Prison, Parkhurst; Camp Hill, Newport, Isle of Wight.
1923. Somerville, George, M.D., Ch.B.Edin., D.P.M., Senior Assistant Medical Officer, West Ham Mental Hospital, Goodmayes, Ilford.
1913. Somerville, Henry, B.Sc., M.R.C.S., L.R.C.P.Lond., F.C.S., Harrold, Bedford.
1885. Soutar, James Greig, M.B., C.M.Edin., M.P.C., 20, Royal Parade, Cheltenham. (PRESIDENT, 1912-13.) (*Chairman, South-Western Division 1929-31.*)
1906. Spark, Percy Charles, M.R.C.S., L.R.C.P.Lond., 3, Clapham Mansions, Nightingale Lane, London, S.W. 4.
1925. Speer, James Millar Craig, M.B., B.Ch.Belf., Assistant Medical Officer, Wilts County Mental Hospital, Devizes.
1929. Spence, David Sheridan, B.A., M.B., B.Ch., B.A.O.Dubl., Assistant Medical Officer, Hereford County Mental Hospital, Burghill.
1922. Spence, Thomas Reginald Carwardine, M.C., M.B., Ch.B.Edin., Dipl. Psych., Assistant Physician, Royal Edinburgh Hospital for Mental Disorders, Morningside; 2, Morningside Terrace, Edinburgh.
1901. Starkey, William, M.B., B.Ch.R.U.I., Bryn-y-Neuadd, Llanfairfechan, N. Wales. (*Secretary, South-Western Division, 1922-30.*)
1928. Statham, Hugh, M.B., B.C.Camb., M.R.C.S., L.R.C.P.Lond., Physician for Nervous Diseases, Royal Victoria and West Hants Hospital; 3, Elgin Road, Poole Road, Bournemouth.

1927. Steel, John P., M.D., Ch.B.Edin., Deputy Medical Superintendent, St. Luke's Hospital, Middlesbrough.
1925. Steel, Samuel Maxwell, M.B., Ch.B.Glasg., Assistant Medical Superintendent, Monyhull Colony, Kings Heath, Birmingham.
1907. Steele, Patrick, M.D., Ch.B., F.R.C.P.Edin., Medical Superintendent, Roxburgh District Mental Hospital; The Hermitage, Melrose.
1929. Stenhouse, Jack Fingland Martin, M.B., Ch.B.Glasg., D.P.M., Assistant Medical Officer, Banstead Mental Hospital, Sutton, Surrey.
1929. Stephen, Adrian Leslie, B.A., M.B., B.S.Lond., Barrister-at-Law, Clinical Assistant, Maudsley Hospital, Denmark Hill, S.E. 5; 50, Gordon Square, W.C. 1.
1929. Stephen, Karin, M.A.Camb., M.R.C.S., L.R.C.P.Lond., 50, Gordon Square, W.C. 1.
1914. Stephens, Harold Freize, M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Birmingham Certified Institution, Coles Hill, Warwickshire.
1909. Steward, Sidney John, D.S.O., M.D., B.Ch.Camb., M.R.C.S., L.R.C.P.Lond., D.P.H., Langton Lodge, Farncombe, Surrey.
1922. Stewart, Francis Hugh, M.A., D.Sc.St.And., M.D., Ch.B.Edin., D.P.M., Major, I.M.S. (retired), Giza Memorial Laboratory, Cairo, Egypt.
1927. Stewart, Francis Melville, M.B., Ch.B.Edin., Second Assistant Medical Officer, County and City Mental Hospital, Littlemore, Oxford.
1887. Stewart, Rothsay Charles, L.S.A., M.R.C.S.Eng., "The Elms," Oak End Waye, Gerrard's Cross, Bucks.
1914. Stewart, Roy MacKenzie, M.D., Ch.B., M.R.C.P.Edin., D.P.M., Medical Superintendent, Leavesden Mental Hospital; Woodside, Leavesden, Watford.
1905. Stilwell, Henry Francis, L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., Hayes Park, Hayes, Middlesex.
1899. Stilwell, Reginald John, M.R.C.S., L.R.C.P.Lond., Moorcroft House, Hillingdon, Middlesex.
1897. Stoddart, William Henry Butter, M.D., B.S., F.R.C.P.Lond., M.R.C.S.Eng., M.P.C., Harcourt House, Cavendish Square, London, W. 1. (*Secretary, Educational Committee, 1908-1912.*)
1909. Stokes, Frederick Ernest, M.D., Ch.B.Glasg., D.P.H., Senior Assistant Medical Officer, City Mental Hospital, Milton, Portsmouth.
1903. Stratton, Percy Haughton, M.R.C.S., L.R.C.P.Lond., York Lodge, Cliff Cottage Road, Bournemouth.
1928. Strecker, Herbert A. J., M.D., M.S., Priv.-Doz. Ment. Dis. Univ. Würzb.; Hon. Research Appointment to the Joint Board of Research for Mental Diseases, City and University of Birmingham; Hollymoor Mental Hospital, Northfield, Birmingham.
1885. Street, Charles Tidbury, M.R.C.S., L.R.C.P.Lond., Kettlebury, Churt, Farnham, Surrey.
1929. Ström-Olsen, Rolf, M.B., B.Ch.Wales, B.Sc., M.R.C.S., L.R.C.P.Lond., D.P.M., Senior Assistant Medical Officer, Derby Borough Mental Hospital, Rowditch.
1909. Stuart, Frederick Joshua, O.B.E., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Northampton County Mental Hospital, Berry Wood.
1927. Stungo, Ellis, L.R.C.P.&S.Edin., L.R.F.P.S.Glasg. 10, Marshalsea Road, Southwark, London, S.E. 1.
1924. Sturrock, Alexander Corsar, M.A., M.D., C.M.Edin., M.R.C.P.Lond., Preston House, Eccles, Manchester. (Physician, Salford Royal Hospital.)
1900. Sturrock, James Prain, M.A.St.And., M.D., C.M.Edin., Commissioner, General Board of Control for Scotland; 36, Murrayfield Road, Edinburgh.
1886. Suffern, Alex. Canning, O.B.E., M.D., M.Ch.R.U.I., Glan-y-Mor, Hill Head, Fareham.

1921. Suffern, Canning, M.A., M.B., B.Ch.Camb., M.R.C.S., L.R.C.P.Lond., Glan-y-Mor, Hill Head, Fareham.
1922. Sullivan, Patrick Daniel, F.R.C.S., L.R.C.P.Irel., Medical Superintendent, Verville Asylum, Clontarf, co. Dublin; 44, Harrington Street, Dublin.
1918. Sutherland, Francis, M.B., Ch.B.Edin., D.P.H., Portree, Isle of Skye.
1919. Suttie, Ian D., M.B., Ch.B., F.R.F.P.S.Glasg., 1, Taviton Street, London, W.C. 1.
1928. Sykes, Elizabeth Sarah Marples, M.B., Ch.B.Sheff., Assistant Medical Officer, South Yorks Mental Hospital, Wadsley, Sheffield.
1928. Sykes, Kathleen Annie Harvey, M.D., B.S.Lond., M.B., Ch.B.Liverp., D.P.M., Assistant Medical Officer, Rubery Hill Mental Hospital, Birmingham.
1908. Swift, Eric W. D., M.B.Lond., Physician-Superintendent, Valkenberg Mental Hospital, Observatory, Cape Town, South Africa.
1926. Talbot, Geoffrey, B.Sc., M.B., Ch.B.Manch., Assistant Medical Officer, Lancashire County Mental Hospital, Prestwich, Manchester.
1923. Tattersall, Stanley Roy, M.R.C.S., L.R.C.P.Lond., Senior Assistant Medical Officer, County Mental Hospital, Prestwich, Manchester.
1910. Taylor, Arthur Loudoun, B.Sc., M.B., Ch.B., F.R.C.P.Edin., Senior Assistant Medical Officer, Stafford County Mental Hospital, Burntwood, Lichfield.
1924. Taylor, Frederic Cecil Marsh, M.R.C.S., L.R.C.P.Lond., D.P.M., Assistant Medical Officer, Kent County Mental Hospital, Chartham Downs.
1897. Taylor, Frederic Ryott Percival, M.D., B.S., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, East Sussex County Mental Hospital, Hellingly. (*Chairman, Educational Committee since 1927; Chairman, South-Eastern Division since 1930.*)
1925. Taylor, Robert, L.R.C.P.&S.Irel., Assistant Medical Officer, St. Patrick's Hospital, Dublin.
1926. Tennent, Thomas, M.B., Ch.B.Glasg., D.P.H., D.P.M., Assistant Medical Officer, Maudsley Hospital, Denmark Hill, London, S.E. 5.
1921. Thomas, Cyril James, M.R.C.S., L.R.C.P.Lond., Senior Assistant Medical Officer, Lancashire County Mental Hospital, Lancaster.
1920. Thomas, Frederic Percival Selwyn, M.D., Ch.B.Vict., The Oaks, Porthill, Staffordshire.
1908. Thomas, Joseph David, B.A., M.B., B.C.Camb., Northwoods House, Winterbourne, Bristol.
1911. Thomas, William Rees, M.D., B.S., M.R.C.S., M.R.C.P.Lond., D.P.M., M.P.C., Medical Superintendent, Rampton State Institution, near Retford, Notts; Gray Ridges, Woodbeck, Retford, Notts.
1925. Thompson, Robert, M.B., B.Ch.Belf., D.P.M., Senior Assistant Medical Officer, St. Patrick's Hospital, Dublin. (*Secretary, Irish Division, since 1929.*)
1921. Thomson, Aidan Gordon Wemyss, M.B., Ch.B.Glasg., Assistant Physician, Glasgow Royal Mental Hospital, Gartnavel.
1920. Thomson, William George, M.A., M.B., Ch.B.Aberd., D.P.H., D.P.M., Deputy Medical Superintendent, Royal Hospital, Cheadle, Cheshire.
1927. Thorpe, Frederick Thomas, M.R.C.S., L.R.C.P.Lond., D.P.M., Assistant Medical Officer and Pathologist, South Yorkshire Mental Hospital, Wadsley, Sheffield.
1914. Tisdall, Charles Jerome, M.B., Ch.B.Edin., Medical Superintendent, Shaftesbury House, Formby, Liverpool.
1903. Topham, J. Arthur, B.A.Camb., M.R.C.S., L.R.C.P.Lond., Senior Assistant Medical Officer, Kent County Mental Hospital, Chartham Downs.
1896. Townsend, Arthur Allen Deykin, M.D., B.Ch.Birm., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Barnwood House, Gloucester.

1903. Tredgold, Alfred Frank, M.D.Durh., F.R.C.P.Lond., F.R.S.Edin., "St. Martin's," Guildford. (Lect. on Ment. Deficiency, London Univ.).
1908. Tuach-Mackenzie, William, M.D., Ch.B.Aberd., Physician-Superintendent, Royal and District Asylums, Dundee; Westgreen, Dundee. (Lect. on Ment. Dis., Univ. of St. Andrews.)
1906. Turnbull, Peter Mortimer, M.C., M.B., B.Ch.Aberd., D.P.M., Medical Superintendent, Tooting Bec Mental Hospital, S.W. 17.
1909. Turnbull, Robert Cyril, M.D., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Essex County Mental Hospital, Severalls, Colchester.
1906. Turner, Frank Douglas, M.B., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Royal Eastern Counties Institution, Colchester.
1922. Twomey, John Christopher, M.B., Ch.B.Liverp., D.P.H., Senior Assistant Physician, The Mental Hospital, Queenstown, Cape Province, South Africa; c/o Secretary for Interior, Pretoria.
1930. Tyars, Mary Elizabeth, B.Sc., M.B., B.S.Lond., Assistant Medical Officer, Horton Mental Hospital, Epsom, Surrey.
1929. Umney, William Francis, M.D., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, The Flower House, Catford, S.E.6; 9, The Knoll, Beckenham, Kent.
1922. Viehoff, Herman Crowther, M.R.C.S., L.R.C.P.Lond., 48, Moor Lane, Great Crosby, Lancs.
1894. Vincent, William James N., C.B.E., M.D., B.S.Durh., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, South Yorkshire Mental Hospital, Wadsley, Sheffield. (Lect. on Ment. Dis., Univ. of Sheff.)
1930. Vivian, Margaret Cordelia, L.S.A., L.M.S.S.A., "Marley," Belle Vue Road, Southbourne, Bournemouth.
1923. Wadsworth, George Reginald, M.B., B.Ch.Belf., Assistant Medical Officer, Lancashire County Mental Hospital, Lancaster.
1928. Waldo, Henry Cecil, M.R.C.S., L.R.C.P.Lond., Barrister-at-Law, Medical Superintendent, Notts County Mental Hospital, Radcliffe-on-Trent, Notts.
1926. Walk, Alexander, M.D., B.S.Lond., D.P.M., Assistant Medical Officer, Long Grove Mental Hospital, Epsom. (*Assistant Editor of Journal since 1928.*)
1914. Walker, Robert Clive, M.D., Ch.B.Edin., Deputy Medical Superintendent, West Riding Mental Hospital, Menston, Leeds.
1908. Wallace, John Andrew Leslie, M.D., Ch.B.Edin., M.P.C., J.P., Mental Hospital, Callan Park, Sydney, New South Wales.
1912. Wallace, Vivian, L.R.C.P.&S.Irel., D.P.H., Ballinakill, Multyfarnham, co. Westmeath.
1928. Walsh, Michael Anthony, L.R.C.P.&S.I., D.P.M., Assistant Medical Officer, Tooting Bec Hospital, Tooting Bec Road, London, S.W. 17.
1889. Warnock, John, C.M.G., B.Sc., M.D., C.M.Edin, M.R.C.S.Eng., The Limes, 181, London Road, Twickenham.
1927. Waterhouse, Amyas Theodore, M.A., M.D., B.Ch.Oxon., M.R.C.S., L.R.C.P.Lond., Hon. Physician, Neurological Department, Radcliffe Infirmary; 35, Beaumont Street, Oxford.
1895. Waterston, Jane Elizabeth, M.D.Bru.x., F.R.C.P.Irel., L.R.C.S.Edin., M.P.C., Govt. Official Visitor, Valkenberg Mental Hospital, Cape Town; 85, Parliament Street, Cape Town, South Africa.
1922. Watson, Douglas Chalmers, M.D., F.R.C.P.Edin., 28, Melville Street, Edinburgh. (Physician, Royal Infirmary, Edinburgh.)
1891. Watson, George Alfred, M.B., C.M.Edin., M.P.C., Rainhill Cottage, Rainhill, nr. Liverpool. (Lect. on Neuro-Path. of Ment. Dis. Univ. of Liverpool.)

1908. Watson, Hugh Ferguson, M.D., Ch.B.Glasg., Ph.D.Edin., L.R.C.P.&S. Edin., F.R.F.P.S.Glasg., D.P.H., F.R.S.Edin., Deputy Commissioner, General Board of Control for Scotland; 25, Palmerston Place, Edinburgh.
1924. Watson, John, M.C., M.B., B.Ch.Edin., Resident Medical Superintendent, District Asylum, Londonderry.
1911. Webber, Leonard Mortis, M.R.C.S., L.R.C.P.Lond., Senior Assistant Medical Officer, Surrey County Mental Hospital, Netherne, Coulsdon.
1929. Weber, Hilda Marion, B.Sc., M.B., B.S.Lond., Clinical Assistant, London Clinic of Psycho-Analysis; 23, New Cavendish Street, London, W. 1.
1922. Webster, William Leckie, M.B., Ch.B.Edin., M.P.C., Major R.A.M.C., Southern Command, Deolali, India.
1919. Westrup, Joseph Perceval, M.R.C.S., L.R.C.P.Lond., Medical Officer, The Old Manor, Salisbury.
1911. White, Edward Barton Cartwright, M.R.C.S., L.R.C.P.Lond., Medical Superintendent, City Mental Hospital, Fishponds, Bristol. (Lect. on Ment. Dis., Univ. of Brist.)
1884. White, Ernest William, C.B.E., M.B., I. S.A., M.R.C.S., M.R.C. Lond., "Fenstanton," Christchurch Road, S.W. 2; and Betley House, near Shrewsbury. (*Secretary, S.E. Division, 1897-1900.*) (*Chairman, Parliamentary Committee, 1904-7.*) (*PRESIDENT 1903-4.*)
1921. Whitelaw, William, M.B., B.Ch.Glasg., Oaklands, Shirley Green, Acocks Green, Birmingham.
1889. Whitwell, James Richard, M.B., C.M.Edin., 66, York Mansions, Battersea Park, S.W. 11. (*Acting Hon. Librarian and Chairman, Library Committee since 1927; Librarian since 1928.*)
1913. Wilkins, William Douglas, M.B., Ch.B.Vict., M.R.C.S., L.R.C.P.Lond., D.P.M., Senior Assistant Medical Officer, Stafford County Mental Hospital, Cheddleton, Leek.
1900. Wilkinson, Harry Bacon, M.R.C.S., L.R.C.P.Lond., Deputy Medical Superintendent, Plymouth Mental Hospital, Blackadon, Ivybridge, South Devon.
1929. Will, George Wishart, M.B., Ch.B.N.Z., M.P.C., Major R.A.M.C., British Military Hospital, Deolali, Bombay Presidency, India.
1925. Williams, Edward Lincoln, M.R.C.S., L.R.C.P.Lond., The Hall, Harrow Weald, Middlesex.
1922. Williamson, David Hardie, M.B., Ch.B.Edin., Assistant Medical Officer, Glasgow District Mental Hospital, Woodilee, Lenzie, N.B.
1923. Wilson, Alban, M.R.C.S., L.R.C.P.Lond., D.P.M., Medical Superintendent, Coldeast Colony, Sarisbury, Southampton.
1927. Wilson, Charles Herbert, M.B., B.Ch.Dubl., 52, Fitzwilliam Square, Dublin.
1928. Wilson, Edward Alexander, M.D., Ch.B.Edin., North Murie, Errol, Perthshire.
1925. Wilson, Harriette Appleby, M.B., Ch.B.Leeds, D.P.M., Senior Assistant Medical Officer, West Riding Mental Hospital, Wakefield.
1930. Wilson, Henry Leonard, M.B., M.R.C.P., D.P.M., Assistant Physician, The Retreat, York.
1923. Wilson, Isabel Grace Hood, M.D., Ch.B.Edin., D.P.M., Commissioner, Board of Control; 154, Clarence Gate Gardens, N.W. 1.
1920. Wilson, James Leitch, M.B., Ch.B.Edin., D.P.M., 10, New Cavendish Street, London, W. 1.
1899. Wolseley-Lewis, Herbert, M.D.Bru.x., F.R.C.S., L.R.C.P.Lond., "Dormers," Wimborne, Dorset. (*Secretary, Parliamentary Committee, 1907-12, Chairman, 1912-21.*)
1921. Wood, Bertram William Francis, M.B., B.S.Leeds, West African Medical Staff; c/o P.O., Lagos, South Province, Nigeria.

Members of the Association.

- 1929. Woodcock, Oswald Hampson, M.D.Manch., M.B., Ch.B., P.M.O., Ministry of Pensions (Headquarters Neurological Inspectorate); 22, Ridge Hill, Golders Green, N.W. 11.
- 1912. Woods, James Cowan, B.A.R.U.I., M.D., B.S., M.R.C.S., L.R.C.P.Lond., 45, Weymouth Street, W. 1. (Lect. on Ment. Dis., St. George's and London Hosps.)
- 1885. Woods, John Francis, M.D.Durh., L.S.A., M.R.C.S.Eng., 7, Harley Street, Cavendish Square, London, W. 1.
- 1912. Wootton, John Charles, M.C., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Haydock Lodge, Newton-le-Willows, Lancs.
- 1922. Wootton, Leonard Henry, M.C., B.Sc., M.B., B.S., M.R.C.S., L.R.C.P. Lond., D.P.M., Medical Superintendent, Fweli Colony, Surrey.
- 1900. Worth, Reginald, O.B.E., M.B., B.S.Durh., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Springfield Mental Hospital, nr. Tooting, London, S.W. 17. (*General Secretary since 1919.*) (Lect. on Ment. Dis., Westm. Hosp.)
- 1917. Wright, Maurice Beresford, O.B.E., M.D., C.M.Edin., 86, Brook Street, London, W. 1.
- 1929. Wyllie, Andrew McRae, B.Sc., M.B., Ch.B., Clinical Pathologist, Crichton Royal Institution, Dumfries.
- 1928. Yates, Arthur Gurney, M.A., M.D.Edin., F.R.C.P.Lond., Physician, Sheffield Royal Infirmary; 53, Wilkinson Street, Sheffield.
- 1921. Yellowlees, David, M.B., Ch.B.Glasg., 5, Ruskin Terrace, Glasgow, W. 2.
- 1914. Yellowlees, Henry, O.B.E., M.D., Ch.B., F.R.C.P.Edin., F.R.F.P.S. Glasg., D.P.M., 93A, Harley Street, London, W. 1. (Lect. on Psych. Med., St. Thomas's Hospital, London.)
- 1926. Young, Hubert Turner Penn, M.B., Ch.B.Edin., Medical Officer, H.M. Prison, Wormwood Scrubs, W. 12.

ORDINARY MEMBERS	771
HONORARY MEMBERS	36
CORRESPONDING MEMBERS	40

Total	847

OBITUARY.

Honorary Members.

- 1920. Colin, Dr. H., Secrétaire Général de la Société Médico-Psychologique de Paris; 35, Grande Rue, Châtenay (Seine), France.
- 1902. Coupland, Sidney, M.D., F.R.C.P., Wootton Ridge, Boar's Hill, Oxford.

Members.

- 1923. McCarthy, Owen Felix, L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., Resident Medical Superintendent, District Mental Hospital, Cork. (Lect. on Ment. Dis., Univ. Coll., Cork.)
- 1911. Muncaster, Anna Lilian, M.B., Ch.B.Edin., Mental Hospital, Bloemfontein, South Africa.
- 1869. Wood, T. Outterson, M.D.Durh., M.R.C.P.Lond., F.R.C.P., F.R.C.S. Edin., "Lodore," Chelston Road, Torquay. (PRESIDENT, 1905-6.)

UNIV OF
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DR. HENRI COLIN.

Born September 22, 1860.
Died October 19, 1930.

Honorary Member
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HENRI COLIN.

HENRI COLIN, Honorary Member of the Royal Medico-Psychological Association, died at Châtenay, near Paris, on October 19 last. The cardio-renal affection from which he suffered had not kept him from his usual activities during the year, and many of his friends were unaware of his ill-health. All were anxious to pay him a last mark of respect, and on October 22, in spite of a heavy down-pour, there was a numerous assembly at his grave, in which for two years there had rested the remains of one of his sons, a medical student, who died from the remote effects of gassing during the war.

He was born in Paris in 1860, and was eleven years old when his stepfather was compelled to leave France for political reasons, and came with him to London, where they stayed till 1878. After completing his medical studies in Paris, he was for two years, as a hospital extern, the pupil of Charcot at the Salpêtrière. It was his duty to collect the series of lectures published under the title of *Leçons du Mardi*, and his relations with the Master were close. He has described Charcot in these words: "Of medium height, he impressed by his superb features, illuminated by two wonderful black eyes, with their dark, sunken orbits, and their penetrating look. His mouth had a slightly disdainful expression."

Having successfully competed, in 1887, for an asylum internship, he spent a year under Paul Garnier, at the *Infirmerie Spéciale* of the Paris *Dépôt de Police*, where all arrested persons showing signs of mental disturbance are sent for medical examination. Later, at St. Anne, he was a pupil of Bouchereau, a friend of Hack Tuke, and was also able to attend lectures by Magnan, and to take part in the latter's clinical work.

The title of Colin's M.D. thesis, presented in 1890, was "An Essay on the Mental State of Hysterics." In 1891 he was appointed an

Assistant Physician in the Asylum Service, after competitive examination, and was sent to Sainte-Gemmes, near Angers. The following year he was transferred to the Lafond Asylum, near La Rochelle, and in 1894 he was placed in charge of the Special Medical Service at the Maison Centrale of Gaillon. Here were to be found, not insane patients who had committed criminal acts, but criminals who had become insane while serving their sentence; it was, in fact, a prison infirmary. Although Colin had already written (in collaboration with Paul Garnier) an article on "Homicidal Monomania" for Hack Tuke's *Dictionary of Psychological Medicine*, he had not yet gone very deeply into these questions, and his new sphere of activity was of absorbing interest to him. But his stay at Gaillon was not very lengthy, for in 1901 he was called to Paris to organize a department for the vicious and criminal insane at Villejuif Asylum.

He favoured the segregation in special institutions of all criminal lunatics, whether under sentence or not, and he divided them into two classes. In the first, the most frequently seen, two states, insanity and criminal tendency, were simultaneously present; these were the really dangerous criminal lunatics, and included homicidal persecuted patients, fire-raisers, sexual offenders, etc. The other group was that of patients who acted under the influence of some delusional idea about which their mental state rendered them incapable of reasoning; this was the case with certain persecuted patients, some epileptics, general paralytics, demented, etc. But he refused to regard as criminal lunatics the vicious and lazy, the drunkards and vagabonds, and certain of the hysterics and epileptics—"all that mass of individuals designated, often wrongly, as cases of moral insanity, who are incapable of adapting themselves to their social environment, and are insufferable on account of their degraded instincts, their violence, brutality, coarseness and lack of discipline; but who, nevertheless, have been careful not to commit any criminal acts, and have only found their way to the prison or the asylum as a result of minor offences." For these he thought it sufficient to provide special wards attached to the ordinary asylums.

We owe to Colin numerous articles and papers on the criminal vicious and troublesome insane, as well as two volumes written in collaboration with Pactet on *The Insane in Court and in Prison*; but all questions concerning mental disorders were equally objects of his attention. He favoured the open-door system, not for all patients, but for all who were capable of benefiting by it; he thought

it indispensable, if this system were to be applied successfully, that the physician should have a thorough knowledge of all his patients—an impossibility if the number of patients was too great. He also worked for the improvement of the professional education of the nursing staff.

He was a corresponding member of the Société Médico-psychologique from 1892, and a full member from 1905; in 1918 he was President, and in 1920 he succeeded Ritti as Secretary-General, at the same time taking over the direction of the *Annales Médico-psychologiques*. In addition to his other occupations, which already filled so much of his time, it was his duty to visit prisoners charged with criminal offences, and to draw up reports on their mental state.

During the war his department was taken over for the use of soldiers suffering from mental disorder. He pointed out the danger of retaining in the Army unrecognized cases of imbecility and general paralysis, and some years later he had occasion to stress the importance of the psychical sequelæ of the war.

On January 1, 1922, he left Villejuif to take charge of that Admission Department at St. Anne to which Magnan had devoted nearly forty-five years of his life. In the spring of the same year was held the celebration of the centenary of Bayle's thesis; the arrangements for this event meant much additional work. When called upon in 1923 to preside at the Congress of Alienists and Neurologists at Besançon, he chose as the subject for his Presidential Address "The Evolution of Ideas upon Insanity During the Last Century." According to him, the reason why the great mass of the psychoses eludes histological investigation is that there is no histological lesion present. "To insist on attributing all disorders of the mind to either cerebral lesion, or biological changes, or psychological disturbances, must in my view be fruitless: it is starting from a preconceived idea, and trying, unreasonably, to make the observed facts fit that idea." He considered direct study and clinical examination to be the true basis of all observations. "But," he added, "psychiatrists cannot be improvised. One can only learn to become one after many years of practice."

Under the age limit he had to leave St. Anne at the end of 1925. But he remained just as active, and the present writer was able to observe, when working with him in organizing in 1927 the Pinel Centenary Celebrations, how much spirit he brought to the task, and how skilfully he could overcome all difficulties. His loss leaves us in deep sorrow, for he was a man of great learning, sure judgment, and upright nature.

RENÉ SEMELAIGNE.

Part I.—Original Articles.

THE ELEVENTH MAUDSLEY LECTURE :

“ TRUTH.”

Delivered by Mr. JUSTICE MCCARDIE at the Quarterly Meeting of the Royal Medico-Psychological Association, November 20, 1930.

It would have been a privilege to address you to-day on the vital and urgent question of the sterilization of mental defectives. It would have been an equal privilege to discuss the validity at the present time of the famous but ancient McNaughten Rules with respect to insanity and criminal responsibility.

It was, however, the wish of those who so ably guide the Maudsley Trust that the lecture for this year should be free from technical detail.

So I decided, perhaps unwisely, to choose the subject of “ Truth.”

Truth, as a word, is the most majestic in the English language. Truth, as a living principle, is of deep concern to all citizens. Dr. Maudsley was, throughout his long life, a devoted lover of the truth. My subject is therefore a tribute to his memory. For ten years he was Professor of Medical Jurisprudence at the University of London. I will therefore, if you will allow me, devote the major part of my time to those aspects of truth which arise in our Courts of Justice.

This lecture is held under the auspices of the Royal Medico-Psychological Association. Whatever be the precise range of psychological activities, it is, I take it, clear that the primary purpose of psychology is the study of the human mind, the human instincts and the human emotions. That, perhaps, is the greatest study of all. The day has gone by when psychology was but a mere aggregate of uncertain data. It is now more than a division of philosophy, more than a branch of science. It may be said justly

that it has become a practical art as well. Psychology may establish itself as the dominant influence of the future.

I give this full recognition to the present status of psychology, because I conceive that as the range of its operations widens, it will devote a full measure of attention and energy to that greatest and most comprehensive of all matters, which men call "truth."

I will not pause to examine the many definitions of "truth." I will not touch on the distinctions between truths which are immutable and fundamental and those which are mutable and contingent. Nor do I more than point out that there is truth of fact and truth in the statement of fact—truth of opinion and truth in the statement of opinion.

It will suffice for the purpose of this address if I define truth broadly as "conformity to fact and reality." Time will not permit me to consider those courteous inaccuracies of statement which lubricate the daily intercourse of life, or to analyse their influence on our standards of honour and character. Nor will I dwell on those merciful rules of reticence which so often save not only the living but also the relatives of the dead from the bitterness of unneeded exposure.

Let him who will discuss the ethics of such matters and determine, if he cares to do so, the conflict between the claims of mercy and the claims of truth.

Still less is it necessary to examine the questions raised by a remark made by Mr. Bernard Shaw in *Heartbreak House* (published just after the Great War), when he says :

" Truth telling is not compatible with the Defence of the Realm Regulations."

These and other fascinating matters must be left to other occasions. I will ask you, in due course, to come with me to a Court of Justice and to see with me the problems of truth-finding with which a Court must deal.

I will ask you to consider whether psychologists can offer any practical suggestions as to the tests to be applied by those whose duty it is to discover the truth. He who can give such suggestions will indeed be a benefactor to the cause of justice.

You will, I think, agree with me that the small world of human nature to be seen within the walls of the Courts of Justice is very much the same as the larger world to be found outside those walls. I should like to bring to your attention some of those grim realities of falsehood which affect the administration of justice, and which touch the interest of every citizen, be he psychologist or not. For

you and I are alike searchers for the truth. The doctor in his consulting-room, the psychologist in his study, the surgeon in his operating hall, are much the same in their purpose as the Judge who sits on the Bench. Over each there stands the august but invisible figure of Truth.

I speak to you to-day, not as a scientist, but as one who for nearly forty years at the Bar and on the Bench has watched the subtle phases of human nature, the constant workings of self-interest, the powerful influence of bias, and the unceasing struggle in the Courts to vindicate or defeat the truth.

It is well for scientists, as for others, to step aside, now and again, from their accustomed grooves of work and thought and to enter another path of observation and inquiry. It is so easy for each of us to overlook things of importance.

But before we go to a Court of Justice, shall we glance at the world around us, and also look for a minute or so into our own minds and instincts? How often is truth still upon the scaffold? How often is truth still kept in the dungeons of suppression? These are indeed great questions!

But truth is a vast subject and, as John Stuart Mill once remarked :

“ On all great subjects there is much to be said.”

I can therefore deal with a few aspects only.

And first, in what spirit shall I approach the topic of truth?

In the spirit of enthusiasm? Surely not, for, as the late Lord Balfour acutely observed :

“ Enthusiasm is a great thing, but it is a pity that so few enthusiasts can be trusted to speak the truth.”

That is a hard saying, but it seems to me to be one of profound and far-reaching significance. No more potent cures for enthusiasm are to be found than in the comparative study of science, of history, of economics and of law. The words of Lord Balfour may well be taken to heart by those eager and ambitious propagandists who from time to time advocate, in so feverish a manner, their vast and numerous schemes of social change.

Enthusiasm is an enemy to truth unless it be guided and restrained by a knowledge and love of truth. The psychology of enthusiasm awaits the attention of expert students of human nature.

I should myself ever wish to deal with the subject of truth in the spirit of a fearless and unbiased man of science. How profoundly different would our public life be to-day if that spirit had been

adopted by those who profess to deal with the grave social and economic problems that beset the Nation. I venture to think that the key-note for honourable public life was given by the words used by Prof. Parker of T. H. Huxley :

"He never faltered in his firm determination to speak the truth at whatever cost of popularity."

Equally striking, I feel, are the words used by Charles Darwin in his *Autobiography* :

"I have" (he says) "steadily endeavoured to keep my mind free so as to give up any hypothesis, however much beloved, as soon as facts are shown to be opposed to it."

It was once observed that "the greatest tragedy in life is to see a theory killed by a fact." But the tragedy is a tragedy only for the error. It is, for truth itself, a triumph.

Public controversy in this country will never, I feel, rest on a righteous basis, until the spirit of the fearless and unbiased scientist is recognized and adopted by all who address the people.

The task of psychology towards establishing that spirit may be a hard one, but it will, I believe, be achieved ere many decades have gone by. Happy the day when each public controversialist can apply to himself the great words framed by the late Lord Balfour and say :

"I prefer truth to victory."

Looking broadly at the world of public and argumentative speech and print around us, it seems to me that truth has three major though latent enemies. They are—(1) lack of courage, (2) self-interest, and (3) bias. How often we overlook them! How rarely do we rightly estimate their reality and force! May I say a word as to each?

(1) *Lack of courage*.—Shall we not all agree that lack of courage lies at the root of much that lowers the standard of our public life? Too many men whisper to themselves the words of Voltaire :

"I am fond of truth but not of martyrdom."

Surely they should strengthen themselves with the nobler spirit of Russell Lowell when he says :

"I honour the man who is willing to sink
Half his present repute for the freedom to think."

(2) *Self-interest*.—Here is a grave enemy attacking truth in many ways—sapping it in innumerable directions. If we watch the play and movement of life around us we shall see on every side how wide-reaching and deadly is the influence of self-interest.

With respect to every controversial utterance, whether written or spoken, I should myself put the question: What, if any, self-interest has the writer or speaker to serve?

If we put that question and press it with severity, then we shall be able to fix the real worth or worthlessness of much that is said and written.

(3) *Bias*.—The history of bias has yet to be written. The psychology of bias has yet to be fully revealed. Here, indeed, is a subtle and powerful enemy to truth, with its tentacles spread in every direction and working with constant and cogent pressure. How little do we realize all that bias means in the great sphere of argument and opinion!

There are, I think, two vital facts to be remembered at all times. First, that bias works not openly but surreptitiously; and second, that it produces evil effects which are beyond measurement or calculation. I venture to suggest that with respect to every book, every newspaper, every article, every speech there should be asked the question, What is the *bias* of the author or speaker?

Few, indeed, are the publications and utterances (other perhaps than the rigorously scientific) which are not tainted with the insidious workings of bias. How greatly a frank admission of partisanship (if only we could get it) would weaken the force of many arguments! It would create a corrective and beneficial mistrust in those who read or hear. The evil would be known and therefore half destroyed.

It seems to me that one of the dangers to-day is the assumption by too many of an attitude of impartial outlook as a mere cloak for subtle and misleading assertions. The vast majority of ordinary folk have not yet learnt the psychology and methods of propaganda.

But as we mention the outside world we must be reminded of ourselves. Do we perceive the foes of truth that may be lurking in our own minds and instincts, whether these foes be lack of courage, bias, self-interest or the like? Has our analysis of the faults of others been accompanied by a like analysis of our own mental and emotional equipment?

We may say now and again, *That man is biased*. Does it occur to us that such a remark may spring from the fact that we ourselves are biased against him? The subtleties of human nature are indeed strange.

"*Thou art the man*" are words of Scripture. They might well form a text from which psychologists could preach.

It is more than three centuries since Francis Bacon published his famous *Novum Organum*. You will remember the well-known *idola*

(or obstacles to truth) there set forth. They are much the same as those named, some three centuries earlier, by Roger Bacon in his *Opus Majus*.

To the enemies of truth I have expressly mentioned may therefore be justly added others, *viz.*, (a) undue regard to ancient authority, (2) habit, (3) prejudice, (4) false conceit of knowledge, and (5) indolence of mind. All these enemies are around us to-day, and it is for psychology to play its part in defeating them. I believe that the worthier part of the nation is yearning for a fuller measure of truth. Nay, more—it is yearning for a new attitude to truth. I myself trust that the day is coming when a fresh spirit will awaken, and when, above all, the bitterness and bias of the mere partisan will be regarded as the symptoms of a moral defective.

May I now speak to you on "truth" in our Courts of Justice? It is a subject far too rarely discussed. It is a grave matter. It touches all citizens, although, of course, the litigant and the accused are, of all men, the most deeply concerned with truth.

To-day I need not deal with decisions on points of law. They are technical aspects only of the Courts and of comparative rarity. Questions of fact are the most vital concern of the Courts. Upon those questions depend fortune, character, freedom—aye, life itself.

In 1845 Daniel Webster, of the United States, in addressing Mr. Justice Story, said :

" Justice, Sir, is the great interest of man on earth."

These were noble words—alike for the ordinary citizen and the trained psychologist. Truth of testimony is essential to the right administration of justice. Perjury is the great enemy of justice. There is no more difficult task in the world than to discover the true and expose the false.

May I venture to hope that those who engage in the study and practice of psychology will give a generous measure of their future attention to the momentous problem of truth-finding in our Courts? I myself will gladly welcome every practical suggestion that responsible psychology can give. You may recall the interesting forecast by the late Lord Birkenhead in his recent book entitled *The World in 2030 A.D.* There he said (p. 196) :

" In the year 2030 forensic eloquence will cease in Courts of Law. Prevarication, whether by prisoner, witness or advocate will be instantly detected and therefore worse than useless. What will it avail a murderer if a Demosthenes demand his acquittal from a jury which has been scientifically convinced of his guilt on psychological grounds? "

Happy the day when that prediction is fulfilled !

Now the question at once arises : Is perjury (that is, wilful false evidence as to facts) widely prevalent in our Courts to-day? The question is a serious one. I answer it at once. In my view perjury can never have been much more rife than it is at the present time. It is, I fear, equally rife, perhaps more rife, in other countries. Perjury is, of course, not a new thing. I observe that towards the close of the seventeenth century a well-known judge (he was called Lord Jeffreys—Lord Chief Justice) said :

“ We live in an age when truth passes for nothing in the world and swearing and forswearing is taken for a thing of course. Had the zeal been half as much for truth as it was for falsehood it had been a commendable zeal.”—“ The Case of Bradden,” 1684, 9, Howe, *State Trials*, p. 1198.

Perjury exists to-day to a most deplorable extent. I feel compelled to say that it is committed in greater or less degree in a majority of the civil and criminal cases that come for trial before the Courts. The ordinary layman, be he of worldly experience or not, has but little conception of the repulsive amount of false evidence that is given.

All of experience must agree that perjury is the greatest of all evils in the Courts. I think that the public should realize the extent to which it exists. Complaint is sometimes made of the length of legal proceedings. Let me point out at once that if perjury could be stopped the length of the trials would, in the large majority of cases, be incredibly short. It is, as a rule, the basic cause of prolonged hearing on questions of fact. Moreover, if perjury were generally renounced as an instrument of misleading the Courts, civil litigation would at once fall to a fraction of its present volume, and criminal trials would occupy less than half the time they now demand.

Perjury is indeed a terrible evil and menace. Perhaps the most glaring type of perjury has arisen since the *Criminal Evidence Act* 1898, which enabled all persons charged with crime to give their evidence on oath in the witness-box. The psychological and sociological effects of that legislation are well worthy of attention. Broadly speaking it may be said that, if not pleading guilty, those who are accused avail themselves of the right to enter the witness-box. Now a man charged with crime gives evidence, as a rule, not to admit an offence but to deny it. Go, if you will, to any Criminal Assize Court and you will hear day by day an almost incredible amount of deliberate falsehood committed not only by the man charged, but also, I may add, by wife or child or relative or friend who may be called to support his defence. Perjury by a

person accused is now, I regret to say, regarded as being the normal incident of a contested criminal trial. It has ceased to surprise. It has become almost a matter of course.

So far as I can recall, few prosecutions have taken place within the last ten years in respect of perjury committed by those who have been tried for criminal offences at the Assizes or the Quarter Sessions. The average total each year of prosecutions for perjury in all classes of cases and throughout the country is about fifty. If the offence was followed by prosecution (assuming that technical requirements could be fulfilled) in every case, then the Criminal Courts of this country would, I fear, be engaged every day of the year in trying offenders against the law of perjury.

It would take too long to consider with you the reason for this lack of prosecution. Perjury in the Divorce Court by those who enter the witness-box in answer to charges of misconduct is but little less prevalent than in the Courts which administer the Criminal Law. I venture to repeat what I have said already, *viz.*, that in the majority of contested cases, whether criminal or civil, perjury is committed by one or more witnesses. In many civil cases, moreover, evidence is, at some stage or another, given on affidavit. Every experienced lawyer knows that the aggregate of knowingly false or misleading statements in affidavits passes belief. The chief motive for this lamentable and widespread commission of perjury is, of course, self-interest, *i.e.*, a desire to escape a conviction and punishment; or to establish or defeat a claim for damages, debt, or property. But there are many other motives for perjury, which range from the loyalty of wife or child, or relation or friend, to a mere desire for revenge. All motives play their part. Here, indeed, is matter for the psychologist to examine.

I should like here to point out that far too many witnesses, both in civil and criminal trials, seem to hold the belief that an action or prosecution is not a public search for truth, but a mere contest or game played between opposing parties.

Now there are two broad statements I desire to make with respect to the incidence of perjury :

Firstly, I think that deliberately false evidence is but rarely given for the prosecution in criminal cases of anything approaching a serious nature. The exceptions to this general statement are to be found in cases where children or girls and sometimes grown women give evidence against men who are charged with sexual offences. In those cases the evidence of children, girls and women is often and most seriously tainted with falsity.

Secondly, that perjury is but rarely committed by those who are petitioners for divorce or by witnesses who are called in support of the petition. The bulk of perjury in the Divorce Court is committed by those who are actually charged with misconduct.

I have mentioned perjury by wife, child, relation or friend. As to wives, I can recall but few cases where a wife had not been ready to follow a husband's example and to support his perjured testimony with her own false evidence. Of children the same may be said with respect to their parents, and so, too, of many relatives. In many instances also the loyalty of a friend to a friend has been greater than his loyalty to truth.

Mr. Chairman, I have drawn a dark picture. I doubt if the colours are black enough. It is, I fear, a grave and significant fact that the administration of the Oath affords but small security to-day against false evidence. The personal character of a witness is, in many cases, more important than the Oath itself. So far as the Oath is efficient at all, it is the fear of prosecution rather than the mere ceremony which effects the desired purpose. The Oath is rapidly losing its sanctity. Too often it is looked upon as a mere formality.

I recall that at a Northern Assize a witness was about to take the Oath. The officer of the Court said to him, "Now kiss the Book." Suddenly the voice of the opposing litigant called out, "Kiss the Book! Kiss the Book! Why, he could not speak the truth if he swallowed the Book!" The point of that incident might be applied to very many witnesses.

The form of the Oath seems in itself to be suitable, inasmuch as the witness is required to speak "the truth, the whole truth and nothing but the truth." I am bound to say, however, that even the honest witness may have sometimes a difficulty in speaking the whole truth, for the reason that the testimony given by the witness is so often limited by the carefully framed question of the counsel who calls him. Too rarely is the honest witness allowed to tell his own story in his own way. Too often, therefore, is the dishonest witness enabled to present an untrue picture to the Court. How just is the observation of Lord Darling :

"Much truth is spoken—that more may be concealed."

There is, I think, an ever-growing tendency for the witness to regard himself as an advocate or supporter rather than a simple speaker of the truth. And here I must face a question which I have more than once put to myself. It is this : Does the fulfilment

of a barrister's functions as an advocate tend to implant a false standard or conception in the mind of the average witness present in Court, and watching with eager interest the conduct of a case by counsel? I fear that the answer must be, Yes. The effect of a barrister's advocacy on a witness is subtle and psychological. But it is, I think, a real influence. Many uneducated and some well-educated witnesses fail to realize the exceptional function of members of the Bar.

May I give you a passage from Boswell's *Life of Johnson*, which sets out with pleasant clearness what I think is an accurate view of the barrister's calling?

" 'I asked him' (i.e., Doctor Johnson) 'whether as a Moralist he did not think that the practice of the law, in some degree, hurt the nice feeling of honesty?'

" Dr. Johnson replied: 'Why no, Sir, if you act properly.'

" Later I said: 'What do you think of supporting a cause which you know to be bad?'

" Dr. Johnson replied: 'Sir, you do not know it to be good or bad until the judge determines it.'

" And the learned Doctor added (upon the legal aspects of a case), 'An argument which does not convince yourself may convince the judge to whom you urge it, and if it does convince him why then, Sir, you are wrong and he is right. It is his business to judge.'

A little later Boswell said: "'But, Sir, does not affecting a warmth when you have no warmth and to be clearly of one opinion when you are in reality of another opinion, does not such dissimulation impair your honesty?'

" Dr. Johnson replied: 'No, Sir. Everybody knows you are paid for affecting warmth for your client.'"

Dr. Johnson has, I think, correctly explained in broad terms the basic features of the advocate's calling. I may venture to add here, with regret, that I think perjury in the Law Courts is in some degree encouraged and increased by the low standard of frankness and honesty so widely and unhappily shown in various aspects of our party political system. These things act and react on one another in a grave and significant manner.

Now you may justly ask the question here, How, if perjury be so rife in our Courts, can justice be done at all either in criminal or civil cases? My answer is that through the experience and knowledge of the Judges, informed by a long experience at the Bar, and through the powerful weapon of cross-examination wielded by counsel, justice is in fact done to a very large and satisfactory degree.

As to criminal cases, I can say from my own long experience of Quarter Sessions and Assizes that so far as my own knowledge goes, I do not recall a single case in which a really innocent man has been convicted. Acquittals are frequent; sometimes they are given on technical grounds. Not a few of the guilty escape. The

law assumes innocence : it requires adequate proof of guilt. Juries are often lenient. Sometimes they are very merciful. If doubt exists they are willing to acquit.

Perhaps as an example of a very merciful jury I may mention to you a case that was told to me by a chairman of Quarter Sessions. A man was charged with stealing fowls. He lived not far from the hen-house that had been despoiled. Footmarks, identified as the prisoner's, led from the hen-house to his cottage not far away. A trail of feathers also led to his cottage. There were other suspicious circumstances. But the verdict of the jury was rendered as follows :

" We find him guilty of the footmarks. We find him guilty of the trail of feathers. But we find him *not* guilty of stealing the fowls."

As to civil cases, I am satisfied that in the great majority of these justice is achieved. Erroneous decisions on questions of fact are, I suppose, sometimes given. But in view of the deplorably dishonest material on which Judge and Jury so often have to act, the wonder is not that occasional injustice may be done, but that so often the right decision is given.

Now what can be done to stem this tide of perjury? Here is a grave and far-reaching question not only for psychologists but for all responsible citizens. The psychologist who can discover some reliable and practical test of veracity will indeed be the greatest benefactor known in the long history of human justice. Just as alchemy advanced to chemistry, just as astrology advanced to astronomy, so I hope that the present system of ascertaining truth will progress in the future to what I may call a practical science of "*veritology*." That forward movement will call for all the help that the ablest psychologists can give.

Now how do the tests of truth stand in the Courts to-day? No one as yet has tried to formulate them fully and clearly, and time does not permit me in this brief lecture to attempt to do so in detail now.

At present the tribunal of fact must do the best it can by observation, psychological instinct, knowledge and experience of human nature, by considering probabilities, by examining correspondence, diaries and documents, by weighing motives, by observing bias, and by detecting so far as possible the influence of pecuniary or other interests.

Somewhat recently public reference was made to a most interesting mechanical invention called the "lie detector." That machine has not yet been fully applied so far as I know in this or any country

either to litigants or witnesses or to others. It depends for its operation on the reactions, revealed by an ingenious device, to the impact of chemical messengers discharged into the blood-stream at the behest of a fear-stricken sensorium. Fear (*i.e.*, the fear of detection) is said to produce definite and measurable states of blood and body which enable us to know whether a person is speaking the truth.

It would indeed help profoundly in the administration of justice if by some magic means a reliable and practical detector of deliberate falsehood could be discovered and could be applied in our Courts. The task of a tribunal would become infinitely easier. The golden age might almost seem at hand. But I must point out at once that there may always be a grave difficulty in distinguishing between the blood and body states produced by acute nervousness (as distinguished from conscious dishonesty), and the blood and body states produced by the fear that deliberate perjury will be detected. It has, moreover, to be remembered that much evidence is given in the Courts which, though quite erroneous, is not intentionally false. It is difficult to see how this latter class of evidence can at any time be dealt with by any mechanical detector or by any existing psychological test.

I wish that all here present would from time to time pay a visit to a Court of Justice, and there listen for an hour or two to an action, not necessarily of a sensational nature, but even to an ordinary action for debt or damages. They would then realize the difficulties of those whose duty it is to find the truth and give judgment on the finding. They would realize also the infinitely various aspects of human nature, and the numberless subtleties of motives, passions and tendencies.

As the late Sir John MacDonnell wrote :

"A trial is a living picture. It brings us nearer to life than the best literature. You hear the voices. It is life itself."—*Historical Trials*, p. 2. (Clarendon Press, 1927.)

Those who watch a trial would, I think, agree with Shakespeare when he said :

" There's no art
To find the mind's construction in the face."
—*Macbeth*. Act 1.

It would take too long to tell you the result of many years' observation of witnesses. But from the psychological point of view it is of interest to examine a few points with respect to those who enter the witness-box. Some have at times asserted that they can detect from a witness's demeanour or bearing whether or not

he is telling the truth. The quiet, self-possessed witness is often assumed to be giving honest testimony. The nervous and anxious witness is often assumed to be giving false testimony. In my view both these assumptions are without foundation. I take the quiet, confident, and self-possessed witness. He is attractive to judge and jury. But there are several things to be remembered :

(1) That such a witness is often assuming a well-considered pose for the purposes of the trial.

(2) That he is usually possessed of ability and memory, and is fully alive to the importance of giving his evidence in a manner agreeable to the tribunal.

(3) That the ablest and most sustained perjury usually comes from witnesses of such a type as that in question.

And here it may be asked : Which of the persons charged with an offence gives evidence in the coolest and most self-possessed manner? My answer is, it is the person charged with *murder*. I have tried many persons for murder, and in the majority of cases those accused have entered the witness-box. I recall but few who have not given their testimony in a quiet, confident, almost dispassionate way with adroitness of reply, ingenuity of explanation and singular ease of manner.

In view of that fact I wonder how any possible mechanical lie-detector would operate in such cases, and what chemical reaction would be shown by guilty but self-possessed persons who employ perjury in order to defeat if possible the demands of the law for punishment. The ease of manner I have mentioned might perhaps be expected from those who have been guilty of deliberate and calculated murder. Instances of such persons will readily occur to you. But, strangely enough, even in cases where the murder has been one of sudden passion or anger, the person accused when he enters the witness-box often displays a noticeable degree of self-possession and adroitness. Broadly speaking, moreover, it may be said that the greater the criminal the more able and effective he is as a witness. The habitual criminal is often the best witness of all.

There are ladies here to-day, and ere I pass from the murderer, as typical of the cool witness, to witnesses who may be described as nervous, it may be as well to give a passing observation to female perjurers, whether as litigants or witnesses, or as charged with criminal wrong-doing. I think it may be said that nothing can exceed the skill, the self-confidence and the audacious reliance on sex that is so frequently displayed by the intelligent female perjurer. She has, moreover, a histrionic sense which is not, as a

rule, possessed by the male. Many women, alas! seem to have a peculiar faculty for the attractive and plausible presentment of false evidence. Gallantry must yield to truth in this address to you.

I have spoken of self-possessed witnesses. May I now say a few words on the nervous witness? His symptoms are well known, *viz.*, uneasiness of manner, rapidity of speech, the appearance of acute anxiety, uncertainty of words, and sometimes an obvious confusion.

Those who sit in Court, whether barristers or the public, regard him with suspicion. Now what bearing have the symptoms mentioned on the question whether the nervous witness be speaking the truth?

In a well-known and delightful book by Lord Darling called *Scintillæ Juris* (p. 59) it is said:

“A nervous witness generally means to speak truly, and seldom does so.”

But that is a humorous epigram by a distinguished man, and it is correct to a very limited extent only.

Nervousness (apart from bad health) is often caused by the unusual position and elevation of the witness-box. In many cases the witness is speaking in public for the first time in his or her life—a fact often forgotten by observers in Court. The occasion is absolutely novel, and the witness, moreover, has to face a judge, jury and opposing counsel—a somewhat embarrassing array. Small wonder, therefore, that many a witness is nervous. But there are many other reasons for nervousness, and the psychologist and student of human nature may like me to give two illustrations:

(a) Many years ago a man occupied the witness-box as plaintiff in a claim for money lent. He was a man of powerful physique, strong face and vigorous mind. As it turned out, his claim was absolutely honest and well-founded. But when giving his evidence, and particularly during cross-examination, he displayed the most pitiable nervousness. To the untrained observer he might well have given the impression that he was making a grossly false demand against the defendant. The mechanical lie-detector might have given an adverse verdict. His chemical reactions would have been, I assume, most suspicious. But what was the real reason for his nervousness? I will tell you. He was a man of middle age, who had gained a good position and an adequate fortune by hard work and merit. He was happily married and with several children. His wife and two of his daughters were in Court. Now that plaintiff, when a youth of twenty-one, had been convicted of embezzlement. He

knew before he entered the witness-box that the defendant's counsel was aware of the conviction. The nervousness of the witness was due to the fear that a question might be put to him, in order to discredit his testimony. The question would be this: "Have you not been convicted and sent to prison for embezzlement?" If that question had been put, the plaintiff's wife and children would have known for the first time of a tragic fact in the life-history of a man who for more than thirty years had borne an exemplary character as citizen, husband and father. I am glad to say that the question was not put, for the case was settled in the plaintiff's favour before he had finished his evidence.

(b) I take as a further illustration the case of an East End Jewish trader. He was sued before me for about £200 in respect of goods supplied. His defence was that the goods did not agree with the contract. The plaintiffs, however, asserted that this defence was not an honest one, and that the real reason for his omission to pay was that he had not got the necessary money. The defendant was cross-examined before me as to his financial position. He became extremely—almost ludicrously—confused, but asserted that his means were ample. Here, again, the ordinary observer in Court would have regarded the man with the gravest suspicion. I never saw a more uneasy witness. He was asked as to his balance at the bank but his memory seemed uncertain. He was asked for his pass-book: he said he had forgotten to bring it. I myself, however, suspected that there might be a special reason for the man's nervousness. So I adjourned the case until the morrow. The next morning the defendant again entered the witness-box. His bank manager was in the body of the Court. The witness produced his two bank-books, *viz.*, his current account book and his deposit account book. I examined them. The current account showed that the amount to his credit was nearly £3,000. The deposit account showed that the amount to his credit was over £40,000.

Now those amongst you who are trained psychologists will perhaps infer at once the cause of the man's nervousness. For the benefit of others, however, I may state the real reason—a reason that I had previously suspected. The fact was that the defendant had never made honest returns for income tax, and he was in a state of terror lest the hearing of the case should lead to the truth becoming known to the Revenue Authorities, with somewhat serious consequences for himself. I may add that upon the merits of the case, and not upon the character of the defendant, I felt bound to give judgment in his favour.

Here, again, I wonder what the chemical reactions of that man were when he was being sternly cross-examined as to the extent of his financial resources.

The fact is that a nervous witness often means to speak the truth—and frequently does so.

Before I pass to another type of witness as to fact, I should like to say a few words on the “expert” witness. He has been the subject of much criticism and some denunciation.

Now the expert witness deals primarily with questions of opinion. In so far as he asserts facts he stands on the same footing as the ordinary witness. I am glad to say that as a rule there is but little difference on questions of fact between the expert on one side and the expert on the other. But the conflict of opinion is often striking, and sometimes astounding. Why is this? There is, of course, the broad circumstance that many experts differ just as much outside the Court as within the Court. Nothing is more singular, *e.g.*, than the variations of view between so-called economists or financial experts on broad questions of trade or financial policy, whether they relate to tariffs, the gold standard or the like. But apart from the honest and perhaps unavoidable clash of opinion, there is undoubtedly a tendency, sometimes a strong one, for the expert in the witness-box to become a partisan. It is this tendency, I think, that leads to the greater part of the invective against the expert witness. The expert too often forgets that he is a witness on Oath and not a well-rewarded advocate. It is somewhat curious that the Oath administered to the expert witness is exactly the same as that administered to ordinary witnesses of fact. He is sworn to tell the “truth, the whole truth and nothing but the truth.”

This form of Oath seems somewhat inappropriate to cases where the facts as between the experts are not in dispute, but where the question at issue between them is one of opinion only. The Oath does not in words refer to matters of opinion.

The subject of expert testimony is one of singular interest, but I will only add—and with pleasure—that in my view the quality of that testimony is steadily improving. The explanation of this is to be found, I think, not in any greater appreciation of the Oath, but in the ever-growing standard of integrity, fairness, honour and dignity amongst the members of the expert professions.

May I now speak briefly and in conclusion of the type of witness who is free from conscious dishonesty, and who enters the witness-box with a normal measure of desire to speak the truth?

The achievement does not always equal the desire. A vast amount of inaccurate testimony is given day by day by honest witnesses. When weighing this type of witness it is always important to ask several preliminary questions :

- (1) Is the witness intelligent ?
- (2) Is he observant ?
- (3) Has he a good memory ?

But even when the answer to each of these questions is " Yes," there still remains the vital matter of bias or partisanship.

Perhaps the most striking illustration of bias or partisanship is to be found in the numerous—almost innumerable—civil actions known as " running-down cases." Here is a type of litigation which the psychologist may study with advantage. For what is the problem for the Court? It was, you may recall, humorously described not long ago by Lord Hewart, the Lord Chief Justice, when he said that he sometimes grew weary of trying to ascertain the truth as to negligence in cases where, according to the evidence given by the respective parties and witnesses, each motor car was, at the time of the accident, on its proper side of the road, each was under the most perfect control, and each was absolutely stationary a few seconds at least before the collision took place.

I confess my own view to be that in a large number of these accident cases the testimony of many witnesses is not only inaccurate but is consciously false. Many of the points of fact at issue in controversy cannot be the subject of really honest mistake. But however that may be, the conflict between witnesses (all apparently honest and respectable) on the one side and witnesses to an equal number (all apparently honest and respectable) on the other side often passes belief.

As an illustration may I recall an action in which the collision had taken place between two chars-à-bancs, each of which was filled with passengers. Each side asserted that the other was driving very fast and on its wrong side of the road at the time of the collision. The questions of fact were of the simplest. You would think that no honest and intelligent person would have the slightest doubt as to the answers. Yet upon each of the points in issue some sixteen passengers from one char-à-banc swore one way, and some sixteen passengers from the other char-à-banc swore exactly the opposite way. Every witness seemed to be most respectable, honest and intelligent, and none of them had any pecuniary interest in the result of the trial. Now what is the explanation of so strange a phenomenon? It lies, I think, in two facts:

Firstly, that the passengers in the one char-à-banc all belonged to one club and were engaged in a day's excursion together, whilst the passengers in the other char-à-banc all belonged to another club and were also engaged in a day's outing. Each body of passengers therefore held together in their testimony.

Secondly, that each passenger identified himself consciously or unconsciously with the vehicle in which he was riding. This spirit of partisanship or bias is singularly strong in running-down cases (I may call it the "*esprit de voiture*"), and it exists in other classes of action also.

The witness links himself resolutely to the litigant whose case he supports, and this adherence colours and taints the whole of his testimony. A judge and jury must always be alive to this aspect of human nature. It explains many things not only in the Courts but in many branches of our national life.

The effects of bias are enormous. Few recognize adequately its influence on the thought and conduct of other people. Fewer still recognize its influence on their own personal thought and conduct. Theologians and propagandists, sectional leaders and submissive followers may well give thought to the significance and the implications of the bias and partisanship shown in an ordinary running-down case in our Courts.

But here I must end this address and thank you for your courteous patience. Time runs so quickly when we touch the vast and fertile theme of truth. We shall gain much if we perceive the grievous failings of the past. We shall gain still more if we realize the faults and perils that exist to-day. It is, I venture to think, our duty to future generations to take a part in building a new and higher standard of truth. If we strive towards that end we shall aid the march of righteous progress, we shall strengthen the souls of men and women, and we shall give a fuller and more gracious dignity to our public and national life.

MENTAL OUT-PATIENT CLINICS.

A DISCUSSION WHICH TOOK PLACE ON JULY 4, 1930, AT THE ANNUAL MEETING OF THE ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION AT OXFORD.

OPENING PAPER.

By Prof. GEORGE M. ROBERTSON, M.D., C.M., F.R.C.P.E.,
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Medical Director, Jordanburn Nerve Hospital.

I HAVE been asked by the President to open a discussion on out-patient clinics for mental disorders. Although these have existed for many years in some places, it is believed that they ought to be more general, and that one or more should be connected with every mental hospital. Their establishment has now become an urgent duty in view of the passing of the Mental Treatment Act.

It is not the duty of the opener of a discussion to deal with his subject exhaustively. Rather is it his task to touch on its various aspects and to glance at its different problems so as to provoke discussion. I shall deal with the subject under the following heads.

- (a) The benefits received by the medical officers of mental hospitals.
- (b) The benefits received by the public.
- (c) The different ways in which a clinic may be started.
- (d) The other services that should be associated with fully-organized clinics: social service; bed treatment; teaching.

The medical officers of most mental hospitals in the past confined their energies strictly to work done within the walls of the institution. Their interest in the patient started with his admission as a certified patient, and terminated when the patient was handed over to his relatives on his discharge.

This limited method of dealing with disease, especially with one that is liable to recurrence, was most unpractical and unscientific. Neither experience nor understanding of the earliest symptoms of mental disease was obtained, and no real attempt at prevention

was made. These deficiencies are made good by the out-patient clinic. It stimulates medical officers to a more active interest in medical science, and the importance and variety of the work make it the most fascinating part of their duties.

Out-patient clinics bring medical officers into closer contact with the domestic life of the poor—a humanizing influence. The public also get into personal touch with the medical officer, and lose much of the suspicion for which the mystery of treatment behind the closed doors of the mental hospital was responsible in the past.

Lastly, the medical officers of mental hospitals have in the past lived too isolated a personal and professional life. By means of out-patient clinics they are brought into relationship with their medical brethren. They learn what problems and difficulties general practitioners have to solve in the management of patients treated at home. It is fitting that these medical officers with their special knowledge should share with family doctors responsibility for the mental health of the communities in which they live.

In the second place, an out-patient clinic benefits those suffering from mental and nervous ailments, for it is difficult for the poor otherwise to get skilled advice in the early phases of these troubles. As a general rule the nervous patient does not suffer from marked physical disability and he is able to hang on and do a certain amount of work. He hangs on too long, and then becoming unable to support himself or attempting to commit suicide, he is sent to a mental hospital. Long before this stage is reached definite symptoms, such as depression, anxiety and insomnia may have existed, and further developments might have been prevented had there been facilities for obtaining skilled advice and treatment. It is well known that simple measures adopted in good time will often ward off a threatened mental breakdown. A *régime* of rest, a change of environment, and the removal of hypochondriacal or other imaginary anxieties by suggestion may be sufficient, or the adoption of simple remedies, such as attention to the bowels and the assurance of regular and good sleep at night by the employment of a simple hypnotic, may be all that is necessary. Although these remedies may be obvious, we know from experience that they are constantly neglected, with disastrous results. The needful stimulus is that a psychiatrist of experience and authority should prescribe them, and then they will be willingly adopted. Such advice would emanate from out-patient clinics.

There is a very large field of minor mental ailments which cause great suffering and have been practically neglected in the past.

Patients suffering from these received little sympathy even from medical men, who, failing to elicit evidence of physical disease and finding them troublesome, minimized the seriousness of their symptoms and even occasionally suggested that there was nothing wrong. This want of understanding and sympathy often drove these patients into the hands of irregular practitioners, who often benefited the patient by the employment of their nostrums, the active element of which is essentially mental suggestion.

Doctors send patients to these clinics in whose case questions have arisen as to certification or as to whether they are suitable or safe for treatment at home. Children are brought who are backward at school, who have been found difficult to manage at home, or who have repeatedly got into trouble owing to minor delinquencies. Social agencies of various kinds and probation officers of police courts will bring other cases for examination and for advice.

In the third place, what means are to be adopted for starting an out-patient clinic? These, of course, will vary, and will be determined by local conditions. The best form of out-patient clinic is one attached to a general hospital, and many have such a clinic nowadays. These do good work, because every person goes willingly to a general hospital, and he has less hesitation there in seeking advice on a delicate matter, such as mental symptoms, because other forms of disease are also being treated. Such a clinic has this further advantage—that if help be needed, this can be obtained from specialists on the staff of the hospital and from its laboratories.

The clinic should be in charge of an experienced psychiatrist, who has full knowledge of the subject. No doubt psychiatry is closely connected with neurology, and as neurologists now interest themselves more than formerly in functional disorders of the nervous system, the two services overlap. There must be a certain measure of cooperation.

If a mental hospital be near the general hospital the psychiatrist in charge of the clinic should obviously be one of the medical officers of the mental hospital. Even if the general hospital be some distance away, it is not difficult to make a working arrangement in these days of speedy motor travel.

A second method of establishing a clinic is to have it attached to the mental hospital. There are disadvantages in this method, because patients with nervous or mental symptoms are at present shy of approaching a mental hospital. There are many ways,

however, by which this difficulty may be minimized. It is usually possible to get simple and inexpensive accommodation, corresponding more or less to a doctor's surgery, for one day a week as a beginning, in a conveniently placed house in the neighbourhood. It may be possible to find a detached building belonging to the mental hospital itself to which out-patients can come without meeting in-patients. If it has a special entrance and a distinctive name, some of the objections to its proximity to the mental hospital are overcome. If successful it will in time develop an independent individuality of its own.

Unfortunately for the purpose of clinics, most mental hospitals are built in the country and are at an inconvenient distance from centres of population. In such cases there is nothing for it but to open the clinic in the nearest large town or towns and in connection with the local hospitals if possible.

It may be added for the information of those about to start such a simple clinic that the maintenance expenses can easily be calculated and are very small. As it expands and as it develops full services its expenses increase, but by that time its value will be recognized by the community. It is important to make a beginning, however small this may be, and to allow the clinic to expand naturally.

A third, but more difficult, method of establishing a clinic is for it to be attached neither to a mental hospital nor to a general hospital, but to be independent and reserved entirely for this purpose alone. There are few such at the present time, but those that exist discharge their functions with great success, and it is probable that with the passing of the Mental Treatment Act other establishments of a similar type will be started. In putting in a plea for the establishment of mental out-patient clinics I do not lay stress on the establishment of superior clinics of this character. No doubt they are valuable, but what is desired in the first place is small clinics that can be managed by the medical officers of our mental hospitals.

In the fourth place there are other services not strictly medical that are of the utmost importance, and should be established if full value is to be obtained from these clinics.

First among these must be placed social services. These are rendered by a social-service worker, or more than one as the clinic expands. She should be present at the clinic and take notes of the history when the patient is being examined for the first time; she should keep records of the name, address, occupation and domestic

circumstances of the patient ; and, if instructed by the physicians, she should visit the patient's home and in a discreet way make observations and inquiries. In this way and in this way only can information in many cases be obtained that throws light on the causation of the symptoms. She also sees that the treatment recommended is being faithfully carried out, or whether indeed it is possible to carry it out at all under the conditions at home.

It has sometimes been found necessary by a service worker to change the environment, and to remove the patient to a new home. In this way has been prevented melancholia that was developing from an isolated life in a gloomy house, and persecutory insanity from the annoyances of undesirable neighbours. It sometimes happens that differences between husband and wife have to be composed or the housewife of poor mentality has to be taught how to arrange a budget on very slender resources, the deficits of which, causing anxiety, were leading to theft and reckless conduct. It is through a service worker that touch can be kept with a patient and cases followed up.

These extra-mural procedures are foreign to the spirit in which we worked in our old mental hospitals. It would have been said in those days, almost brutally, that we were not responsible for what took place outside the hospital, particularly to persons who had never been under our care as in-patients. But surely, as physicians, it is our duty to the poor to treat their mental ailments, to treat these at as early a stage as possible wherever existing, and if possible to prevent serious mental disorders from developing. It is surely our duty even to go out of our way to make these measures effective in the case of persons handicapped by mental trouble and thus unable to help themselves.

In the second place, although most of the patients attending the clinic can receive treatment while carrying on their duties at home or in the workshop, there are others who would receive most benefit by removal from the scene of domestic anxieties and by rest and quietness. The provision of bed treatment is a desirable, if not essential addition to the out-patient clinic.

General hospitals, for whose accommodation there is already too great a demand, are chary about providing beds for mental cases, but a few such beds are available. At the present time it is possible to treat only a few selected cases in general hospitals, and unfortunately cases of mild melancholia, which are otherwise suitable, are not looked upon with favour because of their suicidal tendencies. But under the Mental Treatment Act it is permissible to

provide special accommodation for early cases. Where advantage is taken of this power, patients from the clinics may possibly be treated in these special wards or institutions.

It would, however, appear that the reception of these cases as voluntary patients into our mental hospitals under the Mental Treatment Act is the most convenient method of obtaining immediate bed treatment. It was our experience in Edinburgh, before the Jordanburn Nerve Hospital was opened, that most of these patients would agree to enter a mental hospital with very little persuasion. The passing of the Act to admit voluntary patients to county mental hospitals in England should be signalized by the opening of out-patient clinics by the medical officers of these hospitals, in order to crown the benefits conferred by this Act by supplying these hospitals with the new class of voluntary patients.

Finally, these clinics are invaluable for the facilities they offer for instruction to medical students. They can, of course, only be used for this purpose where there is a medical school. To see early rather than established cases of mental disorder is much more useful for the student who will afterwards engage in general practice. He also gains valuable experience in coming up against the practical difficulties met in treating such cases at home.

It has been found by experience that the first examination of the out-patient, when systematic inquiries are made into the nature and exact date of the earliest symptoms noticed, and into all the accompanying phenomena, both mental and physical, with a view to discovering the cause and diagnosis, is by far the most instructive clinic the student can attend. It is usually also the longest, but the methods of examining the patient and the material elicited are almost always found interesting and useful. So much now depends on the powers of observation and on the training of the general practitioner for success in our efforts to prevent disease, as Sir James Mackenzie has pointed out, that instruction given in out-patient clinics must have a high value placed on it.

In opening this discussion I have not described our particular experiences at our two out-patient clinics in Edinburgh, namely, at the Royal Infirmary and at the Jordanburn Nerve Hospital, both of which are conducted by the medical officers of the Royal Edinburgh Hospital at Morningside. Nor have I given a detailed account of the symptoms of which the out-patients complain, nor described the nature of the advice, given nor the kinds of treatment that the patients have received, nor the success that has attended these efforts. It may possibly be convenient for

some of those who follow to speak on these lines of their own personal experience. I have spoken in a general way of the advantages of these clinics. I have also shown how simple and inexpensive this enterprise is, if a beginning be made in a modest way. In short my remarks have been a plea for the extension of out-patient clinics. In my considered opinion, after an experience of nearly fifty years, a mental hospital is not complete and is not doing the good work of which it is capable unless it has one or more clinics connected with it, conducted by its medical officers. To engage in this work is a duty the medical officers of mental hospitals owe to the community in which they live. Finally this has now become an urgent duty in view of the passing of the Mental Treatment Act, which authorizes the establishment of out-patient clinics, and enables early cases of mental disorder seen at these clinics to receive hospital treatment as voluntary patients.

DISCUSSION.

Dr. WILLIAM BROWN (Wilde Reader in Mental Philosophy, Oxford University): Prof. Robertson has covered the ground so completely that my task of following him is simplified, and I am able to concentrate on a single point—is the nature and possible future of an out-patient psychiatric clinic in a big general hospital.

During the last ten years I have acted as Psycho-therapist at King's College Hospital, and perhaps I can be of most help in the discussion if I mention briefly what my experience has been.

Originally a clinical assistant in neurology, I became, in 1924, psycho-therapist at the Hospital. Conditions have been much the same all through those years: patients go first to the neurologist to be "vetted" by him, and if he thinks fit, they come to me for psycho-therapeutic treatment. That is quite an excellent arrangement if you have a neurologist who is interested in the psychological side, and is ready to surrender the psychological treatment to someone else. But if you have a neurologist—however good in his own specialty—who has strong views about this psychological side and thinks his own knowledge of psychology is sufficient for the cases, then, I think, there will be a hold-up; patients will not come for psycho-therapeutic treatment in adequate numbers. My experience has been that patients have been passed on to me in satisfactory quantities, but that nevertheless this neurological gate to the psycho-therapeutic clinic is too narrow and too slow.

The reason is that psychological disturbance in different forms of illness is not limited to cases which would be originally diagnosed as neurological. Besides the cases of functional nerve disease there are a series which originally reach the other departments of the hospital—functional disturbances of the heart, of the kidneys, and especially of the gastro-intestinal tract and of the endocrine glands, particularly the thyroid and suprarenal glands; these do not necessarily come to one through the neurological department.

So the question arises whether any broader point of view can be taken; and this is a matter for the future. It has not yet been taken, as far as I know, by any of the hospitals. I hope that in the future the authorities of a general hospital will be willing to appoint a psycho-therapist with power to get into touch with, and receive patients from, all parts of the hospital. That means a matter of education and such education is a slow business. One of the tasks is to educate staffs of hospitals on the question of psychology in its relation to medicine. The psycho-therapist should be in touch not only with the neurologist, but also with the physio-therapist, cardiologist, etc., so closely in touch that those controlling these departments are ready to show him doubtful cases and ascertain his opinion upon them. At present many members of the staffs of hospitals say they do not know this; they do not know the possibilities of the psychological side. They know the facts as to psychological or functional overlap, and they are educated sufficiently on the medico-psychological side to understand the importance of early treatment of psychotic cases, but they are not adequately instructed in the possibilities of psychological disturbance as influencing the development of physical disease in the different parts of the body. This applies also to surgery. It is so obvious that I almost apologize for mentioning it. A number of patients who are to undergo surgical treatment should have psycho-therapeutic attention before the operation, previous to the administration of the anæsthetic. I have had the opportunity of carrying out such treatment on a number of patients, and of noting what were its effects. I have seen a sufficient number to feel that encouragement to these patients to face their fears, to decide to relax efficiently for the operation and to make use of auto-suggestion in the right way is a great help to them. In the same way obstetric patients are encouraged in the use of auto-suggestion and relaxation before the time comes for the delivery of the child; then the event will be very much less painful to them than it would otherwise

be. That is still more obvious in the case of disturbances of the endocrine glands, especially in hyperthyroidism. These cases still do not come in a sufficiently large proportion to the neurological section of the hospital, and therefore do not reach the psycho-therapist.

Early treatment by psycho-therapy can be beneficial, though great discrimination is needed, and a correct diagnosis is necessary, because in some cases of toxic hyperthyroidism operation or X-rays are the only justifiable treatments, and time may be wasted by embarking upon prolonged psycho-therapy. There are different kinds of thyroid trouble, and it is the duty of the psycho-therapist to try to understand the differences and to act upon this knowledge.

As to the type of treatment, there is the analytical method, the method of suggestion, and the method of persuasion. Nowadays every psycho-therapist agrees that the scientific method is the analytical, because it is only in that way that the inquirer can know what is going on in the patient's mind, and can get down deep enough into the underlying causes. But we are neglecting the possibilities of the suggestion method. I speak advisedly, because for several years I have seemed to be in a minority of one among psycho-therapists with whom I am in social relations, in practising suggestion and auto-suggestion. Especially in out-patient treatment in a general hospital, suggestion and auto-suggestion are indispensable methods to use. A certain amount of analysis is essential in the first few interviews; but deep analysis cannot be carried out under fifty or sixty hours or more, and such an amount of time cannot, naturally, be devoted to cases in a psycho-therapeutic out-patient clinic. But that does not mean that analysis is to be neglected as a possibility. The knowledge we gain through prolonged analysis enables us to employ it in dealing with our out-patients; that is to say, knowing the general types of complexes and the factors at work, we can guess, in the individual case, what may be wrong, and test out the hypothesis in brief. And we should not forget that in some cases prolonged analysis can be misleading and a mere waste of time. The patient himself may drag out the analysis because he does not wish to get well quickly, and from the analyst who is willing to carry out the work he may withhold important facts. Recently I saw a patient who had been analysed by someone else for a long time and had withheld from that analyst an essential fact which she told me in the first hour. So, even in analysis, the active method of trying to get at the patient's

mind quickly may stir him up to arguing with you and he may face the present situation boldly ; and this is important, for you can do it in an out-patient clinic. In most cases of psychological disturbance there is a present difficulty in that the patient is refusing the leap, but is trying to find a byway instead. And until you can make him take the jump he is stuck and he will regress to more infantile fancies. If he will face that jump, you can employ brief methods of analysis, combined with persuasion and re-education. That is important in out-patient treatment. But, besides that, suggestion has its place. In a whole number of cases you have a functional disturbance which is far greater than the organic trouble justifies, due to the patient's fear and to the general mental and physical tension. And where time restriction does not allow of much analysis one can still train patients in relaxation, and teach them the simple truth which the least intellectual can understand, that so much illness is intensified by bad self-suggestion, through fear, acceptance of certain ideas, dwelling on them in the subconscious and surrendering to them. And it is important to neutralize those bad self-suggestions and to believe that they can be removed by self-suggestion. Patients should realize that they can be helped to help themselves. In many cases suggestion produces permanent benefit. In the past, suggestion was carried out in hypnosis, and was not persisted in to any extent. At present those who practise suggestion are willing to persevere with it for a long time, always being ready to supplement it with other methods.

Returning again to the question of the relation of the psycho-therapist to other departments of the hospital, it seems to me that the ideal would be for a medical psychologist to be appointed to a general hospital as a whole-time appointment, just as you have a bacteriologist and a pathologist ; and he should visit the hospital every day, so that every member of the staff knows where he can be got at, and the patients can be brought to him. He should have clinical assistants to see and learn the different types of cases ; he should have a psychological laboratory, with the latest apparatus for rapid mental testing, for such things as the psycho-galvanic reaction, the testing of memory and of the various physiological concomitants of emotional reaction. Finally, there is the question of teaching. A general hospital is a teaching hospital, and one is supposed to teach students the methods used. But in psycho-therapy I have found a difficulty in that respect. Years ago I began to encourage students to come into my room and look on while I was treating patients. But there was more and

more grumbling about this among the patients. They objected to telling their troubles to me in the presence of young students who were inexperienced in life. A deputation waited on me asking me to cease the practice and so I gave it up. Lectures to students I realize are not in themselves sufficient. I hope in the future to select my cases, to find out beforehand which patients would not object to onlookers being present, and keep them only for the demonstration clinic, setting aside one afternoon a week for such demonstrations to students, and other times in the week for treatment without students being present; but no prolonged analysis can be carried out in the presence of students.

Dr. HUGH CRICHTON-MILLER (Tavistock Square Clinic): I am sure we have all been very much interested in both Prof. Robertson's and Dr. William Brown's remarks. I do not propose to speak on most of the points that Prof. Robertson raised, but I would like to bring one thought to your mind to which he referred. He talked of minor mental maladies that did not reach a mental hospital in the ordinary way. I think all of us, including the most thoughtful psychiatrists, have to have our eyes opened to what the minor mental maladies of life are, and what is their extent. When one thinks of one fact alone, namely, the number of suicides, successful and unsuccessful, which occur without any relationship to the psychiatric or the mental hospital system of the country, one realizes that there must be an enormous amount of minor mental malady which goes completely unnoticed until the coroner's inquest. We do not realize, as a rule, that somebody attempts his life every hour in this country, and that fact means, I think, that there are many who would be better in mental hospitals. How will they get into mental hospitals? How can they be saved, either from mental hospitals or from suicidal attempts?

Apart from the people who attempt their lives, one can multiply indefinitely the amount of minor mental malady. The clinic for the treatment of these minor mental maladies can serve a great purpose, whether it is in connection with a general hospital, a mental hospital or a neurological hospital, or is independent. I represent one that is independent, and I know that independence has certain advantages and many disadvantages. I have realized some of the advantages and disadvantages of the different systems. I shall not discuss them, but there is much to be said for each system. I think we all tend rather to prefer the system which we start upon ourselves. Prof. Robertson, naturally, feels that the out-patient

clinic should be connected with a mental hospital; Dr. Brown, just as naturally, thinks it should be in connection with a general hospital; perhaps somebody from the West End Hospital will think it should be conducted under the roof of a neurological hospital; and, again, there are those who represent the idea that the out-patient mental clinic should be more in connection with the educational and scholastic system of the country, because of the central link of child guidance. That is another point, and it is one not to be passed over as altogether absurd, because there is something in it which deserves consideration.

Prof. Robertson was encouraging in reference to the starting of small clinics, saying that the expense was small. It is so, and if you want to see that the expense is small, see that it is kept small. I speak with some feeling on the subject because I have to take part in some begging in an attempt to collect funds from the public for a clinic which has rather outgrown itself in some ways. And with regard to the expenses of a small clinic, Prof. Robertson was a little light-hearted in saying that the expenses were small; I think he was talking only of expenses in £ s. d. But there is one point which should be always emphasized in any talk about out-patient clinics, and that is the question of time; and in that respect, not only in professional time, but in the best professional time, even the smallest out-patient clinic is expensive. That seems to me to be the very essence of the problem.

Dr. Brown made reference to the relation of neurology to psychotherapy. I hope that when Dr. Gillespie speaks he will give us his experience, because most of us know there is a peculiarly happy conjunction of neurological and psychological work at Guy's, which might well be copied by anybody who attempts to form or run a psychological clinic. But, even if only a small proportion of what one hears about some of the other general hospitals and their psychotherapeutic departments is to be believed, the actual working is not the only ineffective thing about them, but matters are even a little worse.

The first point we have to face when we talk of establishing an out-patient clinic on any scale is one of a positive therapeutic ideal. I could not help feeling, in connection with much of the talk which has been going on, both in Parliament and outside it and before the Royal Commission, that there was a certain amount of airiness about the references to mental out-patient clinics, the idea apparently being that if the County Council gave a site and provided a grant for erecting a suitable building, and someone gave leave to

the staff of the local mental hospital to run it, all was provided for—(Laughter)—and that the mental health of the population would thereupon instantly rise to 100%. I think we have to face the fact that it is very much more complicated than that, and that unless we have a positive therapeutic ideal we really had better not trouble the County Councils to put up the clinics.

There is one dreadful danger—and I speak of this with much feeling, and all who have served in the Army will recognize it—and that is the disposal idea. Some of you may remember the considerable discouragement with which any case was admitted that meant any length of time being spent on it. You got an intelligent person, a soldier who had insight, and began to get down to helping him in a way that seemed promising, and instantly the adjutant or colonel was down upon you, and said, "Surely this fellow is fit to move on?"; and you said "I think he can still be given some benefit," and his reply was "Yes, but we must move him on—we must dispose of him." If the out-patient clinic is to be dominated by the "disposal" idea, I cannot help feeling that we shall risk having that sort of Army situation, in which people were moving round and round, and there was a filling-up of case-sheets, etc., all of which satisfied the people involved. And there is another, rather similar idea which we meet to-day, and that is the out-patient idea in many general hospitals. A friend of mine said to me the other day, "I am in charge of a tuberculosis centre connected with my hospital. A short time ago the treasurer said to me: 'Doctor, there are several of these people whom you are seeing now only once a fortnight, but you used to see them once a week.' I said, 'Yes, once a fortnight is enough.' 'But do you mind seeing them once a week again?' 'Well, perhaps you will tell me why.' He said, 'Well, you see, it makes a difference to our hospital fund returns.'" If any of our clinics are going to be dominated by the "turnover" idea, then it should be realized from the first that it is detrimental to any positive therapeutic ideal. These temptations will always be with us, because of the nature of the material we deal with.

What is the nature of the material? We have, first, what mental hospitals cannot or will not keep any longer, and for them we at the clinics should fulfil a very important function. With cyclothymics there should be the closest relationship between the mental hospital and the clinic, and in this regard I think that much of what Prof. Robertson said is justified. The clinic can do much by thoroughly good psycho-therapy to enable the cyclothymic to

establish a much better acceptance of his condition, and adjustment between his condition and potential relapses. And if the cyclothymic is being seen with some regularity, the possibility of his being shepherded back to the mental hospital in time, before any serious damage is done to his family or his finances, or anything else, is always a desirable state of things.

Then we have the material from the general hospitals; and in that connection one does share some of Dr. Brown's feelings that there is a good deal of psycho-therapeutic possibility that is ignored. I feel that the general hospitals are always seeing what they can do to people, and when they cannot do anything more, they say so, and we get patients who have received this naïve statement, or on whose behalf it has been made—"There is nothing more we can do for this patient." Sometimes one feels inclined to say, "It is fortunate that you have reached the limit of your active interference." (Laughter.) I saw a patient last week who belonged to a very large factory, a well-conducted factory, near London, where they have very good service with their own medical officer and social workers. She had been ten years employed there, and for seven years she had been in and out of work—in fact in and out of everything. They had moved her from one form of work to another; she had been in and out of hospital, and her last experience had been ten days in a neurological hospital, where apparently they could do nothing for her; and I understood that, as they could do nothing for her, they sent her out, with only this one helpful thought, that the patient seemed to be markedly hysterical, which was assuredly true. During these long seven years of her life during which she had been ineffective, she had been the object of much private charity, and of extraordinarily sympathetic treatment by her employers; she had been the centre of the medical interests of the place. One hospital had curretted her twice, and had shortened her round ligaments once. A dentist had said "It is all her teeth"—that was three years ago—saying that with teeth like those he could believe anything; he proceeded to take out three teeth, and when he had got that length there was a scene, and operations were suspended, and it was suggested that when she got better she might have some more of her teeth out. I was not there, and I did not see the teeth they took out; I only saw one of the teeth they had left, three years later, and it was a very foul and septic affair. A doctor who had charge of her at the works said she was a case of parathyroid deficiency, but he had not, apparently, had the persistence even to prescribe

parathyroid for her. With all this mass of surgery and convalescent home, dentistry, operations, etc., there was very little room for anything except a little common sense and a pulling of the threads together, and any of us could have done what one did do, and said: If she has got these septic teeth left—which more than one sense inclines me to believe—take them out; and if she has got parathyroid deficiency, which I agree with because her spasms and tremors correspond with that, give her parathyroid, and after that bring her back in a month, and then we will see about her hysteria.

An out-patient clinic for functional nervous disorders and minor mental maladies must necessarily be a scrap-heap and waste-paper basket; it must necessarily be a place where people drift to who are not primarily psychiatric at all. And I do not think this patient was that. Barry wrote a play called "The Old Lady shows her Medals." In 1917, when Asquith was in hot water, *Punch* produced a cartoon in which Asquith was dressed in a cap, and the cartoon bore the title, "The old lady shows her muddles." It is in the nature of things that the psycho-therapeutic out-patient clinic will always be a place where the muddles of our profession tend to gravitate; it will always be that way. Therefore it must be, above all things, a place where the muddles are received without any preconceptions. There must be people who are competent to handle cases which are not necessarily psychological cases, in the first place, at all. We have found this to a large extent, and we have always been sufficiently conscious of our own inadequacy upon physiological lines. We have now two diagnosticians, men of considerable standing (Crookshank is the senior one), who see every case before the psychiatrist is given a chance of interfering. I think that is a sound principle. These are men of considerable clinical experience, and in Dr. Crookshank's case, great clinical experience, and they are men who have a sufficient experience on the psychological side of life not to miss the psycho-therapeutic possibilities. They, as I say, sift the whole of our material for us. Therefore the waiting-list for the last few months is only a waiting-list of those who have been regarded by one of them as suitable for psycho-therapeutic treatment and are waiting for it, other treatment being carried out meanwhile. And I think that is a very desirable and practical system.

We want a positive therapeutic ideal, we want a rational therapy. Dr. Brown complained—and I want to console him instantly—for he thinks he is in a minority of one about suggestion. He cannot be; I am with him, and I think I know many who would

join him. Suggestion will be of value for this sort of work for all time ; nothing will make it useless. Suggestive therapeutics has, however, certain disadvantages. One is that it is used by panacea-mongers. Suggestion is used as magic by people who do not know that it is magic and who think it is science. The moment you get to that position it is very dangerous. But, at the same time, I tell you frankly, we are experimenting with it ourselves. We have a general principle that nobody who has not had sufficient personal experience of analysis should be allowed to use suggestion, and I believe that to be a bed-rock safe line to go on. The only people who can be trusted to use suggestion without getting carried away with their own magic method are people who have had a definite and adequate experience of analysis. But, in spite of that, we, not long ago, made use of a gentleman who has a special method of suggestion which to some of us is apparently mumbo-jumbo ; but he himself believes in it with a pathetic earnestness. Provided that a person of that sort of therapeutic attitude is sufficiently carefully caged or tethered, or on the lead, he can be very useful. There always are a certain number of people with a low intelligence quotient for whom magic is essential for a cure. What would any of you do when an Aryan brother appears, greatly distressed and in a highly emotional state, and says that he has "failed his final Law examination for the third time, that he was so overcome with fear that he could not answer the questions?" If you start analysing your Aryan brother with that state of intelligence you are out for trouble, and he will not pass his examination that time, and perhaps not for many times to come. On the other hand, you turn him on to a gentleman who deals in suggestion, just in the crudest and simplest form, who believes in it himself with a passionate faith, and you leave the two of them together for a sufficient number of hours. And the Aryan brother, instead of returning to his country and getting his card printed "Failed LL.B.," will put "LL.B with Honours" instead. And that is an extremely desirable result, and it is a result which is achieved by the controlled and intelligent application of magic to a suitable case.

That is the sort of thing which turns up in one's work and which interests one. On a psycho-therapeutic staff of any size I value enormously people with varying standpoints. We have two perfectly good Freudians on our staff ; they are good as far as Freudism can be good ; and one of them did what Dr. Brown referred to : with the first case we gave him he "got away with it,"

and the Freudian transference started. And when I had dealt with him gently but with graduated firmness month after month, I finally said to him, "Miss Jones has had as much of your time and the clinic's time as she is going to have." He said it was impossible to leave her at present as the state of the transference was extremely critical. I have heard a formula like that. I said, "You must take her home; we have several people waiting." He took her home, and he has still got her: is still visiting him with great regularity, and the transference, as Dr. Brown pointed out, is continuing to work out its extraordinarily leisurely way. But he is a wiser man and a more elastic Freudian; and he now says, quite simply, "I am working out an abbreviated technique," and we all say to him, "Good man." We have two very prominent Adlerians, and most of us have a strong penchant for the Adlerian school. But there is more than that in it; when you have a staff which, on the active list, is forty in number, there is room for different people with advantage. We have a devout and intelligent Roman Catholic on the male side, and one on the female side too, and that is enormously valuable, because in the case of some Roman Catholic patients if they were handled by somebody with an analytical outlook who did not share their views, there would be a clash and a scrap, and no good would be done. And we have four married women on the staff, and that I am very glad of, because there are a great many of our patients who make far more rapid and easy contact with married women than with others; such patients appreciate that tremendously, and say, "It made such a difference to me when I knew that the doctor I had to go to was a married woman too."

So we have people with different outlooks and different possibilities of making contact with the patients, and it makes a great deal of difference in the quickness with which one gets through one's work. Some of the men who come as clinical assistants are a little difficult; there are those of the "highbrow" type, who have been taught so much that they have a conscious, or possibly an unconscious feeling that there is nothing more that they can be taught. That makes us welcome the highly-diplomaed and highly-degreed people less than one would have liked to welcome them. We get people who have been a number of years in institutions, four or more years in mental hospitals, and, there again, one is a little critical or doubtful about what their attitude will be towards positive psycho-therapy. Sometimes one finds they have broken away from institutional life as a personal expression of a desire for

freedom, and sometimes they are very ready to lap up anything that you can offer them. Sometimes, on the other hand, they are extraordinarily infatuated with the fascinating problem of whether a case is an early one of dementia præcox or an early paraphrenia, so that they forget to think out any ætiology or to give attention to any conceivable therapy. But the diagnostic maniacs are, of course useful; one is glad to call them in for some delicate piece of differential diagnosis. But one has to keep an eye on them to see that they are not just satisfied with their diagnosis, and that they are doing something active as well. Our great trouble in the clinic is that, and I think the thing most needed after a rational therapy is a leisured therapy. That is extraordinary difficult. A friend who is supposed to run the psycho-therapeutic department of a large hospital said to me, "I go down to the hospital single-handed on Wednesdays, and at 2.30 I see a waiting-room with 80 people in it, and I know that I have to see each of those 80 people and get away at 5.30, and it is simply a matter of mathematical calculation to know how many moments they each, on the average, can get." And he added, "The solution is one and one only: a cheery manner, valerian and pot. brom." And I agree with him. Unless we can ensure an adequate quotient of leisure in treatment, we shall drop down to this sort of work.

Prof. Robertson referred to the small beginnings. Small beginnings are excellent, but you must remember what it will work out at. After many years we have found that a very stable figure in our work is twelve hours per head; that is to say, that every new patient who comes to the clinic is going to take twelve hours, sooner or later, on the average. That means that there are a large number of patients whom you dismiss straight away, and a certain number whom you see only twice or three times, while there are a few patients who will get fifty or sixty hours of treatment; but the average works out fairly well at twelve hours per patient. And by a process of arithmetic you can realize what you will need in the way of doctors' time in relation to the number of patients you have. And when it does come to 400 or 500 new patients a year, the number of hours of treatment is going to mount up. Our figure last year was 7,500 hours of treatment, and it takes some doing to keep up with that. But if one can keep to a fairly steady ratio, not going over the twelve-hour average per patient, one can still claim for the out-patient psycho-therapeutic clinic that it is serving a really good purpose in keeping, at any rate, some people out of our mental hospitals.

Dr. HENRY YELLOWLEES (St. Thomas's) : I had no idea, Sir, that I was going to be asked to say anything, and therefore I have nothing prepared. But if a short and practical statement of experiences and of what I have done or tried to do in this matter is of interest, I shall be glad to say what I can.

I think that Prof. Robertson's summary of the situation was an admirable one, and I was interested to note that he said, not what Dr. Crichton-Miller attributed to him, that the ideal was association of the clinic with the mental hospital, but the reverse. Prof. Robertson said that the ideal was the association of the clinic with the general hospital. (Prof. ROBERTSON: Yes.) In any case it is a very interesting matter, because, as has been said, you can associate the clinic with the general or with the mental hospital, or it can be an independent one; and there is much that can be said for all three. At Wakefield there is an out-patient clinic, which is a flourishing one, in connection with the mental hospital only, and it will probably do better and even more valuable work after the new Act comes into law. At York I started an out-patient clinic in connection with the general hospital, and we did not make such a success of it as the Wakefield people did of the clinic in connection with the mental hospital there. And the question of title is interesting. We began by covering it up, in deference to the dread of the term "mental hospital," or "asylum," which has been referred to recently, and we called it the "Clinic for Functional Nervous Disorder." But after a year or two we found we did better when we called it what it was, a "Mental Out-Patients' Clinic," and we left it at that. I think that is significant. I am now associated with what was the first general hospital in this country to have a mental out-patient clinic, namely, St. Thomas's, and I will tell you my experiences in the hope that they may be of interest, and perhaps of help to some of you.

The first thing I have to say is that I have not, personally, experienced the least difficulty in relation to the neurological department, such as has been referred to. Prof. Robertson said, quite rightly, that the head of any mental out-patient clinic must be an experienced clinical psychiatrist. I did not quite follow Dr. Brown; I think he made rather too much of psycho-therapy as opposed to psychiatry. The greater includes the less; psycho-therapy I regard as only a branch of psychiatry. And while it is true, as we have heard again this morning, that the psychiatrists are sometimes slow to accept psycho-therapeutic knowledge and teaching

which is put before them, it is equally true that the pure psycho-therapist is liable to forget that there is more in mental work than psycho-therapy, and sometimes fails to appreciate the breadth of psychiatry. You cannot run a mental out-patient department unless you take a reasonably large view of the word "psychiatry." By my own choice I altered the number of sittings of the clinic from one a week to two, and the second sitting we arranged to fall on the same day on which my neurological colleague has his. We sit in adjacent rooms; and if there is a case which is on the borderline between the two branches or which is of common interest, we step into each other's room, and there is no difficulty or disturbance of the procedure in the clinic. The time factor is, of course, the critical thing, and few of us are in the happy position of Dr. Crichton-Miller, with such a magnificent staff as he has. The only thing which occurred to me about his staff is that none of them are allowed to undertake suggestion treatment until they have done enough analysis. (Dr. CRICHTON-MILLER: Had personal experience of analysis.) Does it not, therefore, also follow that none of his staff should do analytical treatment until they have had sufficient personal experience? And if so, how did they get it?

I would much value the opinion of Prof. Robertson as to the presence or otherwise of the social worker in the room. I thought that was a very important point. All of us who have experience of it will agree that the social side of this question is tremendously and increasingly important. I have been in consultation with the Lady Almoner's staff as to how that department can be of the best use, but they have not suggested that the worker should be present at the interview with the patient. I shall be glad if Prof. Robertson will tell us if it works, or if it does not have the effect to which Dr. Brown referred, of cramping the patient's style, as the presence of students does. We also have the difficulty of the presence of students. On one of my two days I welcome students, and on the other day I see the patients alone. And even on the day on which students come, if there is a patient who is seriously troubled by the presence of somebody else in the room I keep him until the end, and ask the students to go before I see him. But I agree it is a difficulty, and one which must be got over.

The importance of having beds is another matter, and only time will work this out for us. At present I and most of my colleagues in other London hospitals have either beds in our own names or the right, by the courtesy of medical colleagues, to take in patients whom we want to admit.

But we have to be very careful at this stage, because if one takes in a patient in whom there is a risk of suicide or accident, the whole tendency will be crippled, in the eyes of the hospital, for a long time. It is necessary to go slowly and carefully. I think Dr. Crichton-Miller must have been unfortunate in his experience of the "disposal" bogy. As long as one preserves a sense of proportion it is better, I think, than he experienced. I had a long Army experience, and I found it true that they want to get things moving, but if one preserves a sense of proportion one gets reasonably fair play.

And the same is true about one's colleagues in a general hospital. I think the division of patients into "drifters" and "primaries" is exceedingly good. We get the wastage from other departments, cases in which, having tried their best, physicians and surgeons cannot do more. We also get "primaries," and the term "mental department" does not trouble them; they are feeling queer and are glad of the treatment. And that is the great advantage of association with a general hospital; there is felt to be nothing derogatory or stigma-producing, and if people say it is a mental department they do not mind—they come. And it is fair to say that I have been very much impressed by the notes from the young and inexperienced casualty medical officers whose duty it is to sort out the newly-arrived patients who come to the department; this is *à propos* of the wastage question and the ignorant treatment of patients by general physicians. In eight cases out of ten, although made by an inexperienced house physician—a man who does not pretend to have had any training in psychiatry—the notes are extraordinarily good, and again and again I am lost in admiration of the sincere effort of the casualty man to realize the sort of case it is, and to send it to the appropriate department, with conscientious notes about it.

Two things, I think, have emerged from eighteen months' working. The first is, that after all, even with every expedient we can use, what Dr. Crichton-Miller said remains—that the time difficulty is the biggest, the almost fatal drawback to psycho-therapeutic treatment in an out-patient department. It is not suited for that. But, on the other hand, it is remarkable to my mind how clearly it has been shown that a theoretically absurdly small amount of psycho-therapeutic treatment may bring about a marvellous result in the patient; cases that, theoretically, will profit by nothing short of sixty or seventy hours of deep analysis, improve greatly on this shorter treatment. We do the best we can. And, in

spite of theory to the contrary, they do get better and become reasonably useful members of society. It is fascinating at the present moment to note the various lines along which this is going; the association with the mental and the general hospital and the independent clinic, and I do not think we can say which, ultimately, is the most desirable. But I hope that, in ten to fifteen years' time, it will have become more clear. I have two chief assistants; one is specially interested and skilled in psycho-therapy, and if there is any particular patient to whom we ought to give more than the average time of intensive psycho-therapy, he is handed over to this assistant, who sees him privately in his room and gives him the maximum time possible. I have another assistant who is particularly interested in, and good at, clinical psychiatry, and looks after the cases for whom intensive psycho-therapy is not only impossible, but is undesirable. We all see the new cases together, and allot them amongst ourselves on that scheme, and it works very well indeed.

One word in conclusion. It has been most interesting to me that my psycho-therapeutic colleagues sometimes refer to what one of them called an "intuitive ability" to know what is wrong with a case. It is not any more intuitive ability than all of us have who have clinical psychiatric experience, for the beginning and the end of a satisfactory mental out-patient department is that the man in charge of it shall know mentally sick people when he sees them; and I do not know how any man can acquire that until he has gone through the mill of dealing with the neurotic and the insane, and I do not know where he can go through the mill except in a good mental hospital.

Dr. R. D. GILLESPIE (Guy's): One of the advantages of coming in towards the end of a discussion is that there is not much left to be said. I was specially interested in what Dr. Crichton-Miller said. Dr. Yellowlees' experience coincides very much with mine in its results. I once tried it on patients who were not insane, and I concluded that on any one day in the year there were about three million possible patients. I feel that the time has come for an extensive development of out-patient therapy.

Dr. Crichton-Miller kindly referred to the arrangement at Guy's, and I might, therefore, mention our organization, with the preliminary remark that the amicable arrangement depends on the insight of my colleague, Dr. C. P. Symonds, who himself has had training in psychiatry. No case comes direct to Dr. Symonds or

myself ; we have clinical assistants of consulting rank ; patients are seen by them, and they come to us afterwards. That " seeing " includes physical examination. All of my colleagues have considerable experience in general medicine, and I keep myself in touch by attending Dr. Hurst's courses.

To avoid the muddling which has been referred to, I believe in trying to disseminate knowledge on psycho-therapy throughout the hospital. Besides these two clinical assistants, we have another clinical assistant who confines herself to psycho-therapy, and my chief clinical assistant, after he has seen the patients and sorted them out, devotes himself to cases which I refer back to him. We have a full-time social worker, and we have also other workers. With that equipment we are able to do some follow-up work now which we could not do before, and there is a good deal of visiting done in the homes. My house-physician also assists us when he has time. We meet three half-days a week, one session being devoted to children under sixteen. It is interesting to compare the results of the following-up of children with those of adults.

As to having others present at the interviews, I never exclude anybody whom I think should be admitted. Except in male cases when other questions arise, I have a social worker present, and on one day a week I have one or two social students present. It is surprising how much patients tell you, even in the presence of others, and I have never had a deputation sent to me to protest against the arrangement.

The department itself sees 2,000 new cases a year, and 400 come to the psychological side. With such a load of cases much of my work is advisory. I refer patients back to their doctors with a diagnosis and suggestions for treatment, but where the case requires intensive treatment which he cannot get from his doctor, we try to give it ourselves. But it is only in a small percentage that we can do that. We manage it partly by judicious selection, with a view to spending more time on the cases most likely to benefit.

With regard to suggestion, Dr. Brown said that suggestion could be and often needed to be carried out over a long period of time, so that it is not necessarily a saving method. I reserve it as a rule for those of low intelligence or defective education.

As far as the results are concerned, it is interesting to contrast the after-effects in adults and in children. I recently had 130 cases followed up whom we dealt with two years ago : 70 were adults, 60 were children. Of the adults, 34% showed themselves either cured or considerably improved ; in 30% the condition was

little changed. Ten were, when they came, obvious candidates for a mental hospital, and 7 of those 10 are still there. As to the children, I have a detailed table, but I may tell you, briefly, that 75% are either well or are considerably improved, that is to say, nearly twice as good a result as in the adults. The remainder are, mostly, *in statu quo*. That made me wonder whether there was any necessity for dealing with children in this way at all—whether they would not get better any way. I do find they get better quickly, and on a more stable basis than adults. I am interested in the personality deviations met with in children from the point of view of the prevention of psychoses later on; it is striking what we can do in changing the child's general attitude, and in training the necessary character traits.

Another point is that we have a psychological tester of some experience attached to the clinic who tests all the children and does the performance tests—a very helpful adjunct. It helps one in very important problems in those of school-leaving age, in adolescents and in mental bodily defectives. I suppose the two most important things in life are the work one likes and the wife one loves, and if you can sort children out and give them work which is congenial you will be going a long way in preventing a breakdown later. The aid of the psychological tester is very important, and it is one which can be developed very much in connection with the National Institute, for whose co-operation, some day, we may ask.

Mr. Brock, C.B. (Chairman of the Board of Control): Like Dr. Yellowlees, I did not come with the idea of speaking, but the course of the discussion, to which I have listened with great interest, has emboldened me to take part in it, not because I can teach you, but because I want to do the only thing a layman can do in the presence of doctors, and that is, to ask questions.

The discussion this morning has, naturally, centred on what you can do with the patient when you get him. I want to direct your attention to one or two other questions: How you are going to get the patient, and how you are going to link up your out-patient clinics with the rest of the machinery for the treatment of mental diseases. It is natural that I should look at it from that point of view, because, as an administrator, I am primarily concerned with the machinery side; I am not competent to consider the medical and therapeutic side.

I think there is much truth in the view held by my chief, Sir

Robert Morant, that if the machine is properly designed it will, in course of time, develop the right type of men and women to work it. That does not mean that any machine, however perfect, will produce Crichton-Millers for all; that is an impracticable ideal. But we have to consider not only what can be accomplished in occasional clinics which are fortunately circumstanced, with an abundance of skilled staff readily available; we have to consider, too, how we can bring some facilities within the reach of the people, wherever they happen to live, for whose care we are in some measure responsible. So far as the population of urban areas is concerned, it is a much simpler problem, but, apart from the people living in big cities, where the establishment of out-patient clinics, given good-will, is not a very difficult matter, we have also got the problem—and this is one of the questions to which I want to direct your attention—of what can be done not only for the people in the rural areas, but also for those in the semi-rural areas and the smaller towns. It has occurred to me to-day whether it might not be worth while to consider the possibility, if you cannot get patients to the clinics, of arranging for men to take the clinic to the patient—arranging for men, at suitable intervals, to visit small centres at which one or more patients could be collected to be dealt with by them. As a means to that end, I think we might find that at any rate the difficulty in regard to premises might be got over by utilizing for this work premises already being used for school clinics. They are not needed in the evenings, and it is in the evening that it is most likely patients will attend these clinics, as, ordinarily, the trouble is not sufficiently bad to compel the man or woman to give up his or her employment. It is well worth while considering whether it might not be possible, by co-operation between general and mental hospitals to organize something of the nature of a travelling clinic, which would bring the initial stage of treatment within the reach of everybody who lives within a reasonable distance, because I visualize the out-patient clinic as only the first link in the chain which we have got to construct. It is true, as the experience of our President has shown, and shown very forcibly in Oxford, and as has been demonstrated elsewhere, that the successful out-patient clinic will save a considerable number of patients from having to come to the mental hospital at all. But, important as that service is, it is almost equally important that the out-patient clinic should be used as a catchment-area to attract voluntary patients. I do not think we shall get patients into mental wards of general hospitals or into mental hospitals unless we can first win

their confidence in the out-patient clinic, and we must win the confidence of the doctors as well as of the patients. From that point of view the development of clinics, even though they may not be as well staffed as we should like to see them, is very important, because without that I do not think you will get the patients into the mental hospital as early as you should, nor will you get the full value of the new liberty to treat patients on a voluntary basis.

There is another function which the out-patient clinic, as I visualize it, has to fulfil. I look forward to the time when, in addition to the public mental hospitals, there will be in all teaching hospitals—and, I hope, in a large number of non-teaching hospitals—a psychopathic unit, or at any rate wards, for the treatment, not only of definite mental disease, but also of borderline cases, so that those cases who exhibit physical symptoms, or are suspected of being complicated by physical symptoms, can be thoroughly investigated with the resources which are available, and are only available, in the general hospitals. Therefore I look to the out-patient clinic as not only the catchment-area through which you will get your voluntary patient, but also as a sort of sieve which will help you to distinguish between the cases which can best be sent to the psychopathic unit or mental ward of a general hospital, and the cases which can best be sent to the mental hospital. I do not ever want to see all cases of mental disorder, or of suspected mental disorder, sent to the general hospital; it would have a bad psychological effect on the patient, as he would feel, by the time he reached the mental hospital, that he was "done for"—that no good could now be done for him. But I recognize that there are cases which can be better dealt with in the general hospitals, and in the process of selection a well-organized out-patient clinic might be of enormous importance.

There is another thing which I want to see the out-patient clinic do. I am glad previous speakers emphasized the importance of supplementing the medical work of the out-patient clinic by social services. I was struck, last September, when visiting the Rouselle Hospital, in Paris, with the importance they attach to their social services, because of the value of knowledge, not only of the home circumstances of the patient, but also of the antecedent difficulties which may have aggravated his condition; and also because there are many cases in which, when you have done what you can do for your patient, it is vitally important that he should not return to the old harassing, aggravating conditions which started the trouble before. So I want to see the social worker not

only making the initial inquiries which are so valuable to the physician, but also doing what is possible to see that when the patient goes back the old difficulties have been removed, and that when he has been following an occupation which is bad for him and for which he is not fitted, some new and less harassing occupation shall be found for him. I hope that if in that way we can secure the confidence of patients, they will look to the out-patient clinic as the first place to which they will return if at any time they feel a recurrence of their old symptoms. That is to say, I do not want it to be concerned only with the patient who has never been in hospital before, but with the medical after-care as well. And if that is so, not only the more valuable will it become, but the more rapidly will it secure what is so essential to our success—the confidence of the public and the confidence of the general practitioner.

Dr. NOBLE (Australia) : I have been thinking, Sir, that in such a very interesting discussion as this it might be well that someone outside of Great Britain should have a few words.

I regard this discussion as one of the very best that I have ever attended. The field has been very well covered by the various speakers, and these speeches have shown us that in this country the problem of out-patient treatment is being very widely and very satisfactorily tackled. As a result of this discussion we shall agree that the success of these clinics depends mainly, no matter what method is adopted, on the personality of the workers in that field. The methods suggested by Prof. Robertson—association with a general hospital, or a mental hospital—are very valuable and necessary, and depend on the circumstances and the environment in each case ; they are all needed, and all have their place. As far as general hospitals are concerned, it is essential to have beds in association with the clinic. Dr. Yellowlees mentioned the difficulties one has when commencing a clinic. The Council thinks we shall be a nuisance, and say they will give us a few beds to see how we get on. At Sydney we find that when there is trouble in the general hospital it is not on the part of the patients under the psychiatrist, because we have seen those cases and we know which are suitable for being kept in general wards. The difficulties arise in patients belonging to surgeons and physicians. We are reluctant to send patients from the general hospital because we have not a separate block in which to treat them. But in Australia we have succeeded in getting separate buildings in conjunction with general hospitals, and I think that is ideal, and for this reason : all our systems are

working well, as far as they have gone, but we must look to the future. The field is a tremendous one. We have seen what wonderful buildings they are erecting in America, and we have come back from America knowing that the leaders there complain that though they have excellent equipment they have not the trained psychiatrists in sufficient numbers; in other words, they are deficient in man-power in the specialty. And the same applies here in this country. To get these men one needs association with a general hospital connected with a university. Therefore we must develop along those lines, so that medical students will, during their training, understand that the patients who come before the general practitioner are personalities, not "cases." This necessary work can be done better by the psychiatrist in a general hospital than by any other teacher in the hospital. Therefore I say it is most important that we should have these clinics in association with a general hospital at a university centre, so that we can attract the undergraduate and induce him to take an interest in our subject. Then house physicians and house surgeons can attend our department, and we do find that a number of them take an interest in the subject. In that way we can build up a team of useful workers.

Another aspect of importance is the child-guidance clinic, and there again it is difficult to organize that work apart from the general hospital. It succeeds in America largely, but in our smaller communities we get children better by working in children's and general hospitals than by separate agencies.

Mr. Brock mentioned the difficulty in rural areas. In New South Wales we have, in conjunction with the educational system, a travelling clinic which goes through the country. On that clinic are several psychiatrists. It is a good system, because by it, children the subjects of psychological difficulty are secured early, and it is a good method for following up.

Another aspect of the work which would be a great help, but has not been mentioned, is that of mental hygiene in the universities themselves. In Oxford and Cambridge you have excellent fields for that work, and much useful work of that kind is being done elsewhere. Some undergraduates have problems peculiar to themselves, as well as like problems to the rest of the community. The recent tragedy at Cambridge would be a good text for such bodies as this to have facilities for helping undergraduates. It has already been well exploited in Canada and the United States, and it should be considered carefully here, because not only will you thereby help the students, but you will teach intelligent men and women about

our subject, and so get a wider sympathy with psychological medicine throughout the community, and that is a necessary thing to do.

I thank you, as a member of the Association who lives far away, for the benefit of having had the opportunity of hearing such an excellent discussion.

Dr. D. SLIGHT (McGill University, Montreal): It has been of great interest to me to be present and hear the various view-points. I myself have an appointment in a general hospital. One thing which has been touched on to-day is the need for taking a general view-point on the part of the psychiatrist. We have heard discussed the relation of medicine to psychiatry. Frequently men say, "Should not I be a neurologist?" I say, "Yes, and after that go and learn to be a general physician." I think it is pathetic to imagine that the only way for psychiatrists to see cases is through a special clinic. We psychiatrists who are connected with general hospitals and medical schools and are teaching students are using this subject as an introduction to the general study of medicine. I am fortunate in the co-operation I receive from my colleagues. I receive my cases from the other departments in hospital, and refer cases back to them. We are called "psychologists"; it is a joke; but we have to sell the subject to them on their own terms. We have got to be prepared to talk some amount of surgery with the surgeon, some medicine with the physician, and so on, and I plead that we psychiatrists will be in a more fortunate position if we are to take our place as reputable men in the general medical field if we take a broader view. It is unfortunate if we allow ourselves to be looked upon as pure psychiatric experts, or as "neuro-psychiatrists"—an unfortunate term. We should be very careful, otherwise we shall get into trouble and bring the subject into grave disrepute.

Sir HUBERT BOND said the subject was a very important one. He would, as time was short, avail himself of the invitation to contribute his quota to the discussion in writing. It must be a great delight to the President, who had devoted something like twelve years of intensive work to this particular subject, to see how it had grown, and was still growing in the minds of those in this department. It would dominate the method of approach as soon as the Mental Treatment Act began to have its way. One point which had been missed was the connection of the mental with the physical

examination of the patients. What was to be done in that regard, and which was to have the prominence? Were the two to proceed *pari passu*, or was one to have precedence of the other?

Prof. ROBERTSON, in reply, said: I cannot, at this late hour, Sir, enter into a reply on all the details of this discussion. But I may say I think there is little doubt that we have come to a critical point in the history of psychiatry in this country, and that a great deal depends on this question of opening out-patient clinics. We are not concerned with the development of magnificent institutions, such as Dr. Crichton-Miller's; what we have to do is to raise the standard of clinics and introduce them into those parts of the country where they do not at present exist. I agree with Mr. Brock that this is going to be one of the means by which the ideas of physicians in mental hospitals will be brought into contact with the public and with general practitioners, so that the treatment of our patients will no longer be confined to the mental hospitals. Our work must be extended in all directions among the community. Even the starting of out-patient clinics in a modest way is the thin end of the wedge, for before long the practice will extend; and in this way we shall be able to get the full benefit of the Mental Treatment Act.

As Mr. Brock said, How are we to get voluntary patients into our mental hospitals? This is one of the methods by which it can be done. And there will be two other effects. There will be earlier and preventive treatment, and ideas that the mental hospital is a place of stigma will be greatly minimized. The second is, that you will educate the general practitioners of the country. One of the difficulties at the present time is that the general practitioner, and even the eminent consulting physician, does not realize when he comes up against a mental case. I know this in connection with my former position in Edinburgh. Any physician in the hospital could ask me to see any case in his ward with which he had a difficulty from the mental point of view. Some physicians asked me to see them every fortnight, but other physicians never asked me to come into their wards, and when I hinted that they must have such cases, they told me they had not. I know such cases exist, but some physicians do not realize their existence and what can be done for them by calling in mental specialists. Too often, as Dr. Crichton-Miller and Dr. Yellowlees said, it is only when they find they cannot do anything more for the patient, who has been first a medical case,

then a surgical one, that they send him along to the mental out-patient department, to see what the psychiatrist can do.

Another problem that has arisen in the discussion is the teaching of the medical student. The out-patient clinic is a very good place for the medical student to see these cases, and I think more importance should be attached to the teaching of psychiatry and psychology in the medical curriculum than at the present time.

All these things are connected together, and the subject extends in so many directions and involves so much in connection with social life, education and medicine that I hope all will put their minds to this question and help with the solution.

[A contribution to the subject by Dr. LORD will appear in our next number.—Eds.]

THE SIGNIFICANCE OF CHOLESTEROL IN CELLULAR OXIDATION AND ITS BEARING ON MENTAL DISORDER.

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STEROLS, such as cholesterol, phytosterol, etc., are present in all animal and vegetable tissues, and play a most important rôle in physiological and pathological processes. For example, it is well known that cholesterol has a powerful influence in aiding complement fixation in sero-diagnosis—it checks the action of lipolytic enzymes and inhibits the hæmolytic action of saponins and cobra venom on erythrocytes. It is an important factor in giving cells their power of holding large quantities of water without losing their peculiar semi-fluid characters and without dissolving. Citron (1) states that '1 c.c. of an emulsion of central nervous system neutralizes three times the fatal dose for mice of botulism toxin and that lecithin and cholesterol act similarly.

A *résumé* of certain investigations respecting the significance of cholesterol and lecithin in metabolism will now be given and the results considered.

(1) EXPERIMENTAL EVIDENCE OF THE INFLUENCE OF CHOLESTEROL ON FERMENT ACTION AND OXIDATION PROCESSES.

Certain washed erythrocytes are hæmolyzed by cobra venom and others are not. This appears to be dependent on the proportion of cholesterol to lecithin in these corpuscles. For example, the red corpuscles of the rabbit are readily hæmolyzed by cobra venom, and the percentages of cholesterol and lecithin in them are $\cdot 072$ and $\cdot 490$ respectively, while the corresponding percentages in the case of the sheep, whose corpuscles are entirely resistant, are $\cdot 380$ and $\cdot 410$ respectively. The hæmolytic power of cobra venom

is considered to depend on the presence of an enzyme which has the remarkable property of acting on lecithin by hydrolysing its unsaturated fatty acid groups. Levene has suggested the name of "lysolecithin" for this compound. This lysolecithin has powerful hæmolytic properties, but it also has a marked affinity for cholesterol, and the loose compound resulting is devoid of hæmolytic properties. The following table of results, using washed sheep's corpuscles, illustrates the effect of lecithin in facilitating hæmolysis and the inhibiting action of cholesterol :

Venom 1/5000 in N.S.	1 c.c.	1 c.c.	1 c.c.	1 c.c.	1 c.c.
Sheep's corpuscles, 4% in N.S. . .	'5 ,,	'5 ,,	'5 ,,	'5 ,,	'5 ,,
N.S.	'5 ,,	'25 ,,	..	..	..
2% lecithin in N.S. . . . .	..	'25 ,,	'25 c.c.	'25 c.c.	'25 c.c.
4% cholesterol in abs. alcohol . .					
1 in 5 N.S. . . . .	..	..	'25 ,,	..	..
1 in 10 N.S. . . . .	..	..	..	'25 c.c.	..
1 in 20 N.S. . . . .	..	..	..	..	'25 c.c.
	N.H.	C.H. in 50 min.	C.H. in 50 min.	C.H. in 25 min.	C.H. in 14 min.

N.H. = no hæmolysis ; C.H. = complete hæmolysis ; N.S. = normal saline.

In order to prevent the hæmolytic effect of the venom ferment, it is therefore necessary that cholesterol shall be present above a definite amount in proportion to the lecithin present.

The influence of cholesterol on the oxidation of lecithin will now be considered. Cholesterol and lecithin alone, and certain mixtures of them in definite proportions, were subjected to the action of potassium permanganate solution for varying lengths of time. The quantities were all dissolved in 5 c.c. CCl_4 , and 50 c.c. of a standard permanganate solution added to each. The quantity of oxygen absorbed was found by the well-known iodine and thio-sulphate method. During the time of action the mixtures were kept in the dark and frequently shaken. The results are as shown in the next table.

It will be seen that the amount of oxygen absorbed by cholesterol (columns 2 and 3) is negligible, while that absorbed by lecithin (columns 4 and 5) is very considerable. Comparing columns 4 and 6, it will be noted that the addition of cholesterol to lecithin in equal amounts inhibits the power of oxygen absorption by lecithin to the extent of 75%, and from columns 4 and 8 it will be noted that one part of cholesterol almost entirely inhibits the absorption of oxygen by three parts of lecithin, .05 grm. of lecithin alone absorbing

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
Material.	Control KMnO ₄ solution.	Cholesterol.	Cholesterol.	Lecithin.	Lecithin.	Cholesterol and lecithin.	Cholesterol and lecithin.	Cholesterol and lecithin.	Cholesterol and lecithin.	Cholesterol and lecithin.	Cholesterol and lecithin.
Quantity of cholesterol and lecithin (gram.)	..	·05	·05	..	..	·05	·05	·05	·05	·05	·05
c.c. N/10 sodium thiosul- phate used	32	32	31·8	26·2	19·1	30·4	29·9	26·5	19·5	27·0	24·3
Oxygen ab- sorbed (mgrm.)	Nil	Nil	·14	5·08	11·2	1·4	1·84	5·12	2·5	4·31	7·0
Time	2 hrs.	2 hrs.	5 dys.	2 hrs.	30 hrs.	2 hrs.	2 hrs.	2 hrs.	24 hrs.	24 hrs.	24 hrs.

practically the same amount of oxygen as does ·20 gm. when associated with ·05 gm. cholesterol. Other considerations are also evidenced, *e.g.*, comparing columns 4 and 9, the inhibition exercised by cholesterol is obviously both powerful and prolonged.

Reverting to the relation of cholesterol to enzyme activity, it is noteworthy that when fresh human serum is added to cobra venom hæmolysis of sheep corpuscles is effected, but when the serum is inactivated at 56° for 30 minutes hæmolysis does not take place. This thermolabile substance present bears no relation to complement—in fact it seems to vary indirectly to it in a given serum. It would appear to vary directly with blood cholesterol, since in cases of recurrent mania with excess of cholesterol it tends to be more active than in cases of dementia præcox containing less than normal. In other words, it would seem to be an attempt on the part of the organism to counteract the disproportion of cholesterol to lecithin. When the latter is in relative excess this thermolabile substance diminishes, and contrariwise when cholesterol is in excess. The following is an example :

1/5000 venom in N.S.	.	.	.	.	.	.	.	1 c.c.	.	1 c.c.
3% sheep corpuscles	.	.	.	.	.	.	.	·5 "	.	·5 "
N.S.	.	.	.	.	.	.	.	·2 "	.	·2 "
Fresh patient's serum :										
Case of dementia præcox	.	.	.	.	.	.	.	·3 "	.	..
" recurrent mania	.	.	.	.	.	.	.	..	.	·3 c.c.
								C.H. in		C.H. in
								10 minutes		4½ minutes.

C.H. = complete hæmolysis.

This is evidence of an attempt on the part of the organism to accelerate ferment action in order to counterbalance the inhibiting effect of excess of cholesterol on oxidation processes.

THE INFLUENCE OF LECITHIN AND CHOLESTEROL ON SURFACE TENSION AND DIFFUSION OF CERTAIN IONS.

By adaptation of the torsion balance, *viz.*, the suspension of a platinum ring on the surface of the fluid by means of a thread and estimation of the pull in milligrammes necessary to make the ring part company with the fluid, a simple and accurate method of estimating surface tension was devised. 50 c.c. of a 1% solution of glucose in distilled water to which 1 c.c. of alcohol had been added gave a reading of 384 mgrm. Subtracting 115 mgrm. from this—the weight of the platinum ring and thread—the pull exercised by the surface tension amounted to 269 mgrm. A similar amount of the glucose solution, to which 1 c.c. of an alcoholic solution of cholesterol was added, resulting in a colloidal cholesterol suspension containing .1% of cholesterol, showed a reading of 340 mgrm., *viz.*, a pull of 225 mgrm. The addition of the cholesterol, therefore, caused a lowering of the surface tension by 44 mgrm.

It is of importance to note that cholesterol, when present in colloidal suspension, causes a much greater alteration in surface tension than when it exists in solution. Thus the surface tension of olive oil shows a reading of 102, and the addition of .5% cholesterol only reduces it to 100, and 1% to 95. Since substances which lower surface tension tend to accumulate at the periphery, cholesterol will be in strongest concentration in and about the cell walls, and therefore exercises considerable effect on cellular metabolism so far as diffusion, nutrition and protection from extrinsic toxins are concerned.

The following tables illustrate clearly the effect of lecithin and cholesterol on the diffusion of K and Na ions. Tables A, B and C show the results of diffusion experiments using sodium and potassium salts as the crystalloid, with lecithin (brain extract, alcoholic, dried) as the colloid. Table C gives the results of experiments using a membrane impregnated with cholesterol.

DIFFUSION EXPERIMENTS: COLLODION MEMBRANES; 36 HOURS' DURATION.

TABLE A.—*The Effect of Lecithin on Mixtures of Na and K Salts. 1% Colloidal Lecithin in Distilled Water.*

	1.	2.	3.	Control.
Within membrane:				
Distilled water	10 c.c.	10 c.c.	10 c.c.	10 c.c.
Na ₂ CO ₃	50 mgrm.	25 mgrm.	10 mgrm.	25 mgrm.
K ₂ CO ₃	50 "	25 "	10 "	25 "
Lecithin	50 "	50 "	50 "	..
Outside membrane:				
Distilled water	30 c.c.	30 c.c.	30 c.c.	30 c.c.
After dialysis: Solution left outside membrane:	22 "	23.2 "	22 "	25 "
Water absorbed	8 "	6.8 "	8 "	5 "
Total solids dialysed	45%	50%	50%	60%
K ₂ CO ₃ dialysed	16.3%	10%	11%	21.4%
Na ₂ CO ₃ dialysed	28.7%	40%	39%	38.6%
Ratio K to Na.	1:1.76	1:4	1:3.6	1:1.8

TABLE B.—*The Effect of Brain Extract Within the Membrane on K Salts Outside Membrane.*

	1.	2.	3.	Control.
Within membrane:				
Brain extract	2 grm.	1 grm.	.05 grm.	..
Distilled water	10 c.c.	10 c.c.	10 c.c.	10 c.c.
Outside membrane:				
KCl	50 mgrm.	50 mgrm.	50 mgrm.	50 mgrm.
Distilled water	30 c.c.	30 c.c.	30 c.c.	30 c.c.
Quantity KCl dialysed	19 mgrm.	24 mgrm.	22 mgrm.	14 mgrm.
Per cent. KCl dialysed	38%	48%	44%	28%

TABLE C.—*Collodion Membrane Impregnated with .2% Cholesterol Tested against Plain Collodion Membrane as Regards Diffusion of Na and K Salts.*

	NaCl.		KCl.	
	Cholesterol membrane.	Plain membrane.	Cholesterol membrane.	Plain membrane.
.8% N.S. inside membrane	50 c.c.	50 c.c.	.1% KCl sol. inside membrane	40 c.c.
Distilled water outside membrane	50 "	50 "	Distilled water outside membrane	40 "
Amount of salts diffused out	.078 grm.	.23 grm.	Amount of salts diffused out	.0029 grm.
Percentage of salts diffused	19.8%	57.5%	Percentage of salts diffused	6.4%

The following conclusions are of importance: From Table A it will be observed that lecithin seems to have a retentive action on potassium ions within the membrane. The sodium ions dialyse unchanged in comparative concentrations. Table B shows that as more potassium ions pass through the membrane, from without inwards when brain extract is present within, than in the control experiment. Regarding Table C, here it is possible that the cholesterol has lessened the molecular spaces in the membrane, and thus slowed up the diffusion. The percentage diffusion is markedly lessened with both salts, but more so with the potassium.

The quantity of cholesterol per sq. cm. of membrane is extremely small; the membranes used were very thin.

CATAPHORESIS.

Emulsions of varying quantities of alcoholic solutions of lecithin and cholesterol were made up in a .1% Na_2CO_3 solution. An amount of each concentration was used in the respective emulsions, so that the total colloid present should remain the same. The voltage used was 120 for 15 minutes in all cases.

Concentrations.		Velocity of particles (cm.).
Lecithin alone		1.0
Cholesterol and lecithin	1 : 1	.5
"	" 1 : 2	.5
"	" 1 : 3	.6
"	" 1 : 4	.8

From this it would seem that cholesterol has a restraining effect on the anionic movement of lecithin.

It was extremely difficult to find a suitable electrolytic medium for suspension of cholesterol alone in colloid form, and not possible to use Na_2CO_3 , but it was eventually found that a perfect colloid was obtained by using .1% glucose solution and forcing into it an alcoholic solution of cholesterol, giving a final concentration of .1% cholesterol—a similar method to that adopted with Na_2CO_3 . In this cholesterol colloid the velocity of the particles was found to be .3 cm. in 15 minutes. This observation corroborates the above findings.

LIPOID CONTENT OF BLOOD IN CERTAIN CONDITIONS.

Process for total cholesterol in blood and tissue.—10 c.c. to 20 c.c. of blood or 5 grm. of tissue is taken. The blood is drawn off and

immediately forced into 50 c.c. of absolute alcohol and allowed to stand for two hours. The tissue, brain or liver, etc., is cut up finely and treated in 30 c.c. absolute alcohol for two hours, then more finely ground in a small mortar. The following steps apply to either blood or tissue: The mass is filtered through a fine filter-paper on a Buchner funnel and washed with hot alcohol, using about 100 c.c. Then about 30 c.c. of ether is slowly poured through and the pump left running until the filterings are dry. The filtrate is set aside. The mass on the filter-paper is then powdered, placed in a fat-extraction thimble in a Soxhlet apparatus and extracted with ether for about four hours. The extract is then added to the original filtrate. The ether is now evaporated off on a water-bath, care being taken to extinguish the flame. About 10 c.c. distilled water is added, together with 2 grm. KOH, and this is stirred into the remaining alcohol. The whole is now evaporated to dryness, during which process saponification of the fats takes place. 75 c.c. distilled water is added, the soaps dissolved and the solution placed in a separating funnel. 75 c.c. of ether is now added, and the separator contents shaken briskly for about one minute.

A few drops of chloroform added to the ether aids the solution of the cholesterol. Separation takes place overnight. The bottom layer is run off into another separator. The ether layer is washed with a little water, and this water added to the above. In the second separator the same procedure is carried out as for the first, with similar quantities of extractive. A third extraction completes this step in the process. The ether extracts are added together and delivered into a weighed flask, the ether evaporated off in hot water, the flask placed in vacuum in a desiccator until thoroughly dry, then weighed.

Test of the process.—20 mgrm. of cholesterol was added to 10 c.c. of defibrinated sheep blood, the cholesterol content of which was previously ascertained. The process was carried through as above.

After deducting the quantity originally present in the blood used 21 mgrm. cholesterol was recovered—a quantity very slightly increased, but well within the range of experimental error.

Process for phospholipin (ether-alcohol soluble phosphorus) in blood and tissues.—The technique in the first steps is similar to that for cholesterol, the only difference being that the ether-alcohol extract is evaporated with 2 grm. phosphorus-free calcium carbonate to dryness. The mass is then ignited until all organic matter is driven off, cooled, and about 50 c.c. of water added. The mixture is

now treated with hydrochloric acid in excess, slightly heated until solution takes place, and filtered. To the filtrate an excess of ammonium hydroxide is added, producing a precipitate of calcium phosphate. This is dissolved in excess of nitric acid and the solution boiled for a short time. Ammonium molybdate solution, specially prepared in the laboratory, is now added, sufficient to precipitate the phosphorus. The yellow precipitate is allowed to settle, filtered, washed well with dilute HNO_3 , dried and weighed on a porous glass filter. From this figure, using suitable factors, a very fair estimate of the quantity of phospholipin calculated as lecithin can be obtained.

BLOOD CHOLESTEROL: RESULTS.

Primary Dementia.

	Percentage of whole blood (grm.).	Age.
A. M— . . .	·030 . . .	38
R. M— . . .	·055 . . .	32
J. D— . . .	·035 . . .	30
A. A— . . .	·067 . . .	26
F. W. I— . . .	·030 . . .	38
H. L— . . .	·034 . . .	25
M. F— . . .	·085 . . .	32
W. N— . . .	·075 . . .	34
D. H— . . .	·055 . . .	25
J. W— . . .	·050 . . .	16

The blood phospholipin, calculated as lecithin, varied within very small limits, the average of all cases being ·32% of whole blood. We found the normal figure to be ·30%.

Recurrent Mania.

	Percentage of whole blood (grm.).	
*H. F— . . .	·10 . . .	Fairly normal at present.
†A. R— . . .	·32 . . .	Just recovering from an attack.
E. R— . . .	·19 . . .	Proceeding towards an attack.
A. J. T— . . .	·24 . . .	Just recovering from an attack.
J. W. D— . . .	·34 . . .	During an attack.
E. H— . . .	·18 . . .	Fairly normal at present.
*H. F— . . .	·46 . . .	During apex of attack.
†A. R— . . .	·22 . . .	Much less excited.

The phospholipin in this condition does not vary very much from normal—not sufficient to merit any comment. The average figure equals ·313% of whole blood.

In primary dementia the average ratio of phospholipin to cholesterol is as 6 : 1. The same ratio figure during the attack of mania is as 1 : 1. Normally this ratio is slightly over 2 : 1.

Cholesterol Content of Brain.

Name.	% of cholesterol (grm.).	Amount in both hemispheres (grm.).	Case.
F. M. H— (F.)	2.82	30.0	Fairly normal.
A. R— (F.)	1.87	18.52	C.V.D.
H— (F.)	1.90	19.0	Epilepsy.
C. H— (M.) . . . . .	.52	5.38	G.P.I.
C— (M.) . . . . .	.62	6.44	"

Cholesterol and Phospholipin in Medulla and Pons (mixed).

C. B—	Fairly normal brain	Cholesterol	6.4
		Lecithin	6.72
		Ratio cholesterol to lecithin =	1 : 1.52.

NITROGEN METABOLISM.

Processes.—The total nitrogen was estimated by the Kjeldahl method, the urea nitrogen by the hypobromite method. This method gives rather high results, and the error was found experimentally and deducted in each case. The ammonia nitrogen was estimated by Shaffer's vacuum method, the creatinine by the Jaffee reaction, finishing in a Dubosc colorimeter.

The study of the nitrogen metabolism was carried out in twelve cases of primary dementia. The patients under consideration were all given the same diet. Three days were allowed to elapse, then a 24 hours' collection of urine was obtained. The protein in the diet was then increased by 50% and continued for three days, at the end of which period another 24 hours' sample of urine was taken. During these periods any food left was weighed and deducted from the individual's diet. The total volume of urine was taken, and immediately preserved by the addition of a few c.c. of thymol in chloroform preparatory to analysis.

Diet.

Protein	94	grm.	per head	per day.
Carbohydrate	342	"	"	"
Fat	57	"	"	"

In the second study 50% more protein was added daily.

Results: Average of Studies; Daily Excretion in Grammes.

	1. Ordinary diet.	2. Increased protein diet.
Total nitrogen	10·91	10·84
Urea „	9·92	9·70
Ammonia nitrogen	·40	·52
Creatinine	1·44	1·62

It would appear from the fact that the increased protein diet has had no effect on the nitrogen output, that cellular metabolism in dementia præcox is not capable of stimulation in this way. The normal response would be a definite increase of urea nitrogen.

DISCUSSION AND CLINICAL CONSIDERATIONS.

Attention has been previously drawn by one of us (3) to the fact that, by analogy with exactly similar states present after death from malaria definitely associated with lack of oxidation, the arachnoidal opacities and congestive areas in the meninges met with so frequently in *post-mortems* in cases of mental disorder are probably due to deficient oxidation and to the demand of the neuron for oxygen. As regards nervous metabolism, certain outstanding facts strike one at once: firstly, the enormous amount of oxygen consumed by the brain of a waking animal, *viz.*, 360 mgrm. per gramme per minute, as compared with that of skeletal muscle—4 mgrm.—and of salivary glands—28 mgrm.; secondly, the high percentage of phospholipins present, substances intimately bound up with the activation of vital processes; and thirdly, the presence of cholesterol in great excess as compared with other tissues. Cholesterol must obviously be of great importance in nerve metabolism, and from the evidence now put forward, experimental and clinical, it cannot be doubted that its ratio to the phospholipins is a fundamental factor in the pathology of certain forms of mental disorder, and that determination of the blood-cholesterol content is essential to correct diagnosis. It is well, perhaps, here to lay emphasis on the fact that gravimetric estimations should be employed, as the colorimetric methods at present in use have serious defects, leading to erroneous results.

It is a well-known property of phospholipins that they oxidize readily and spontaneously. Matthews (2) states: "The fact that this fundamental stratum of living matter has the power of taking up oxygen, of burning itself and possibly inducing oxidation in

substances dissolved in it, is of the greatest importance for the theory of the mechanism of respiration, since all protoplasm has also the power of reduction or auto-oxidation." Further, "It is very suggestive that the oxidized phospholipin has a much greater affinity for water than the unoxidized. Possibly this process may play a part in cell mechanics, since most movements in cells are apparently due to this changing affinity for water. By oxidation the phospholipin may be made to take up water—by reduction, to lose it." To effect this we have now demonstrated that it must be delicately balanced with an appropriate amount of cholesterol.

The affinity of lecithin for water is clearly evidenced in Table A.

Quite recently it has been shown by workers in Japan (9) that calcium and cholesterol injected into rabbits cause histological changes in nerve-cells, indicating a dehydration or shrinkage of the cell, while lecithin and potassium, contrariwise, cause a swelling or hydration.

The amount of cholesterol present in normal blood is .15 grm.% and of lecithin .30, and such a ratio would seem to be necessary for the adequate control of oxidation processes. Decrease the cholesterol and the lecithin is at once attacked, as there is little variation in the percentage of lecithin. The seriousness of any alteration, especially diminution, in the cholesterol content is apparent.

It is presumable that just as phosphate activates oxidative processes in ordinary fermentation, so the phospholipins accelerate the energizing of protein, sugar and fats, and that such action is regulated by the amount of cholesterol in association with them.

The union of cholesterol and lecithin would appear to be one of adsorption, as shown by the cataphoresis experiments. The charge on the cholesterol particles is slightly anionic, and intermediate in degree between the markedly anionic charge on lecithin and that of albumens and globulins, which is cationic. In the medium in which it exists in the body fluids it is possible that it may act in an amboceptor-like fashion.

Owing to the excessive demands of nervous tissue in respect of oxygen, any lack on the part of the blood will at once result in disordered functioning of the neuron. How will it respond? By increased action of its endocellular ferments and stimulation of the energizing mechanism of the systemic organization—gonads, thyroid, adrenals, circulatory apparatus, etc. If this state of anoxæmia persists the result must be neuronal exhaustion, hyperactivity of the sympathetic system and various ductless glands, general imbalance, serious disorder of cellular metabolism, and

eventually neuronal deterioration and destruction. Consequent on this there will be a state of cellular acidosis.

Hypercholesterinæmia, which we have shown to exist in certain states of mania, will, owing to abnormal inhibition by the excess of cholesterol, result in an anoxæmia of the tissue-cells, but it is obvious that anoxæmia produced in this manner will have a less destructive effect on the neuron, since ferment action will also be inhibited. The hypercholesterinæmia associated with the climacteric period (4) is of much interest in connection with the nervous pathology of this time of life, and since quite recently a hypercholesterol content of tissues has been noted (5) as a factor contributing to the preparation of a precancerous ground, this may have some bearing on the lower mortality from cancer in the population of mental hospitals, since such a large proportion are subjects of dementia præcox. The remarkable deficiency of cholesterol in the brain of general paralytics is worthy of note, and it is an interesting speculation whether some deficiency of this nature may not in certain cases of syphilis have a bearing on the initiation of infection of the central nervous system.

As regards treatment, the indication is, of course, restoration of the normal blood cholesterol as quickly as possible, and recovery will obviously depend very largely on recognizing the condition at an early stage before the neuron is irretrievably damaged.

With regard to pyretotherapy, increased body temperature will, of course, tend to mobilize cholesterol, and temporarily result in its increase in colloid form in the body fluids.

Other points of interest in relation to the cholesterol blood content are the facts that there is evidence of its increase after castration and splenectomy (6), and that a distinct diminution is caused in dogs by thyroid feeding (7), best marked when the symptoms of thyroid excess are most pronounced.

In view of the frequency with which profound degenerative changes are noted in the adrenal cortex at *post-mortems* in cases associated with certain forms of mental disorder and infection, the relation between the cholesterol blood content and adrenal cortex is of special interest; evidence has recently been brought forward (8) that extracts of adrenal cortex cause, in a normal animal, a lowering of blood cholesterol, and on prolonged administration a rise in the total cholesterol of the body. In this the reticulo-endothelial system is concerned, as when this system is blocked no reduction occurs in blood cholesterol after cortical injections. After such injections to mice cholesterol accumulates in the body

generally. This, along with the lowering of blood cholesterol, points to a cholesterol-fixing action of the cortical active principle.

In cases of dementia præcox we are endeavouring to increase the cholesterol blood content directly by parenteral injections of this substance dissolved in olive oil, and also by feeding with cholesterol emulsions and colloids.

The following case is worthy of mention, as such rapid and complete recovery is rarely met with: H. L—, a very definite early case of dementia præcox, æt. 25, admitted from general hospital, where she was sent for observation. Duration of illness four weeks. School history good; had reached highest standard. On admission blood cholesterol content .03 grm.%. Parenteral injections of .25 grm. cholesterol in olive oil were given every third day, and suitable diet calculated to aid cholesterol production. After a month she was given, by mouth, .5 grm. of cholesterol daily in emulsion, which was continued for a further two months. Steady and continuous mental improvement took place during the treatment, with synchronous increase of blood cholesterol. At the end of three months her blood-cholesterol content was normal and she appeared quite recovered. She was kept under observation for a further period of two months without treatment. No relapse occurred and she was discharged recovered, and has remained quite well since.

SUMMARY.

The following facts are demonstrated:

(1) The inhibitory influence of cholesterol on hæmolysis and its activation by lecithin, also the presence of a thermolabile ferment in serum which activates hæmolysis, and which appears to vary directly with the blood cholesterol content.

(2) The influence of cholesterol as a controlling factor in oxidative processes, its controlling power being best exercised in relation to lecithin in the ratio to that substance normally existing in blood.

(3) That lecithin has an attractive influence on potassium ions, and that the presence of cholesterol in the membrane definitely retards diffusion of potassium.

(4) The retarding effect of cholesterol on the anionic movement of colloidal lecithin.

(5) That increase of protein diet has no effect in stimulating metabolism in dementia præcox.

(6) That the blood-cholesterol content in dementia præcox is

greatly diminished, while abnormal increase is noted in states of mania.

(7) That in general paralysis there is great diminution of cholesterol in the brain substance.

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OBSERVATIONS ON SOME OF THE DISTURBANCES
REFERABLE TO THE PRINCIPAL SENSORY FIELDS
IN CASES OF ORO-NASO-PHARYNGEAL SEPSIS
WITH MENTAL DISORDER.

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IN a very large number of cases of non-syphilitic mental disorder examination of the upper alimentary and respiratory tracts has shown the presence of diseased conditions of septic origin affecting the teeth and their sockets, the gums, the tonsils and the mucosæ of the mouth, pharynx, nasal passages, nasal sinuses and ears, including the diverticula contained in the mastoid.

In some cases the severity of the disease is more marked in certain sites than others, but by taking a group of cases a composite conception is formed of a chronic inflammatory process, subject to acute exacerbations, affecting all the mucosæ of the head. In persons showing no mental symptoms septic foci occurring in these sites may be responsible for a wide variety of sensory disturbances, and even one of these disturbances may be sufficient, and justifiably so, to cause the patient to seek advice. In cases of mental disorder, however, with similar septic foci the patient rarely describes, or is able to describe, his experience of sensory disturbances.

If capable of coherent speech, the content and emphasis of the patient's utterances are chiefly concerned with a description of his feelings and fears, his views on the worthiness or unworthiness of himself or others, and the discomforts or tortures inflicted upon him by other persons, usually vague and unspecified, or by the environment generally. A complete and clear-cut description of the perception of sensory disturbances, which the patient recognizes as occurring within himself, is seldom obtained even on intensive questioning. Yet, on recovery from the mental disorder, and following treatment of the septic foci, it is usually very easy to elicit from these same individuals that during the mental illness, and frequently also prior to it, they have experienced sensory disturbances identical in character with those occurring in persons who, without mental symptoms, seek advice for these disturbances.

The sensory disturbances arising from oro-naso-pharyngeal sepsis may be grouped as primary and secondary. The secondary are those arising from disease processes set up in other organs and tissues as a result of the spread of infection from the foci in the head, *e.g.*, gastritis from swallowing infective and irritating exudates. The primary disturbances arise from the action of the septic process or its products on the peripheral mechanisms of the cranial nerves, and are referred to the sensory fields of smell, taste, vision, common sensation, hearing and equilibrium. Considerable variation as regards the pathological state has been found to occur between patients with oro-naso-pharyngeal sepsis, whether or not they also exhibit mental symptoms. These variations appear to depend on the individual and upon the infective process. Between individuals considerable differences of anatomical structure and development have been found, as well as extraordinary variations in the immunity response to treatment by the same vaccine. The infective process also varies, especially as regards its nature, whether pure or mixed, and its extent. The number of foci involved also shows considerable variation. In some cases they are unilateral, in others bilateral. In some cases the process appears to be in a state of gradual progressive chronicity, in others an acute character is superimposed upon that of a gradual development, whilst in others it is fulminating in character.

Between individual cases with oro-naso-pharyngeal sepsis considerable differences occur as regards the symptoms presented, and these variations can also be found in the sensory disturbances.

Some of these may now be considered.

Variation in Intensity of the Sensory Disturbances.

Variation has been found to exist between individual cases in regard to the intensity of the sensory disturbances experienced, as well as in their remission, recurrence and exacerbation. The symptoms, the pain and suffering which may be experienced by patients with these septic foci, whether or not mental symptoms are included, may be out of all proportion to the pathological changes observed during life, and even more so in relation to the lesions demonstrable at autopsy.

In certain cases, for instance, the headache may be unbearable, yet the actual indications of the disease process are insignificant; in others the headache is mild, yet enormous tissue changes have taken place.

Variation in the Number of Sensory Disturbances.

Between individual cases variation has been found in regard to the number of sensory fields in which disturbances appear, as well as in the character of those disturbances. It is uncommon to find a complete absence of disturbance, but this does occasionally occur in cases showing mental symptoms. In some cases only one disturbance is present, whilst in others several or all the sensory fields are affected. Thus, in a case with oral sepsis and multi-sinusitis the patient stated that his food was poisoned, that people were shouting about him, and that gases and chloroform were thrown at him. It was also elicited that he experienced stiffness in the jaws, a rolling pain in the head and attacks of dizziness, and was troubled with white flashes in front of the eyes.

Not only is there diversity in the number of sensory disturbances present in these cases as a whole, but even where similar foci are involved, there may be diversity between them as to the sensory fields affected, whether the disturbances are perceived normally or in hallucination.

Thus, in two cases, each with tonsillar sepsis and stinking pus in the left antrum, one (Mrs. R—) only experienced severe headache, whilst the other (Mrs. T—) was troubled solely with an hallucinatory disturbance referred to vision.

In two cases with bilateral antral and sphenoidal disease, one experienced disturbances referred to four sensory fields, whilst the other experienced no disturbance.

In the same way with similar foci involved there may be diversity between individual cases in regard to the type of disturbance of the same sensory field.

Variation in Distribution of the Disturbances.

In some cases with a bilateral distribution of the foci there may be a unilateral distribution of the disturbances, yet frequently a unilateral distribution has been found to correspond with a unilateral focus or foci.

In some cases, as the illness progresses, a bilateral may succeed a unilateral distribution of the sensory disturbances.

Variation in the Rate of Development of the Sensory Disturbances.

Diversity obtains between cases in regard to the rate of development of the sensory disturbances.

Three broad groups may be indicated.

In the first group sensory disturbances have been present, perhaps for many years, before the onset of mental symptoms ; so much so that the patient has been able to indicate a chronology of their appearance and of their increase in character and severity. In typical form the patient in this group retains a normal perception of these disturbances throughout the illness. In the third group there is a sudden appearance of disturbances referable to the sensory fields, associated with the acute phase of mental disorder, in which the disturbances are perceived wholly as hallucinations.

A much larger group than the first in mental hospital practice is the second, which bridges the gap between the first and the third. Here the patient has experienced some sensory disturbances, perhaps for many years, but with the appearance of acute mental symptoms there occurs an alteration in the perception of the sensory disturbances. They now appear in hallucinatory guise. Associated with the change in perception there is usually an increase in the severity of the existing sensory disturbances, together with the appearance of additional ones.

These three modes of development of symptoms indicate the progress of the underlying infective process.

THE SENSORY DISTURBANCES IN RELATION TO THE AFFECTIVE STATE AND MENTAL CONFUSION.

Neither the sensory fields involved, nor the character of the disturbances affecting them, appears to bear any relation to the affective state.

It is usual to correlate headache with depression, but whilst these symptoms are frequently associated, it is not uncommon to find that intense headache is present during states of extreme exaltation. Both exaltation and depression may occur in the absence of sensory disturbances or with the presence of few or many, and the character of these may vary from case to case. Severe headache may be induced by non-specific protein therapy, yet during the incidence of the headache, and whilst the course of treatment is being pursued, an existing depression has, after previous removal of septic foci, passed away.

Similarly, in these cases of oro-naso-pharyngeal sepsis, mental confusion may develop apart from or may be associated with these sensory disturbances. In the majority of cases where confusion becomes pronounced there are usually also present some

disturbances referred to the sensory fields caused by the septic foci. On the other hand confusion may be very slight, even when there is a maximum number of sensory disturbances of varying character and severity. It therefore follows that neither the abnormal affective state nor the mental confusion is caused by the sensory disturbances *per se*, but each is a separate result of the activity of the same common cause—the infective process.

This may cause only sensory disturbances, as in those who retain their capacity to perceive them as such and seek treatment for them at the hands of the dentist, rhinologist or ophthalmologist. Another separate result of the action of the process is to cause disturbance of the affective state. As the affective state becomes more seriously disturbed the patient becomes less likely to seek advice for any associated sensory disturbances. In depressed states they furnish a further urge towards suicide, in exalted states towards restless excitement.

Another separate effect of the activity of the infective process is to cause mental confusion, varying in severity, depending on the intensity and character of the process.

VARIATION IN PERCEPTION OF THE SENSORY DISTURBANCES.

For these reasons considerable variation is found to occur between individual cases of mental disorder arising from oro-naso-pharyngeal sepsis in regard to their perception of the sensory disturbances they are experiencing.

For purposes of ascertainment of the presence of these disturbances cases may be divided into three groups :

(1) Those who are able to perceive the disturbances as such and are able to describe them.

As has been indicated, this group has been rare, especially in cases who are in the acute phase of the psychosis.

(2) Those who perceive their sensory disturbances in the form of hallucinations, and express them in terms of delusions.

(3) Those who are unable to express themselves in speech, and in whom, therefore, other indications of the presence of sensory disturbances require study, such as the facial aspect, motor disturbances, movements of the upper limbs, and poise of the head, general attitude, carriage and conduct.

Whilst cases can be found who at any one time belong typically to these groups, yet the same patient may at different stages of the illness illustrate all three groups.

Further, the rate of progress from one stage to another may be rapid.

In transition states between the first two groups and in the second it not infrequently happens that the existence of some or even all of the disturbances is denied, yet on recovery, following treatment of septic foci, the patients admit or even volunteer that they were present.

In some cases, of course, the denial may be true. In those, however, who give an erroneous denial, the explanation appears to be that they have grown so accustomed, before the onset of the mental symptoms, to the disturbances, with their insidious development, partial remissions, recurrences and exacerbations over a long period of time that they have come to regard them as normal, therefore they do not complain of them. In some cases they have never known what the comfort of their absence means. Only when the disturbance has gone is its existence realized. In such cases, however, denial or minimization of sensory disturbances will continue until the causal focus has been dealt with.

It is, therefore, not uncommon to find cases where relatives have no idea that the patient has had the pains and discomforts which are eventually elicited as having been experienced. Such cases not infrequently state on recovery that they are "altogether different" or "have been made new."

DISTURBANCES OF SMELL.

Disturbances of olfaction are frequently met with in cases of mental disorder with oro-naso-pharyngeal sepsis, and have the same origin and pathology as in those cases where definite psychotic symptoms have not appeared.

The symptoms usually met with are those of anosmia, parosmia and cacosmia.

During the acute phase of mental symptoms it would appear that some degree of anosmia is present in cases with this type of sepsis. In the later stages anosmia may occur as a secondary result of chronic nasal disease.

Cacosmia is a common disturbance. The foul odour which can be detected in some cases upon opening a diseased sinus testifies to the objective cause of many of the olfactory hallucinations and delusions founded thereon. Further proof of this causation is furnished by the disappearance of the cacosmia, whether perceived as such or in hallucination, following treatment of the septic process. Cacosmia perceived in hallucination usually results in complaints

of being gassed, subjected to vile odours, chemicals, etc. It may also be combined with other disturbances as the basis for the formation of more complex delusions.

DISTURBANCES OF TASTE.

True disturbances of the primary elements of taste appear to be very rare, but disturbances referred to the sensory field of taste are very common in cases of oro-naso-pharyngeal sepsis with mental disorder.

The information obtained regarding these disturbances generally falls under one or both of two separate symptoms :

(a) Diminution of normal taste capacity.

(b) Perception of unpleasant tastes.

Diminution of normal taste capacity, *e.g.*, " food does not taste the same as it used to do," is usually an indication of some degree of anosmia, causing diminution of the perception of flavours. The perception of unusual, generally unpleasant tastes is chiefly due to oral sepsis, but may also be caused by nasal and tonsillar sepsis.

Hallucinations and delusions founded only on unpleasant tastes in cases with oral sepsis frequently disappear on treatment of that sepsis, but their persistence after such treatment warrants further investigation.

In other cases the delusions are founded on disturbances of taste combined with other disturbances, and then the whole delusion does not disappear until the cause of the other component sensory disturbances has been treated.

Thus, the fixed idea that the patient has " wires in the head " may result from a metallic taste caused by oral sepsis and neuralgic pains caused by dental disease.

Removal of septic teeth may cause the disappearance of the delusion if there are no other foci present.

If, however, sinus disease is also responsible for neuralgic pains the delusion may not disappear, although the metallic taste has ceased following the treatment of the oral moiety of the sepsis.

DISTURBANCES OF HEARING.

Deafness, tinnitus aurium and auditory hallucinations are the principal disturbances referable to the field of hearing in cases of oro-naso-pharyngeal sepsis with mental disorder. The first two symptoms may occur in persons suffering from this form of sepsis, but without mental disorder.

In regard to the last two symptoms psychotic cases can be divided into three groups.

In the first group, tinnitus aurium is perceived as such throughout the illness. The patient perceives it as an unaccustomed sound, is able to describe its character or compare it with the sounds made by well-known causes, *e.g.*, a mosquito, a bell, running water, etc.

In the third group are cases with those disturbances referred to hearing known as auditory hallucinations. The extent of their development varies from case to case. In their maximum development the patient is sure that he hears the voices of persons which the observer does not; the persons may be of either or both sexes, of varied ages; they may be few or many and have distinct personalities, some of whom he may profess to recognize; the voices utter words sometimes linked into connected statements which have a definite meaning for the patient; with these "voices" he may converse, and following their alleged instruction he may act, not infrequently in a dramatic manner. In this group the hallucinations should typically be sudden in their appearance and fully developed in their characteristics, and not preceded by any other auditory disturbance which the patient is afterwards able to remember.

The second group is the group bridging the gap between the first and third. Here tinnitus aurium has been recognized as preceding the appearance of the "voices." Sometimes the tinnitus has been in existence for years, remitting and recurring and generally having the same character on its reappearance. The character of the tinnitus may be continued in the hallucination. In other cases tinnitus appears, and rapidly continues to increase in severity until, with associated increasing confusion, the hallucination appears. As with the onset, so with the termination, the patient may perceive the tinnitus as such after the disappearance of the hallucination, and later the tinnitus itself ceases.

In cases of oro-naso-pharyngeal sepsis the development of the auditory hallucination from the basis of tinnitus is as follows: The patient perceives an unaccustomed sound, which he describes as a uniform dull roar. He may compare it to the dull roar made by a crowd of people talking in the distance. So far it is perceived as a noise pure and simple.

As the tinnitus becomes more severe the noise becomes louder, perhaps uniformly or by a process of waxing and waning. The crowd appears to be coming closer. The previous uniformity of the sound becomes broken. Certain sound components come into

prominence from, or are added to, the uniform background of the roar. These sounds may be of various pitches and timbres, and of different degrees of loudness.

So far the sensation of sound perceived by the patient is simply tinnitus aurium, uniform or composite. At this stage he may perceive that the noise he hears is like that made by the audience in a theatre before the play commences—a confused babble of voices, with here and there some voices more clamant than others. He may institute further comparisons. He may state that he hears different high-pitched sounds which resemble the voices of women, and others of low pitch which resemble those of men, as well as other sounds of different timbre, which he may compare with, *e.g.*, a telephone bell or other instrument. The symptom is still, however, in the stage of tinnitus aurium. If it is a single type of sound he may state that he hears a "voice," but on being closely questioned will admit that it is not a real voice, but that it appears to be like a human voice.

With relaxation of associational control due to the toxæmia, there is an increasing tendency for the patient to attribute the sounds of the tinnitus to external causation.

If the affective state is, from the operation of the same cause, also disturbed, the meaning of the sounds takes on a corresponding quality, *e.g.*, increase of the loudness of low-pitched tinnitus is perceived as the talking of men threatening to kill the patient; increase of loudness of high-pitched sounds may be perceived as the cries of children who are being murdered.

The sensory disturbance of tinnitus aurium is now perceived in hallucination.

Further relaxation of associational control causes the patient to attach distinct personalities to these sounds. They resemble the voices of relatives, children, friends or enemies. The personalities are single or multiple, dependent on the number of sound components recognized.

The hallucination may remain in this stage, and the patient will admit that although he hears the "voices" and draws certain conclusions, *e.g.*, that he is to be murdered, or that children are being murdered, yet he does not hear what the "voices" say. "What they say is all muddled" may be the answer when questioned on the subject.

The next stage of development of the hallucination is the appearance of utterances; this indicates a further stage of loss of associational control.

These utterances, however, necessarily express ideas which the patient would have had apart from any "voices," and their emotional character is in consonance with and determined by the patient's own affective tone. Whilst he was in a state of exaltation the voices informed a patient that he owned all the earth; the state of depression of another patient determined that unseen people should tell her that she was only fit to live with the Australian aborigines and urge her to suicide.

As already indicated, the rate of development from tinnitus to the complete hallucination may be gradual or rapid. Following treatment of septic foci its disappearance may also be gradual or rapid and, when it can be traced, is in the reverse order of its development from the basis of tinnitus aurium.

DISTURBANCES OF THE SENSE OF EQUILIBRIUM.

Oro-naso-pharyngeal sepsis may be responsible for dizziness and vertigo occurring in persons without mental symptoms, and in subjects where this sepsis also causes mental disorder these symptoms have been experienced. The objective manifestation of these disturbances of the sense of equilibrium would sometimes appear to be a form of functional astasia-abasia.

In two cases with sphenoidal sinus disease this symptom has been observed.

DISTURBANCES OF VISION.

Oro-naso-pharyngeal sepsis has been found associated with, and held responsible for, several diseased states of the eye and disturbances of vision in persons without mental symptoms, and it has been claimed that in many such cases treatment of the sepsis has been followed by amelioration of, or recovery from, these conditions.

In cases with this sepsis and showing mental symptoms similar disturbances referred to vision have been described by others and observed by us.

Some of these disturbances are: Entoptic phenomena, *e.g.*, *muscæ volitantes* and *photopsiæ*; reduction of visual acuity; toxic weakness of accommodation; *macropsia*; reduction of visual fields; *scotomata*.

Following treatment of the sepsis there has similarly been considerable amelioration of, or recovery from, these conditions, as well as the mental symptoms.

The same groups of cases, in regard to the development and the

ascertainment of the presence of these disturbances, may be made as for those referable to the other sensory fields.

We can therefore proceed to refer to some of the forms in which these disturbances are presented to the observer in the psychotic phase of these septic intoxication states.

Muscæ volitantes may be perceived as a variety of external objects; the type of object may be determined to some extent by the shape of the causal opacities and therefore of the image thrown on the retina, as well as by their density which may determine the colour. They provide a stimulus which may be interpreted in a wide variety of ways, *e.g.*, as animals or persons, either in procession or separately, as in Lilliputian hallucinations.

Photopsiæ may be perceived as sparks from an electrical machine, or as knives flashed in front of the face, or as masses of shimmering objects in the air, so obstructing vision that the patient endeavours to move them away with the hands.

Positive scotomata may be the basis of a variety of delusions of persecution.

Reduction of visual acuity: It has been frequently observed in patients, both with and without mental symptoms, that removal of septic foci has been followed by improvement in visual acuity. In cases where the septic lesions have acquired a fulminating character, it is not difficult to understand that when there is a rapid reduction of visual acuity the psychotic patient concludes that some harm has been inflicted on him by external agency.

In these cases all the information which may be available as to the presence of visual disturbance may be allegations that someone has "blinded" him. On recovery following treatment of sepsis further information has been available indicating that there is a group of cases where reduction of visual acuity appears to be dependent on a toxic weakness of accommodation.

Some conduct indications of the presence of disturbances referred to vision in cases of oro-naso-pharyngeal sepsis are the following: Movement of the upper limbs, as if to pierce a mist or push away something interfering with vision, endeavouring to catch objects, striking at or beckoning at unseen objects or persons; movements of the head and eyes for similar reasons; movements involving the whole body, such as recoiling from normal surroundings, or again from persons on account of their apparently enormous size.

In several cases, during the acute phase of the mental illness, patients have made mistakes in the identity of those around them, even including their relatives.

In some of these cases these errors might be attributed to the fact that, owing to their conduct, they have had to be deprived of the glasses they ordinarily wore for errors of refraction existing antecedent to the onset of the acute mental illness. In these cases, however, this reason did not obtain, for on recovery from the mental illness these errors of recognition were not made, even if glasses were not worn.

This inability to recognize those around them might be attributed to mental confusion or amnesia. However, in some cases the mistakes of identity ceased with only partial treatment of sepsis, *e.g.*, dental, before mental recovery was complete.

There are, therefore, some cases in which mistakes of identity shown during the psychotic period can be reasonably regarded as due to disturbances affecting the peripheral mechanism of vision caused by oro-naso-pharyngeal sepsis.

DISTURBANCES OF COMMON SENSATION.

These are divided into two groups, which may be described according to their situation or locality of reference as parietal and visceral.

The parietal include the headaches, hyperæsthesiæ and paræsthesiæ.

The visceral are disturbances referable to the lumen and mucosæ of the upper respiratory tract and the mouth.

Parietal Disturbances.

Depending on the sites of the responsible foci and the extent and progress of the disease therein, as well as on the causative infection, individual cases of mental disorder will show variations in the site of reference and character of these disturbances. Whilst disease affecting individual teeth and sinuses may cause referred pain in certain typical situations, yet in an individual case these situations of reference are not always to be relied upon as absolute indications, for between individuals there are frequent differences of anatomical structure, and possibly of nerve distribution.

Thus, sphenoidal sinus pain may be felt behind the eyes or ear, or referred to the root of the nose, or the vertex, or the occiput, or the temporo-parietal region, but in acute exacerbations the whole head may be painful.

The referred pain of chronic antral disease may be frontal, but in exacerbation it may become temporo-parietal.

Variations may be met with even in individual cases with regard to the character of the pain. Thus, there may be superimposed on a heavy pressure pain over the vertex a feeling of heat, suggestive of an exacerbation of the responsible focus in the sphenoidal sinus, caused by a resurgence of the original infection or the presence of an additional one, *e. g.*, a streptococcal added to a primary staphylococcal infection.

Some of the terms which are used to describe the headaches are throbbing, knocking, bursting, boring, tearing, sickening, splitting, dull, pressing and heavy weight. These indicate the character and intensity of the headaches met with in sinus disease. Associated with the headaches from the sinus disease, and also due to it, but frequently of dental origin in cases with oral sepsis, are the paræsthesiæ. These similarly may show variations dependent on the progress of the disease.

Tonsillar sepsis may be responsible for general headache, and also for pain referred to the ear.

Hyperæsthesiæ may result from these various foci of sepsis and may be present in the face and scalp.

Types of all these various parietal disturbances of common sensation have been met with in cases of oro-naso-pharyngeal sepsis with mental disorder, singly or in combination.

Visceral Disturbances.

Direct complaints of these are, in comparison with those referred to the parietes, less common. They are dependent on the presence of discharges from the septic foci into the lumen of the upper respiratory tract and on the condition of the swollen and inflamed mucosæ causing obstruction and pain.

Sensations of irritation occasioned either by the discharges or by actual inflammation of the nose and throat may be the basis of direct complaint or of delusions. Dysphagia may arise from these conditions, with consequent refusal of food owing to pain.

Obstruction to nasal airway is rarely the subject of direct complaint during the psychotic phase.

It is especially easy to understand that this condition may be in existence without the patient being aware of its presence, for until it is remedied he may never have known the comfort of an unobstructed airway. However, the same appreciation of its absence rather than its presence can obtain with regard to a headache. As one patient put it—"I missed it when it had gone." Severe exacerbation of the septic foci may however, result in an appreciation of

the presence of discomforts and pain referable to the nose, mouth and throat. In some few cases the presence and character of these parietal and visceral disturbances has been indicated during the phase in which mental symptoms have been manifest, but in most cases they have been described only after treatment of the focal sepsis, found on routine examination, has been followed by mental recovery.

In many of these latter cases the patient has explained that certain delusions uttered or conduct shown during the psychotic state were due to the presence of these disturbances. Some of these delusions may be only partially formed, whilst others are more elaborate.

Thus, the sensation of pressure on the vertex may become a "heavy weight" sensation and the patient may state that it feels like a ton weight pressing on the head; further development of the idea is that there actually is a ton weight pressing him down.

Another development of the same idea is as follows: There is something pressing on the crown of the head, therefore it is a crown, hence the idea that the subject is a king. The sensation of a band tied round the head has, when accompanied with mild paræsthesiæ, caused the patient to compare the sensation to a band of holly-leaves. Further increase in severity of a similar sensation has caused a patient to declare that he is Christ, the disturbance being perceived as similar to that caused by wearing a crown of thorns.

The idea of steel plates embedded in the sides of the head has been founded on a bilateral temporo-parietal pressure headache. Persistent accusations that the "nurses knocked me on the head" have been withdrawn on recovery of the patient, following treatment of sepsis, when it transpired that the knocks were the throbbings of a vertical headache.

The same patient also persisted that he had heart disease, and refused to be reassured on being told after several examinations that his heart was sound. On recovery he volunteered that the vertical throbbing headache was the basis of his idea of heart disease.

Delusions involving the ideas of heat and burning referred to the head as a whole or to localized areas of the scalp or to the pharynx and nasal passages have been met with, and have disappeared following treatment of these septic foci. The persistent benumbed sensation arising from similar causes may be responsible for a variety of ideas and delusions. A wide variety of factors may cause exacerbation of these symptoms, and included among these factors are certain movements.

Thus the act of coughing or straining at stool may intensify a headache, and similarly the efforts of deep breathing or even of speaking.

Consequently a study of such movements as are possible, or even of the restriction of movements, may be of value in ascertaining the presence of these disturbances of common sensation in those who are unable to express themselves by speech. Of such cases a simple illustration may be given: on inquiring as to the existence of a headache such a patient may slowly raise the hand to the head and place it over a certain area. Not infrequently the hand used corresponds to the painful or more painful side, but alternatively, as even the raising of the limb may cause some exacerbation of the pain, it may happen that the hand used may correspond to the less painful side of the head.

A further development is a fixed rigid posture; this may affect the whole body or be confined to the head and neck. Cases illustrating this protective type of reaction, showing varying degrees of restriction of movement, have generally retained some degree of perception that the discomfort they experience is within themselves and is not caused by external agencies. As confusion increases, the rigid attitude may be maintained in an automatic manner.

At the other extreme is the complete abandonment of the protective reaction and the display of active movement. This is generally shown by cases who are extremely confused. The extreme confusion and this type of reaction are indicative of an acute exacerbation of the responsible foci, such as obtains when an acute influenzal infection is superimposed on a chronic state of oro-naso-pharyngeal sepsis.

The conduct in such cases may be that of pulling out the hair, rolling the head from side to side, knocking the head against something hard and slapping the head.

All these and similar types of activity indicate the presence of considerable discomfort in the head, and represent desperate attempts at its removal or mitigation by methods which have a mode of action similar to that of a counter-irritant. Another indication which may be of value in suggesting the presence of sensory disturbances is the condition of the scalp hair. Apart from the effects produced by the toxæmia acting on the tone of the pilomotor muscles and the activity of the sebaceous glands, the state of the hair may be indirectly affected by the toxæmia and the sensory disturbances produced by oro-naso-pharyngeal sepsis. The general toxæmia

may produce disturbances of the affective tone so that the individual has no interest in his appearance. It can also cause general muscular weakness, and so any desire to dress the hair is limited by the inability to make the effort. Even if the patient is able to make the effort, he may be inhibited from so doing because the necessary movement would intensify an existing headache. And further, associated with the headache may be hyperæsthesia of the scalp, localized or general, which may prevent the patient using a brush. All or some of these various factors may be operative in different cases. Usually on admission a case of oro-naso-pharyngeal sepsis with acute mental disorder shows the effect of lack of attention to the hair, and on recovery the effects of normal interest therein; especially, of course, are both effects more striking in women.

Whilst the efforts of the nurses may make some difference to the appearance of the hair, their attentions are of value in cases otherwise unable to indicate hyperæsthesia. During brushing, nurses have noted resistiveness to this attention. In some cases the objection to brushing is general; in others it is restricted to certain areas, in some cases unilateral, in others bilateral. In this way hyperæsthesia has been detected which has been confirmed later by the patient. Following treatment of septic foci the hyperæsthesia has disappeared, and with it the objection to brushing.

Delusions founded on the disturbances of sensation referred to the nose, mouth and pharynx also occur.

Whilst one patient may clearly indicate a sensation of obstruction or other discomforts, another patient will insist that he is constantly being choked. Further elaboration of the idea of choking is that someone chokes him, and in a state of mental confusion those around him must be responsible. As this sensation becomes more pronounced in the recumbent position it is more frequently experienced at night, and so the night-nurses become the evil-doers in the allegation made by the confused patient. However, in one case the angels were held responsible. Another patient constantly complained that her head was "on fire," was "burning," and "hot smoke was in the nose and throat."

As has been indicated, these various visceral discomforts may be a cause of dysphagia and consequently of refusal of food. This sequel is not difficult to understand in acute inflammatory states, but in subacute states, when the patient is able to swallow, it requires some appreciation of possible discomforts to link the delusion of having no gullet with oro-naso-pharyngeal sepsis.

THE GLUCOSE TOLERANCE CURVE IN EPILEPSY.

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CERTAIN findings in the course of routine biochemical investigations at this Hospital suggested to us that the glucose tolerance test in epilepsy might show interesting results, and accordingly a series of 66 cases was submitted to this examination.

The usual technique of the glucose tolerance test was adhered to. The resting blood specimen was taken at 8 a.m., and, following the ingestion of 50 grm. of glucose, further specimens were removed at half-hourly intervals for two hours. The protein-free filtrate was prepared immediately after the withdrawal of each specimen, and the glucose content estimated by the colorimetric method. Samples of urine were also taken at the same half-hourly intervals, and Benedict's test was applied in determining the presence or absence of glycosuria.

For the purpose of studying our results we have divided the cases into four groups:

- I. *The hyperglycæmic group*, in which the maximum blood sugar content in the curve exceeds '18 mgrm. per 100 c.c.
- II. *The normal group*: the maximum blood sugar content is within the limits of '150 mgrm. to '18 mgrm. per 100 c.c.
- III. *The subnormal group*: the maximum blood sugar content is within the limits of '125 mgrm. to '15 mgrm. per 100 c.c.
- IV. *The markedly subnormal group*: the maximum blood sugar content is less than '125 mgrm. per 100 c.c.

The following are examples of the results obtained in some of the cases of this last group :

Resting specimen, mgrm.	¼ hour. mgrm.	1 hour. mgrm.	1½ hours. mgrm.	2 hours. mgrm.
·079	·088	·094	·097	·088
·075	·079	·075	·071	·053
·083	0·93	·079	·088	·071
·075	·093	·115	·075	·068
·075	·093	·062	·068	·071
·083	·093	·093	·093	·085
·075	·093	·088	·065	·071
·075	·093	·062	·068	·071

Thirty-five male and 31 female patients were thus investigated, making a total of 66 patients in all. Using the above classification, the results obtained were as follows :

Group.	Male.	Percentage of total males.	Female.	Percentage of total females.
I	6	17	..	..
II	7	20	8	25·8
III	5	14	9	29·03
IV	17	49	14	45·16

In certain of our cases fits occurred during the taking of the specimens: these were followed by a temporary fall in the blood sugar content, succeeded by some degree of recovery. Appended are some of the findings obtained in such cases :

Resting. mgrm.	¼ hour. mgrm.	1 hour. mgrm.	1½ hours. mgrm.	2 hours. mgrm.	Remarks.
·087	·125	·075	·125	·107	Fit between half hour and one hour.
·088	·079	·100	·096	·083	Fit between resting and half hour.
·087	·125	·075	·125	·107	Fit between half hour and one hour.
·088	·079	·100	·096	·083	Fit between resting and half hour.

The half-hourly specimens of urine were tested for the presence of glucose by means of Benedict's solution, and in 9 female cases and 4 male cases, *i.e.*, 20% of the total cases, the presence of glucose was demonstrated in one or more specimens during the period observed. In none of these cases did the sugar content of the blood at any time exceed normal limits, suggesting that all these cases of glycosuria were due to a low renal threshold for glucose.

A survey of our results suggests the following points of interest :

(a) While there is no typical glucose tolerance curve in epilepsy, a high percentage of epileptic patients present a glucose tolerance curve of a definitely subnormal type.

(b) We have attempted to correlate the type of epileptic (*e.g.*, irritable, confused, demented) with the blood sugar level, but have been unable to determine that there is any such relation. Examples of all these types are found in each of the groups mentioned above.

(c) Similarly we have been unable to establish any definite relation between frequency of fits and the blood sugar level.

(d) The comparatively high percentage of cases with renal glycosuria in our series is worthy of note.

We have to thank Dr. G. L. Brunton, Medical Superintendent, for permission to make use of the clinical material.

INVESTIGATIONS INTO THE PROLONGED TREATMENT OF GENERAL PARALYSIS WITH TRYPARSAMIDE.*

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THE cases of general paralysis here submitted, fifty in number, have all been treated by tryparsamide either alone or combined with a non-specific form of treatment. Some of them have been undergoing treatment since 1923, and consequently the method adopted has varied as the result of observation and experimentation. All of them have been under observation for at least two years.

Tryparsamide is the sodium salt of n-phenylglycinamide-p-arsonic acid, a pentavalent arsenical compound containing 25% of arsenic. It was first synthesized by Jacobs and Heidelberger (1) at the Rockefeller Institute in 1915. Thereafter extensive experimental work with the drug was carried out by Brown and Pearce (2). This was primarily in relation to trypanosomiasis, but later the drug was administered to cases of late syphilis. According to the early reports, it was administered to improve the general condition so that these cases might later be treated in the ordinary way. It was found, however, to have a very beneficial effect, both on the lesions and also serologically, so its use was extended. It was given to patients with primary and secondary lesions. In these no improvement was noticed; in fact in some cases the lesions are said to have progressed. The properties of the drug, summarized by these workers, were:

- (1) It was comparatively free from untoward effects.
- (2) A slight but definite spirochæticidal action.
- (3) An unusually high penetrability. There was no other substance known with an equal degree of spirochæticidal action that possessed the same degree of penetrability.
- (4) A remarkable power of reinforcing the processes of natural resistance and of promoting recuperation.

The first report of its use in the treatment of neurosyphilis was made by Lorenz (3) in 1923, and a short time later by Moore (4).

* An abstract of a thesis accepted by the University of Glasgow for the degree of M.D.

Early in 1924 a supply of this drug became available for use in several hospitals in this country, and twenty patients were submitted to this treatment at the Maudsley Hospital. Three of these were cases of tabes, and have not been included in this series.

In the early stages, the drug was administered in courses of eight injections. Each injection consisted of 2 gm. dissolved in 10 c.c. of sterile water and was given intravenously at weekly intervals. After an interval of two months another course of eight injections could be given, but prior to 1926 none of these patients had received more than three courses of eight injections. Of the 17 cases of general paralysis originally submitted to this treatment, only one died during the course. The remaining 16 have been kept under observation, and treatment has been continued, where possible, during the past four years.

There were no complications of note, and the dose was increased to 3 gm., given intravenously at weekly intervals. It was claimed for the drug that it could be given intravenously, intramuscularly or subcutaneously. It was thought that since the absorption into the body would be slower if the drug were given intramuscularly, this method of administration might be more efficacious. Accordingly, in 1927, several patients were submitted to intramuscular injections of 2 gm. twice a week, thereby also increasing the weekly intake of arsenic. The site of injection was, as a rule, the buttock. In spite of strict aseptic precautions several patients developed a localized abscess. It was interesting to note that those patients had previously received such injections intravenously without any untoward effect. Some of these localized abscesses were aspirated and a hæmorrhagic purulent fluid was obtained. From this there was obtained in culture the staphylococcus. Cultures were then made from the solutions of tryparsamide but, as anticipated, these were sterile. The solutions of tryparsamide were then infected with the staphylococcus which had been isolated. It was found that after twelve to twenty-four hours these were again sterile owing to the germicidal action of the arsenic. These abscesses then were considered to be "mechanical abscesses" due to an irritation of the tissues by the drug, with a secondary infection from the deeper layers of the skin. As the majority of the patients were able to be at home, many of them working, it became of the utmost importance that if they were to continue treatment they should not be called upon to suffer unnecessarily or to have to cease work. The intravenous method of administration was, therefore, adopted again and has been employed since.

In 1923 the treatment of general paralysis by malaria was commenced at this hospital. No untoward effects were experienced until 1926, when one of the patients so treated died, and owing to the attitude adopted by the local coroner it was decided to discontinue meantime this form of treatment. Later that year 4 cases were inoculated with relapsing fever. One of these, an advanced case, died prior to the onset of the fever; 1 died during pyrexia; the remaining 2 received in addition tryparsamide and are included in this series (Cases 31 and 32).

During the past three years malaria has again been used extensively here, and its use has been combined with tryparsamide. In 1927, when resort was again made to the intravenous method of administration, the quantity of tryparsamide given in a course was increased from 16 to 40 gm. No deleterious effects were noted.

In the course of a visit to the Boston Psychopathic Hospital and the Psychiatric Institute, New York, in 1928, it was observed that the drug was being employed in the treatment of cases of general paralysis uninterruptedly over an indefinite period. Since then that has been the method employed in this hospital, and as it has involved considerable modification of the method of treatment adopted in the early stages the present procedure will now be described in detail.

As soon as a diagnosis of general paralysis is made, the patient is examined by the ophthalmic surgeon, who reports as to the presence of any suggestion of optic atrophy. If no signs are found contra-indicating the use of the drug, tryparsamide treatment is begun forthwith. An intravenous injection of 3 gm. dissolved in 10 c.c. of sterile water is given each week. This is especially valuable if the patient's general condition is poor.

As early as possible the patient is inoculated with from 3 to 5 c.c. of malarial blood (benign tertian). Blood inoculation is preferred, as this has been found to be more reliable than inoculation by mosquitoes. The intravenous route is frequently chosen, though some have been injected intramuscularly. After the usual incubation period the patient develops the characteristic pyrexia, and blood-films are examined regularly for the presence of parasites. Some of the blood used for inoculation has had a double infection, and the resultant pyrexia has been quotidian in type. The patient is allowed to have a varying number of rigors depending on the general condition. Eight to twelve rigors are considered adequate. At the end of this period quinine is given, usually in the form of the sulphate, 10 gr. three times a day for a few days.

Throughout the fever and at weekly intervals thereafter, tryparsamide, in 3 grm. doses, is given intravenously. These injections are continued for prolonged periods in an effort to produce clinical and serological improvement.

The cases under review therefore have been treated by either of two methods: One series have had tryparsamide only, and the other series have had treatment by tryparsamide plus pyrexia. Several of the first group did not show clinical improvement after treatment by tryparsamide here, and were later admitted to a mental hospital, where they were subsequently treated with malaria. These cases have been transferred to the second group. In the first group, treated by tryparsamide alone, there are 17 cases. In the second group, treated by tryparsamide plus pyrexia, there are 33 cases.

Some of the patients have received varying doses of tryparsamide. At first they received doses of 2 grm., then of 4 grm., and latterly of 3 grm. These have all been calculated on the basis of 3 grm., and the equivalent number of injections which each patient has received has been specified in Tables IX and X.

COMPLICATIONS.

In this series very few complications have arisen as the result of treatment by tryparsamide. Only in 2 patients did amblyopia develop. This was only temporary, and improved after the drug had been discontinued. One of the patients (Case 33) after three injections of 0.3 grm. stabilarsan developed a Herxheimer reaction, and this drug had also to be discontinued. It is noteworthy that after treatment by malaria he received twenty injections of 3 grm. of tryparsamide with no bad effect on his eyes. It has frequently been reported that the effect of tryparsamide on the optic nerve is markedly diminished after a course of fever.

Several investigators have stated that tryparsamide has unfavourably influenced the development of the malarial fever. This has not been my experience, as in no case has the drug prevented the development or influenced the course of the fever, although it has been administered throughout. It will be noted that Case 48 did not re-develop malaria after a second and a third inoculation. This cannot be cited as evidence that the drug was responsible, as many patients appear to have developed an immunity after the initial course of fever.

The most serious complication experienced in the treatment of

this series has been the development of localized abscesses when the drug has been given intramuscularly. This has already been discussed and need not be further elaborated.

A few have complained of giddiness at the time of injection, and one of the earlier patients had a rigor several hours afterwards.

Moore (43) reported that in a series of 241 cases treated by tryparsamide alone visual disturbances were found in 17·8%. The majority of these were transient, and only in 2·8% did permanent visual injury result. Solomon (31) found that if a careful examination of the eyes was made prior to treatment and the drug only given when there were no signs contra-indicating its use, then the visual complications were not serious. Only one of the patients developed a temporary impairment of vision. Several others complained of mild confusion, headache and nausea, which symptoms all cleared up within twenty-four hours. Reactions of a nitritoid type were seldom found. He had the same experience with regard to abscess formation as was found in this series.

As already explained in the method of administration, a careful examination of the eyes was made in all cases. This consisted of an ophthalmoscopic examination by the ophthalmic surgeon, and perimetric tracings of the visual fields, if such were indicated or where any doubt existed. It is worth noting that in Case 37 no untoward result has followed the administration of thirty-five injections of 3 grm. of tryparsamide, although the patient had a complete optic atrophy in one eye and a commencing atrophy in the other, prior to beginning treatment, two and a half years ago. The atrophy has not advanced.

The complications are apparently considerably diminished if the drug is combined with fever therapy.

SUMMARY OF THE RESULTS.

The efficacy of treatment of any condition is judged by the degree and permanence of clinical improvement thereby produced. In considering the results obtained in the treatment of physical diseases one is accustomed to speak of recoveries in a rather loose sense. One talks of cases with organic heart lesions having recovered, whereas what one really means in most cases is that that degree of compensation has been re-established which enables the patient to take his part in the world again. In the consideration of general paralysis one hesitates to think of recovery. As has already been stated, any claim of recovery arouses in most minds grave

doubts as to the diagnosis. In many of the patients under review a marked degree of improvement has been noticed as the result of treatment.

In estimating these results one has to take into account the findings, if any, at the clinical examination, together with the social usefulness of the patient. In considering the latter one frequently attaches importance to the patient's ability to work and maintain himself. This criterion is, however, unsatisfactory unless attention is given to each case individually. Much depends on the level to which the patient had attained prior to his illness, and the simplicity or otherwise of his employment. Some have been able to resume responsible duties, and have discharged them successfully for several years. One feels that several others could be regularly employed, if the nature of the work were less complicated or less responsible. Case 12 is a good example of this. He is a clergyman, who, although much improved, will not be allowed the opportunity of resuming duty. Instead, he has been doing part-time clerical work, and this quite efficiently. One feels that, had his vocation in life been of a simpler and less onerous nature, he could have been regularly employed. Another aspect is also to be considered where patients enjoying a partial improvement are able to be employed regularly in routine work. Their interests are few, consequently their attention is not distracted from the work on hand, so that their output is greater, and to their employers they appear to be better. Some others, who appear to have made a good improvement, are nevertheless unable to be regularly employed. Psychological investigations are being conducted to ascertain, if possible, why this should be so. It is hoped to publish these results in a subsequent paper.

The patients have been arranged in four groups according to whether they enjoy a good or a partial remission, are unimproved, or have died. Further explanation of what is implied by each of these terms is required.

Good remission.—In this group have been included those cases who show that degree of recovery, both mental and physical which enables them to play the part of normal citizens again. It is not inferred that they have completely recovered, though there is no evidence superficially of psychic disorder. A careful examination in some of these cases would show some failure of memory, or other intellectual or emotional defects. But they have completely recovered their former ability to work, and have resumed their previous occupations, or are regularly employed in a similar capacity.

They can adapt themselves to their environment and have made a social recovery.

When examined they are bright and cheerful. As a rule they come readily for examination, though they may be somewhat apprehensive about the interview. They have good insight, and most of them desire to take all precautions against having a relapse. In passing, I would point out that such patients have frequently complained of headache and general malaise after lumbar puncture. This has been more marked the more closely their serological reactions approached normal.

Partial remission.—This group has been further sub-divided into "moderate remission" and "at home, stationary." The "moderate remission" group includes those whose degree of improvement is quite distinct but not so good as in the former group. Some in this group have been more recently treated, and approach very nearly to the first group. It may be that they will yet attain to that level. Most of them are unable to obtain or retain regular employment. Others, whose duties are simple with little or no responsibility attached, are able to continue thereat regularly.

In the "at home, stationary" group the degree of impairment is more marked. They are unable to obtain employment. To their acquaintances they appear dull, indifferent and lacking in mental capacity. As a rule they are quiet and docile, and usually employ themselves in the home or garden.

The difficulty of prolonged treatment in this partially remitted group has been greater than in the group of patients enjoying a good remission. These patients frequently fail to grasp the value of treatment and require to be reminded repeatedly.

Unimproved.—This group contains those who have not, in spite of treatment, been able to be retained at home. In this respect a great deal depends on their social conditions, and so they are not quite comparable to the "unimproved" group of investigators in mental hospitals. Several of these patients, while unable to be cared for at home, would be able to do useful work in a hospital, and one feels they could probably be included in the stationary group. All in this group are in mental hospitals, and some have definitely deteriorated. Together with the stationary group they constitute a large social problem, and, like those suffering from some other forms of organic nervous disease, they require care for the rest of their lives.

Deaths.—Altogether 9 patients in this series of cases died. Six of these died in the terminal stages of the disease, and their death

was not associated with, or hastened by, treatment. One died, during a good remission, of carcinoma of the alimentary tract. Two deaths were associated with the malarial fever. One of these patients, Case 25, had been treated with tryparsamide, and showed a partial improvement, but later relapsed. He was not accepted here for malarial treatment but obtained admission to another hospital, and died there within twenty-four hours after a rigor. The other patient, Case 50, died two weeks after the fever had been stopped by quinine. The percentage of deaths, then, associated with malaria was 4.

The results of treatment are set out in Table I (a). Of the 50 cases treated, 36% have enjoyed a good remission, 24% are distinctly improved, 8% show slight improvement and are stationary, 14% are unimproved, and 18% are dead. Thus 68% have improved after treatment, and in 60% the improvement is distinct.

TABLE I (a).—*Results of Treatment.*

Number of cases.	Good remissions.	Partial remissions.		Unimproved.	Deaths.
		Improved.	Stationary.		
50	18	12	4	7	9

If to the number of patients now alive, those who died after treatment are added, these being grouped according to their mental condition before death, then the results as found in Table I (b) read: 38% have had a good remission, 24% are distinctly improved, 10% are slightly improved, and 28% are unimproved.

TABLE I (b).

Number of cases.	Good remissions.	Partial remissions.		Unimproved.
		Improved.	Stationary.	
50	19	12	5	14

The results of the 17 cases treated by tryparsamide alone are tabulated in Table II (a). Those of the 33 cases treated by tryparsamide plus fever are contained in Table II (b).

TABLE II (a).—*Results Obtained in Cases Treated by Tryparsamide Only.*

Number of cases.	Good remissions.	Partial remissions.		Unimproved.	Deaths.
		Improved.	Stationary.		
17	6	5	1	2	3

TABLE II (b).—Results Obtained in Cases Treated by Tryparsamide Plus Fever.

Number of cases.	Good remissions.	Partial remissions.		Unimproved.	Deaths.
		Improved.	Stationary.		
33	12	7	3	5	6

Of those treated by tryparsamide alone, 35.29% have enjoyed a good remission, 29.41% show a distinct improvement, 5.88% show slight improvement, 11.76% are unimproved, and 17.64% have died. The number showing appreciable improvement is therefore 64.7%.

Of those treated by tryparsamide plus pyrexia, 36.36% have enjoyed a good remission, 21.21% are distinctly improved, 9.09% show slight improvement, 15.15% are unimproved, and 18.18% are dead. The number showing appreciable improvement is therefore 57.57%.

It is, however, not possible to compare these results, on their face value, as representing the relative merits of these forms of treatment. Among those treated by tryparsamide alone may be patients whose general condition is too poor to submit to treatment by fever, as Case 17, or those whose relatives will not give their consent to treatment by fever, as Case 13. On the other hand, several cases are included in the second group, treated by tryparsamide plus fever, who showed no improvement under, or relapsed after, treatment by tryparsamide. They were removed to a mental hospital where, as a last resort, they were treated with malaria.

In considering the number of these patients who have shown improvement, one is reminded of Osler's (5) comment, in 1905, when writing on the treatment of general paralysis: "Prolonged remissions, which are not uncommon, are often erroneously attributed to the action of remedies." A study of the number of cases who showed improvement prior to the introduction of these forms of treatment is interesting. As this hospital did not open, for its present purpose, until 1923, it has been impossible to get this information directly, but the literature already published on this aspect is worth attention.

Raynor (6) found that of 1,004 cases of general paralysis admitted to the Manhattan State Hospital, 85 or 8.5%, showed improvement, of whom 33 had a good remission. He also noted that in more than one-half of the cases the remissions were not permanent. Furman (7) found that of 503 cases of general paralysis only 21 patients, or 4.2%, had a spontaneous remission. Mapother and Beaton (8) found that the percentage of spontaneous remissions was between 7 and 8. Stoddart (9) quotes the rate for such cases treated in Bethlem Royal

Hospital at the end of last century as being 14%. Kraepelin states that 15.9% show a spontaneous remission. Meagher (45), in 1927, investigated the subsequent histories of 1,173 untreated cases of general paralysis who had been admitted to the English county and borough mental hospitals in 1923 and 1924. He found that the total number who had been discharged from hospital, including those removed against advice, was 66, or 5.62%. Of these, 17 were classified as recovered, 40 as relieved, and 9 as not improved. 26 of these, between 1924 and 1927, had died at home or had been readmitted to hospital. In 1927, of 1,173 only 157 were alive, and 1,016 were dead. Of the 157 alive, only 40 were then outside of a mental hospital. He concluded his remarks by "pointing out that, if taken to represent the cases in this series showing a complete or a partial remission of the disease, they suggest that remissions of more than transient duration are decidedly rare occurrences. A study of these cases of untreated general paralysis clearly shows that complete recovery must be, if it ever occurs, of extreme rarity."

A comparison of these figures with the results obtained by treatment in this series of 50 cases, of whom 68% showed some degree of improvement, 60% being quite markedly improved, indicates that the treatment has produced beneficial results. I have tabulated (Table III) the results of treatment reported by other investigators, with an indication of the treatment they employed.

A study of the results obtained by the more recent methods of treatment, including tryparsamide, malaria and relapsing fever, shows great similarity as to the outcome. On the average, improvement has been obtained in 59.4% of cases treated by tryparsamide, in 54.1% by malaria, and in 51.15% by relapsing fever. A search through the literature was made for reports of cases treated by combined methods of specific and non-specific therapy, but in most reports (Gerstmann, Bunker, etc.) these have been grouped with cases treated by one or other method alone. Gerstmann (26) has pointed out that the assessment of good results is related to the duration of remissions. With this statement there is entire agreement. It will be noted that the cases he records were treated at varying periods from five to eleven years ago. The period that elapsed between treatment and the publishing of the other reports has been indicated on Table III. All the cases in this series have been under observation for periods of from two to seven years. During the past three years the cases of general paralysis treated at this hospital have been selected ones, and the number of patients who have shown marked improvement in that period surpasses the results in this series. As several of this group have been under treatment for less than two years, they are not all included in this series.

I have stated that of late the cases admitted for treatment here have been selected ones. The factors which have been considered in such a choice have emerged as conclusions after an analysis of the previously treated cases. Although the period since treatment

of these selected cases is too short to say much, the results obtained so far strongly support the findings of this analysis.

The variations in the clinical outcome presented by these cases

TABLE III.—*Results of Treatment Reported by Other Investigators.*

	Number of cases.	Year of publication.	Duration after treatment in years.	Complete remission.	Improved.	Unimproved or dead.
1. Protein shock, etc :						
Pilcz (10)	86	..	..	8%	36%	56%
Szedlak (10)	25	..	..	10%	53%	37%
Jauregg (10)	33	..	..	10%	48%	42%
Hanber (10)	36	..	..	5%	26%	69%
Average	.	.	.	8%	38%	54%
2. Arsenic, mercury, etc :						
Goldsmith (11)	155	1925	2	10%	20%	70%
Finlayson (12)	14	1918	2	10%	10%	80%
Evans and Thorne (13)	14	1916	1-3	8%	17%	75%
Average	.	.	.	9.3%	15.3%	75%
3. Tryparsamide :						
Lorenz (14)	90	1924	1-3	41%	42%	17%
Moore (14)	40	1924	1-2	42%	16%	42%
Kirby and Hinsie (15)	69	1928	2-5	28%	26%	36%
Jaenicke and Forman (16)	100	1928	1-4	15%	23%	62%
Menzies (17)	41	1929	4-6	25%	35%	40%
Bunker (18) (collected)	542	1929	..	35%	..	..
Average	.	.	.	31%	28.4%	40%
4. Malaria :						
Yorke and McFie (19)	84	1924	2	27%	33%	40%
Driver, Gammel and Karmosh (20) (collected)	2460	1926	..	27.5%	25.6%	46.9%
Kirby and Bunker (21)	106	1926	1-3	34%	21%	45%
Baender (22)	300	1926	3-7	36%	16%	48%
Ferraro and Fong (23)	120	1927	1-3	26%	35%	39%
Gerstmann (24)	400	1928	5-11	32%	13%	55%
Average	.	.	.	30.3%	23.8%	45.5%
5. Relapsing fever :						
Plaut and Steiner (46)	55	1926	1-5	43.6%	12.7%	43.7%
Petrie (47)	26	1929	2	26.9%	19.2%	53.9%
Average	.	.	.	35.25%	15.9%	48.8%
6. Rat-bite fever :						
Solomon, etc. (48)	12	1926	3	(Too early to evaluate results, but clinical and serological improvement was obtained.)		

provoked considerable interest, and various factors were studied which, it was thought, might influence the outcome. If these factors could be ascertained, it was considered they might be of

value as regards prognosis. The more important points which were considered and which were found to influence the results of treatment were, the duration of the symptoms prior to treatment, the age of the patient, and the clinical form of the illness. Two other points were also considered—the effect of treatment on the neurological and on the serological findings. In this order these investigations will now be presented.

THE DURATION OF SYMPTOMS PRIOR TO TREATMENT.

Considerable difficulty has been experienced in obtaining accurate data as to the duration of symptoms prior to treatment. As Gerstmann (24) says: "What we see from the clinical standpoint as initial paralysis is in a biological, morphological sense, mostly, the resultant of a process which has been going on for a period of unknown duration." In most cases the onset is insidious, and a striking feature is the frequency with which relatives record a history of irritability over long periods prior to the development of acute symptoms. In 20 cases the onset was attributed to some fairly definite factor. The mental symptoms, in 8 of these, developed immediately after a seizure or a congestive attack. In 2 it followed an accident. In both of these 2 cases the patients were crushed between vehicles. Overwork at business during the Christmas rush was said to account for 2, and 1 other became ill following upon a heavy financial loss. The arousing of strong emotional states over the death of relatives, or the ill-health of relatives and friends, accounted for 5 others. One developed during pregnancy, and 1 other within a week of a burglary in his house. In the other 30 cases the onset was more insidious, and no definite causal factors could be elicited.

In Table IV are tabulated the results of treatment compared with the duration of the illness before treatment. In this and the subsequent tables the patients who died have been included, and they have been grouped according to their mental condition before death. They have been inserted as + so many. In estimating the duration of symptoms prior to treatment I have restricted my inquiries to the first change in manner, talk or conduct of the patient noted by his relatives. A history of a seizure or congestive attack was given in 15 cases prior to treatment, but only in 8 of these did mental symptoms directly follow the attack. Case 24 illustrates this point. The patient suddenly lost the power of his

leg and arm 15 months prior to his admission here. These symptoms cleared up within three weeks and he was quite well until thirteen months later. The causal factor then was the illness of his daughter. She was badly injured in an accident and had to undergo a serious operation, and this caused him considerable worry. Thereafter his illness developed. Unless the seizure or congestive attack has been followed directly by abnormal mental phenomena it has been disregarded. This may account in some measure for the fact that relatively poorer results are obtained in these patients in this series who have presented symptoms for over nine months, than are recorded by other workers.

TABLE IV.

Duration of symptoms.		Number of cases.	Good remission.	Partly improved.	Remission stationary.	Unimproved
1 month and under		5	5	..	..	..
Over 1	3 months	14	9+1	2	..	1+1
„	3 months	18	3	8	2	3+2
„	6	5	1	2	+1	+1
„	9	8	..	..	2	4+2
		50	19	12	5	14

A glance at these figures shows that cases treated within the first few months of showing definite mental symptoms give by far the best results. The chances of improvement diminish with delay in treatment. Of 8 cases treated who presented mental symptoms for over nine months, only 2 have shown a partial improvement, and they are included in the stationary group. It is interesting to note that of the 5 cases who presented symptoms for four weeks or less, Cases 17, 18, 31, 34 and 39, 4 were manic in type, and 1 was of the simple type in whom marked loss of memory attracted the attention of the relatives.

This factor no doubt partly explains the greater number of remissions seen in manic and expansive cases, as states of excitement always affect relatives more strongly than those of mere indolence. Consequently these patients come under treatment at an earlier stage. While early cases appear, therefore, to benefit most by treatment, it is to be noted that 2 patients, 14% of those whose symptoms had been present for less than three months, passed into the unimproved group.

These results are found to agree with those of other investigators,

irrespective of the type of treatment employed. Most of them, however, find a greater degree of improvement in patients whose symptoms have been present for long periods prior to treatment, but, as already explained, this may result chiefly from the method of reckoning the earliest change.

Gerstmann (24) states that, in those cases who had a complete remission, the duration of symptoms prior to treatment varied from a few months to about three years. In cases with incomplete remission of high degree the duration was from six months to three and a half years. In those with incomplete remissions of low degree, and those who did not benefit by treatment, there was a long duration, up to about six years and even more. He also draws attention to the fact that among the incomplete group there were a number of so-called initial cases.

Ferraro and Fong (23), in an analysis of 126 cases, conclude that old-standing cases of over two years' duration offer less probability of successful treatment.

THE INFLUENCE OF AGE.

Of the 50 cases in this series, 24 were between the ages of 20 and 40 years, and a similar number between 40 and 60 years; 1 case was above 60, and another was below 20. The outcome in these two groups has been tabulated in Table V:

TABLE V.

Outcome.	Age group.	
	20-40.	40-60.
Good remission	12	6+1
Improved	4	6
Stationary	2	3
Unimproved	4+2	3+5
	24	24

From these figures it would appear that the relative frequency of good remissions was greater in the period between the ages 20-40. The number of good remissions in this period was 50%, whereas the number of good remissions between the ages 40-60 was 29%. With regard to the improved group, this is relatively greater for the period 40-60 than for the period 20-40. The respective figures for these periods are 25% and 16.6%.

These results suggest that the age-factor may influence the outcome, in that the chances of remission are slightly diminished with

the increase of years over 40 years of age. This influence, however, is not marked, and would appear to be no greater than one might anticipate. Pönitz (25) quotes Gerstmann's explanation of this, namely, that the ability to establish new defences in the body, upon which so much depends in the treatment of general paralysis, can only, at these ages, occur incompletely or in a very unsatisfactory way. Ferraro and Fong (23) quote Jansen and Hutter, who suggest that patients over 55 years of age should not be treated.

THE RELATION OF THE CLINICAL TYPE TO OUTCOME.

The series of cases is divided according to the clinical picture each patient presents. This segregation into clinical types, however, is beset with many difficulties and is somewhat arbitrary. In this respect the differentiation between euphoric and manic types is probably the most artificial. Clear-cut cases are easily grouped, but, as Bunker and Kirby (21) have pointed out, it is very difficult to mark off a definite boundary between the euphoric patients, whose expansiveness is frequently accompanied by motor restlessness, and the mildly hypomanic, whose motor restlessness is a more prominent feature than the expansiveness accompanying it. The clinical state has been reckoned as that shown between admission to hospital and the beginning of treatment, and later changes in type have been disregarded. For example, Case 31 at the time of admission was bombastic and euphoric, whereas later, after treatment, he became dull, depressed and resistive, and was very difficult with his food. He has been classified as euphoric in type.

In Table VI (a) are detailed the distribution of these 50 cases collectively, in relation to the clinical form and the results of treatment. As before, those who died after treatment are added and are grouped according to their mental state before death. They are indicated by being preceded with a + sign. In Tables VI (b) and (c) the details are added for each variety of treatment separately.

TABLE VI (a).—*Total Number of Cases Treated.*

	Simple dementia.	Euphoric.	Manic.	Depressed.	Tabo- paresis.	Juvenile.
Good remissions . . .	3	3+1 .	6 .	..	2 .	..
Improved . . .	7	4 .	2 .	1 .	1 .	1
Stationary . . .	+1 .	2 .	..	1 .	1 .	..
Unimproved . . .	3+5	+1 .	1 .	1 .	2+1 .	..
	<u>19</u>	<u>11</u>	<u>9</u>	<u>3</u>	<u>7</u>	<u>1</u>

TABLE VI (b).—17 Cases Treated by Tryparsamide Only.

	Simple dementia.	Euphoric.	Manic.	Depressed.	Tabo-paresis.	Juvenile.
Good remissions .	1	2	..	..	..	..
Improved .	4	3	..	..	1	..
Stationary .	+1	..	..	1	..	..
Unimproved .	1+2	..	..	..	1	..
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
	9	5	..	1	2	..

TABLE VI (c).—33 Cases Treated by Tryparsamide plus Fever.

	Simple dementia.	Euphoric.	Manic.	Depressed.	Tabo-paresis.	Juvenile.
Good remissions .	3	1+1	6	..	2	..
Improved .	2	1	2	1	..	1
Stationary .	..	2	..	..	1	..
Unimproved .	2+3	+1	1	1	1+1	..
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
	10	6	9	2	5	1

These figures show that of the 50 cases there were 19, or 38%, of the simple type, 11, or 22%, of the euphoric, 9, or 18%, of the manic, 3, or 6%, of the depressed, 7, or 14%, of the tabo-paretic, and 1 juvenile general paralytic.

The clinical form offering the greatest likelihood of success in treatment, is the manic. 66% of these cases are enjoying a good remission. It is worth recording that two of these manic patients showed no improvement with tryparsamide alone over a short period, Cases 34 and 39. They were later treated with malaria, and their excitement did not abate until the fever had developed. The euphoric type is the next most favourable, and the number of good remissions given by this type was 36%. Of the tabo-paretics, 28.6% showed a good remission, and of the simple type, 15.78%.

In the improved group there are 22% of manics, 36% of euphorics, 36% of the simple type, and 14.2% of tabo-paretics.

With regard to the unimproved, including those cases who were in the stationary group, only 11% of manics were found. Of euphorics there were found to be 27%, and of the simple type 47%. The tabo-paretics had the relatively high figure of 57% in these groups.

While, therefore, the number of simple type enjoying a good remission or improved is fairly high, a large percentage are unimproved, and of these, 6 patients, or 31.5% of the total of this type, are dead. An analysis was then made of this group of cases, and it was found that two types of cases could be distinguished. One type was childish, garrulous, mildly elated, self-satisfied and fatuous. All

of these were distinctly fatuous. The other variety was characterized by loss of memory, indifference, apathy and irritability. They resented being spoken to, and their replies to questions were in monosyllables. One patient of the simple type, Case 5, was admitted to hospital in the terminal stages of the disease and was not further classified. Of the remaining 18 patients of the simple type, there were 12 belonging to the " fatuous " group and 6 to the " apathetic " group. The outcome of these patients is very interesting and is detailed in Table VII :

TABLE VII.—*Outcome of Simple Type.*

	Good remission.	Partial remission.		Unimproved.
		Improved.	Stationary.	
" Fatuous " group	2	3	+1	4+2
" Apathetic " group	5	..	..	+1

There are thus of the " fatuous " variety 16·6% enjoying a good remission, 25% improved, 8·3% stationary, and 50% unimproved, whereas of the " apathetic " variety there are 83·33% enjoying a good remission and only 16·66% unimproved.

From these results one is justified in concluding that the most avourable types in order of degree of improvement are :

1. The manic type.
2. The euphoric type.
3. The simple type.
4. The tabo-paretic type.

The results recorded by other investigators as to the types which offer the best prospects of success vary somewhat. The majority have found that the manic group offer the best prospects. Bunker and Kirby (21) found that 67% of the manic, 55% of the expansive and 12% of the simple attained a maximum therapeutic result. Gerstmann (26) found that the majority of cases of good remissions belonged to the simple and to the manic agitated types. The percentage in the simple variety was not less than in the manic. Similarly, with tabo-paresis the occurrence of a good remission was not less likely than in other forms of general paralysis. He formulated two groups according to the outlook for remissions. Those varieties in which the outlook was good were :

1. The so-called initial cases.
2. The manic type.
3. The simple dementing type.
4. Cases where congestive attacks were prominent.
5. Tabo-paretics.

Those in which the outlook for a good remission was poor were :

1. Far advanced cases.
2. Galloping or fulminating type.
3. Juvenile general paralysis.
4. Senile type.

Pilcz (27) found that the best results were obtained in the manic and simple varieties, and that the hypochondriacal, presenile and catatonic forms were less favourable. Ferraro and Fong (23) stated that in their experience the best results were obtained in the expansive paranoid form, and that 37·44% of the good remissions belonged to this type. Next to this were the manic and the depressed varieties.

THE NEUROLOGICAL CHANGES FOLLOWING TREATMENT.

It has not been possible to consider all the cases in this series. Some live in the country, and were unwilling to attend here for re-examination. Their relatives and their physicians were communicated with, but the replies were not as satisfactory as was desired. In three patients adequate reports could not be obtained, and they have not been included.

Improvement in the concomitant neurological findings has been frequently found in those cases who have improved clinically. They have not, however, been restricted to those in whom the clinical improvement was marked. With the improvement in the mental and physical states there is an improvement in the muscular tone, coordination and gait. With regard to reflex responses, no definite or constant changes were found. As a rule, where the reflexes were sluggish they remained so, and similarly for those whose reflexes were active or somewhat exaggerated. The greater number of patients who showed improvement had active deep reflexes of the upper and the lower limbs. After treatment, seizures occurred in only two patients, Cases 7 and 38. The former of these died in a seizure. The latter had a slight seizure following a lumbar puncture examination made here two years after treatment by malaria. Considering that 15 cases had had seizures or congestive attacks prior to treatment, a distinct improvement in this respect is to be noted.

The signs which showed the greatest degree of improvement and were most constantly altered were the speech defects and the tremors so frequently found in this condition. Of 21 patients

enjoying a good remission, 7 lost their tremors altogether, while in 6 others they were markedly diminished. Of 10 patients of the improved group, 3 lost their tremors, while in 3 others they were markedly diminished. In none of the patients in the stationary or improved groups was there absence of tremors, but in some there was improvement in this respect.

Speech was also markedly affected: 13 patients of the group of good remissions, and 3 patients of the improved group, in all of whom speech had been definitely slurred before treatment, have shown a marked improvement. Their speech is now clear, and they can enunciate the usual test phrases quite well. Only 1 patient of those enjoying a good remission has slurred speech. No definite improvement in this respect was noticed in the other groups.

With regard to the pupillary changes found in these patients prior to treatment, various alterations thereafter were found, but none of these was constant. Improvement in some respects occurred in certain cases, but the findings in others of the same group deviated further from the normal after treatment than they did before. The reactions to light and accommodation, and the equality and regularity of the pupils before and after treatment, have been tabulated in Table VIII:

TABLE VIII.

	Reaction to light.				Reaction to accommodation.				Equality.				Regularity.							
	Before.		After.		Before.		After.		Before.		After.		Before.		After.					
	A.	S.	I.	A.	S.	I.	A.	S.	I.	E.	U.	E.	U.	R.	Irr.	R.	Irr.			
Good remissions .	1	8	10	2	3	14	18	1	0	16	3	0	7	11	8	10	8	11	8	11
Partial remissions	1	6	7	2	2	10	14	0	0	12	1	1	5	9	3	11	5	9	5	9
Unimproved .	1	5	8	0	3	11	11	3	0	10	4	0	6	8	6	8	2	12	2	12

A. = active; S. = sluggish; I. = inactive; E. = equal; U. = unequal; R. = regular in outline; Irr. = irregular in outline.

The alterations in the light reflex were on the whole of a progressive nature. No case who, on the first examination, showed a loss of this reaction regained it after treatment. Of those patients enjoying a good remission, one originally showed a normal reaction to light, but, after treatment, this reaction became sluggish. In the same group, of those whose reactions were originally sluggish, 6 showed an alteration: 2 of these thereafter reacted normally to light, but in the other 4 the light reflex was completely lost. Of those patients who clinically had a partial remission, there were

6 who originally showed a sluggish reaction to light. One of these, after treatment, reacted quite well to light again, 3 lost their reaction altogether, and the other 2 remained sluggish. The reaction to light of one of the cases in the unimproved group was originally normal, but after treatment it became very sluggish. Three others in this group, previously sluggish in their reactions to light, became inactive.

The reaction on accommodation became sluggish in 2 of those with a good remission. It was lost in 1 of the partially remitted group, and became very sluggish in 1 other of this group. In 1 case of the unimproved group this reaction, previously normal, became, after treatment, very sluggish.

As regards the equality and the regularity of outline of the pupils very little change was noted. Their condition after treatment remained practically unchanged, as the table shows.

With regard to the alterations in the neurological findings reported by other investigators, Gerstmann (24) stated that in his series of cases improvement was most frequently found in the speech and writing disorders. The pupillary changes were least affected by therapy. Occasionally sluggish pupils became more active. Pönitz (25) stated that he never found any definite alteration in the size of the pupils or in the light reflex after treatment. Deep reflexes also showed little change, and were sluggish after treatment if such was their condition before. Rudolf (28) found improvement in the pupillary reaction to light after treatment in 8 cases. Three of these, who, prior to treatment, showed no reaction, did react thereafter through a small range. Ferraro and Fong (23) found that one of their cases whose pupils reacted sluggishly to light before treatment became active thereafter. They found that speech defects, tremors and incoordination were most favourably influenced by treatment.

THE EFFECT OF TREATMENT ON THE SEROLOGICAL FINDINGS.

As a further aid towards elucidating the problem of why these cases should react differently, careful investigations were made of the serological findings. These included as a routine practice the investigation of the Wassermann reaction in both blood and cerebrospinal fluid. The total cell count, the protein content and the colloidal gold reaction were also estimated in each examination of the latter.

All the serological examinations were carried out in the Central Laboratory of the London County Mental Hospitals. This proved a great advantage, as most of the cases who showed no improvement after treatment here were subsequently admitted to one or other of these mental hospitals. Further specimens could therefore be obtained, and these were examined by the same investigator who

made the original examinations. Only in Cases 34 and 39 were the serological estimations after treatment made elsewhere. A cell count not exceeding 5 cells per c.mm. and a protein content not exceeding 25 mgrm.% are considered normal. The Wassermann reactions are expressed quantitatively. For ordinary routine Wassermann tests it is customary to use 1 c.c. of cerebro-spinal fluid. Several investigators in this field have published results in which this amount of C.S.F. formed the maximum concentration they employed. In the investigations made in this series of cases the highest possible concentration has been employed, namely, that obtained by using 1.5 c.c. of C.S.F. The effect of this has been to obtain in some cases a positive result which would in a greater dilution have been passed as negative. Case 27, in whom the Wassermann reaction is +2, exemplifies this. All those whose Wassermann reactions have been recorded as negative have given a negative finding with this weak dilution and with all other dilutions of the cerebro-spinal fluid. Similarly the highest possible concentration of blood-serum has been employed by using 0.5 c.c. In routine examinations and in the results published by some other workers only 0.4 c.c. of serum has been employed.

In all these cases the blood and cerebro-spinal fluid have been examined before treatment and have given positive results. I should like to draw attention at this juncture to Case 18. In 1922 a diagnosis of cerebral syphilis was made while this patient was undergoing treatment in a mental hospital. Unfortunately no examination was then made of his cerebro-spinal fluid. He showed a remission, and was discharged from that hospital in 1924, but four months later he relapsed, and was admitted here. He then showed, serologically, the typical findings of general paralysis, although his blood Wassermann reaction had not increased in strength from the examination made when in the mental hospital. In spite of active treatment by tryparsamide plus pyrexia he has failed to show clinical improvement. At present he is under care in a mental hospital, and presents the typical picture of a euphoric general paralytic. Incidentally he is the only case of the manic form who passed into the unimproved group. Much has been written recently about the value of serological findings in neurosyphilis. This case is an outstanding example of one where serological examination might have greatly aided the making of a diagnosis.

Of the cases treated by tryparsamide alone a further serological examination was made, in the early stages, at the end of each course of treatment. The more recently treated cases whose injections

TABLE IX.—Serological Findings of Patients Treated by Tryparsamide Only.

Case.	Number of injections.	BEFORE.						AFTER.					
		Blood.	Cerebro-spinal fluid.			Lange.	Blood.	Wassermann reaction.	Cerebro-spinal fluid.			Lange.	
			Wassermann reaction.	Cells, c.mm.	Protein, mg. %.				Wassermann reaction.	Cells, c.mm.	Protein, mg. %.		
1	28	+40+	+40+	80	125	555543210	+40+	+8	5	45	001100000		
2	8	+40+	+40+	100	125	555543200	+40+	+8+	70	100	555543200		
3	8	+40+	+40+	80	125	555543200	+40+	+40+	70	100	555543210		
4	8	+40+	+40+	60	125	555542200	+40+	+40+	10	80	5543210000		
5	7	+40+	+40+	100	20	5555421000	+40+	+40+	Not estimated.				
6	8	+40+	+40+	50	100	555543210	+40+	+40+	14	100	555543210		
7	8	+40+	+40+	80	100	555554321	+40+	+40+	10	80	5555432100		
8	35	+40+	+40+	100	200	555543210	+13	+4+	4	35	3332211000		
9	60	+40+	+40+	200	200	555553421	neg.	neg.	4	20	0000000000		
10	24	+40+	+8+	80	125	555543200	+40+	+8+	5	45	2223331100		
11	8	+40+	+20+	100	130	555544321	+40+	+40+	100	125	555554320		
12	70	+40+	+20+	80	125	555544321	+30+	+3+	2	25	0000000001		
13	100	+40+	+8+	90	125	55555431	+20+	neg.	2	20	0000000000		
14	21	+40+	+40+	50	125	555543211	+40+	+4+	10	75	5555432110		
15	37	+40+	+20+	50	90	555554400	+15	+3+	3	55	5534321100		
16	15	+40+	+40+	50	100	5443210000	+10+	+20+	5	35	0000000000		
17	68	+40+	+20+	88	110	5554432100	+20+	+6	3	20	0000000000		
19	8	+40+	+40+	100	130	5555522000	+40+	+20+	50	110	5555532000		
21	28	+40+	+20+	18	50	555543210	neg.	+4	5	30	0000000000		
23	24	+40+	+40+	50	130	555543210	+40+	+40+	28	80	5553322100		
24	8	+40+	+40+	80	130	555543210	+40+	+40+	Blood adm.			5534432100	
25	16	+40+	+40+	100	180	555543210	+40+	+40+	37	80	4434222110		
34	22	+40+	+40+	78	125	555554321	+40+	+40	40	80	5544331000		

Cases 19, 21, 23, 24, 25 and 34 were later treated by malaria. These reactions were made prior to treatment by fever (see text).

TABLE X.—Serological Findings of Patients Treated by Tryparsamide + Fever.

Case.	Number of injections.	BEFORE.				AFTER.				
		Blood.	Cerebro-spinal fluid.		Lange.	Blood.	Cerebro-spinal fluid.		Lange.	
			Wassermann reaction.	Cells, c.mm.			Protein, mg. %.	Wassermann reaction.		Cells, c.mm.	Protein, mg. %.
18	24	+20+	+40+	80	554321000	+20+	neg.	4	20	0000000000
20	40	+40+	+40+	150	555332000	neg.	+3+	3	20	0000000000
22	24	+40+	+40+	125	555542000	+40+	+8+	10	40	4443211000
26	8	+40+	+20+	80	555543210	+40+	+8	40	120	5544321000
27	33	+40+	+40+	200	555554321	+6+	+2+	3	20	0000000000
28	36	+40+	+20+	100	555432100	neg.	neg.	3	20	0000000000
29	8	+40+	+40+	138	555543210	+40+	+20+	75	125	555543210
30	8	+40+	+40+	200	555554332	+40+		Not estimated.		
31	33	+40+	+40+	125	555554310	neg.	neg.	4	20	0000000000
32	23	+40+	+40+	130	555555321	+40+	+20+	25	50	3322100000
33	34	+40+	+40+	140	555554321	neg.	+8	3	20	0000000000
35	15	+40+	+40+	175	555554321	+40+	+40+	50	125	5544321000
36	71	+40+	+40+	150	555554321	+13	+6	8	35	5543210000
37	55	+40+	+40+	130	555432100	+20+	neg.	2	20	0000000000
38	52	+40+	+40+	175	555554310	neg.	neg.	3	20	0000000000
39	22	+40+	+40+	150	555554430	neg.	+40+	5	60	5543110000
40	18	+40+	+40+	160	555554400	+40+	+40+	5	60	555543210
41	33	+40+	+8+	145	555543210	neg.	neg.	4	20	0000000000
42	64	+40+	+20+	140	555554321	+13	neg.	3	15	0000000000
43	66	+40+	+40+	90	555543210	neg.	neg.	10	35	4444320000
44	33	+20+	+20+	60	5443321000	+20+	+20+	6	35	4433210000
45	54	+40+	+40+	120	555554321	+10+	+6	5	25	0000000000
46	41	+40+	+40+	110	555543210	+40+	+40+	4	50	4444322110
47	..	+40+	+8+	80	555543210	+30+	+3	10	35	3322100000
48	18	+40+	+20+	75	555543210	+40+	+40+	28	65	5544321100
49	53	+40+	+8+	100	555554332	neg.	+20	15	45	2221110000
50	7	+40+	+40+	100	555554321	+40+	+40+	Blood adm.	..	..

have not been given in courses, but uninterruptedly over long periods, have been examined serologically at the end of three months. One was guided by the degree of improvement, if any, then obtained in deciding whether the next serological examination should be made after three or six months. The cases treated by tryparsamide plus fever were examined serologically a few weeks after the fever had been discontinued, and prior to their leaving the hospital. Further examination was made at three-monthly and later six-monthly intervals. Meanwhile, they continued to receive their injections.

In all cases treated by tryparsamide alone, the serological findings after treatment have been obtained except Case 5, who died after he received seven injections of 2 grm. Of those treated by tryparsamide plus fever, serological findings have not been obtained in 7 patients; these are Cases 19, 21, 23, 24, 25, 30 and 34. Cases 19, 21, 23, 24, 25 and 34 had their fever treatment elsewhere than in this hospital and serological examinations were not made thereafter; Case 25 died during treatment. These cases received treatment by tryparsamide for some time prior to being treated with malaria. Serological examinations were made thereafter before they received treatment by fever, and therefore I have tabulated these results with the group of patients who have been treated by tryparsamide only. This makes for consideration, then, one group of 23 cases, the results of whose blood and cerebro-spinal fluid after treatment by tryparsamide in varying doses are known; and another group of 26 cases whose serological findings, before and after treatment by tryparsamide plus fever, are known. In one case (Case 50) only the Wassermann reaction of the cerebro-spinal fluid was obtained. These serological findings I have tabulated in Tables IX and X.

In summarizing the serological findings and comparing them with the clinical outcome, it was necessary, then, to disregard 8 cases in whom I did not have the opportunity of making serological examinations after treatment. The findings of 42 cases in whom it was possible to correlate the clinical outcome with the serological results are summarized in Table XI.

These figures show that where there is a definite clinical improvement there is also a high degree of serological change. In evaluating these findings it is essential to remember that all of these cases have been under treatment for periods varying from two to seven years. None are recorded in this series who have been under treatment for less than two years. The table shows that at this

period there is a partial correlation between the clinical and serological improvement, in that cases with clinical improvement show a concomitant serological improvement. Reference to the detailed clinical records shows that this is not so in the early stages of treatment, where clinical improvement almost invariably precedes serological improvement. As time goes on there is a higher correlation between these two.

It is also to be noted, however, that the serological improvement is not confined to patients with marked clinical improvement, but is found in some who occupy the unimproved group.

TABLE XI.

Cerebro-spinal fluid findings.	Good remissions.	Partial remissions.		Unimproved.
		Improved.	Stationary.	
Negative	5	4	..	..
Marked improvement	5+1	3	3	2
Slight "	5	3	+1	6+1
Unimproved . . . . .	..	1	..	2
	<hr/> 16	<hr/> 11	<hr/> 4	<hr/> 11
Blood Wassermann reaction.				
Negative	6+1	2+1	1	..
Marked improvement	2	2	3	..
Slight "	2	4	..	1
Unimproved	5	2	..	9+1
	<hr/> 16	<hr/> 11	<hr/> 4	<hr/> 11

The 3 cases in the stationary group all show marked serological improvement. One of these (Case 27), as already explained, would, to the routine tests, give normal findings in his cerebro-spinal fluid.

In only 3 cases of this series was no improvement noted in the cerebro-spinal fluid after treatment. Two of these cases (Cases 3 and 11) were treated by tryparsamide in the early stages, and only received eight injections. The third case (Case 50) was treated by tryparsamide plus fever, and died within two weeks of his fever being discontinued. Owing to blood admixture only the Wassermann reaction was noted. In all patients who have received tryparsamide either alone or plus fever over a reasonable period of time improvement in the cerebro-spinal fluid has been obtained.

The effects on the cerebro-spinal fluid findings as the result of treatment, in 22 patients by tryparsamide alone, has been summarized in Table XII. Similarly, for the 26 patients treated by

tryparsamide plus fever, the results have been summarized in Table XIII.

TABLE XII.—*Summary of the Effect on the Cerebro-spinal Fluid Findings of Treatment by Tryparsamide only.*

Cerebro-spinal fluid findings.	Number of cases.
Negative	2
Marked improvement	8
Slight "	10
Unimproved	2
	—
	22

TABLE XIII.—*Summary of the Effect on the Cerebro-spinal Fluid Findings of Treatment by Tryparsamide plus Fever.*

Cerebro-spinal fluid findings.	Number of cases.
Negative	7
Marked improvement	7
Slight "	11
Unimproved	1
	—
	26

One cannot, however, take these results on their face value and deduce therefrom the relative merits of the two forms of treatment. The majority of those in Table XIII, following upon their clinical improvement, have been more willing to continue treatment. They have, therefore, in addition to treatment by fever, received on the average many more injections of tryparsamide. Nevertheless, allowing for this, there is no doubt that the effect of treatment on the serological findings is much greater when combined treatment by tryparsamide plus fever is employed than when tryparsamide alone is used.

The blood Wassermann reaction has been more resistant to treatment. From Table XI one notes that a negative blood Wassermann reaction has been obtained in 11 cases, marked improvement in 7 others, but that in 24 patients this reaction is still very strongly positive and no appreciable improvement has been noted.

These observations show that the most consistent change in the cerebro-spinal fluid is a reduction in the cell-count. This change was found in all cases but one, and it occurred early in the course of treatment. If the clinical improvement was maintained the cell-count frequently became normal. The protein content is next in order of improvement, and this has been followed by improvement in the Wassermann reaction. The colloidal gold reaction is the element

most resistant to treatment. It may become less intense, or change to the luetic type. There it frequently remains for a long time before it becomes negative. Distinct reduction in the other elements has often been obtained with little change in this reaction. No fluid has failed to show a reduction in the pathological findings, where prolonged treatment by tryparsamide has been employed. The most resistant pathological change has been the blood Wassermann reaction. In some cases this has behaved peculiarly, and has shown surprising improvement. As a rule, however, it has been the most obstinate feature.

From these results one is justified in concluding that as an aid to prognosis the serological changes after treatment are not very valuable. Marked improvement in the serological reactions has been obtained in those who have displayed little clinical improvement, as well as in those who enjoy a good remission. One point that is noteworthy is that those cases who have had marked clinical improvement have displayed more frequently serological improvement shortly after treatment than did the others. This improvement chiefly affected the cell-count and the protein content. Unexpected improvement is found in certain elements sometimes as the result of a few injections, but considering the whole series, the order of improvement has been the cell-count, the protein content, the Wassermann reaction in the cerebro-spinal fluid, the colloidal gold curve, and lastly the blood Wassermann reaction. The serological results have been more marked after treatment by tryparsamide plus fever than after treatment by tryparsamide alone.

THE EFFECT OF TREATMENT ON THE SEROLOGICAL FINDINGS AS REPORTED BY OTHER INVESTIGATORS.

The results of an interesting study made by Barbé and Sezary(29) were published in 1924. They examined at frequent intervals the blood and cerebro-spinal fluid of 21 untreated cases of general paralysis. Their results showed that little change was found, but that the cell-count and the globulin content varied considerably at different examinations. They also noted periodic changes in the blood Wassermann reaction.

Treatment by Tryparsamide.

Lorenz (3) in 1923 published the first report dealing with the treatment of general paralysis by tryparsamide. In it he claimed that in addition to clinical improvement there was a well-marked serological improvement. In 1928 (30) he reviewed the outcome of the cases dealt with in his early reports. He stated that 87% of the cases reported as recovered then had continued so during the past five to six years. He found that serological changes were very constant in these patients, though they were not necessarily negative. A positive Wassermann reaction and a positive colloidal gold reaction were found equally frequent with either outcome. In the recovered group 87% showed a change in the colloidal gold curve at an early stage in their clinical improvement.

Solomon (31) reported that negative serological results were obtained occasionally from a small number of injections. The cell-count, the Wassermann reaction, the colloidal gold curve and the globulin content of the spinal fluid were frequently favourably altered. As a rule it required about seventy-five injections of 3 grm. to produce serological improvement.

Brown and Martin (32) in their analysis of all the available literature, found that up to April, 1926, about 2,000 cases of neurosyphilis had been treated by tryparsamide and thereafter reported. There was serological improvement claimed in 75% of all these cases.

Davie (33) observed the effect of treatment by tryparsamide in 12 cases over a prolonged period. He found that serological improvement need not accompany clinical improvement, and that the former might occur a long time (eighteen months) after the treatment had been completed. Two of the cases after treatment had a negative Wassermann reaction in the cerebro-spinal fluid. The cell count was reduced, and the colloidal gold test weakened or became luetic in type. The blood Wassermann remained positive in all the cases after treatment.

Bamford (34) reported that of 46 cases submitted to treatment by tryparsamide plus malaria all those who showed clinical improvement showed corresponding serological improvement, but the converse was not established. The gold curve was little, if at all, affected by therapeutic measures. His investigations demonstrated that, serologically, tryparsamide was a more potent therapeutic agent than malaria.

Williford (35) reported the findings in 84 cases treated by tryparsamide. The spinal fluid became completely normal in 6 cases and markedly improved in 36 others. The blood Wassermann became negative in 49 cases, or 54%, was reduced in 17, remained stationary in 15 and became more positive in 3 cases.

Bunker (36) reported the serological findings in 23 patients who received varying doses from 36 to 116 injections of 3 grm. of tryparsamide. Twelve of these had treatment by malaria three to twelve months prior to treatment by tryparsamide. Of these cases 2 gave a negative Wassermann reaction in the cerebro-spinal fluid. In 6 this reaction was unchanged, and the remaining 15 occupied intermediate positions. In his opinion not less than 75 injections of 3 grm. of tryparsamide would seem to be equivalent, in sterilizing effect, to a course of fever therapy. He concluded that it required one hundred, and certainly not less than fifty injections, to bring about any material degree of modification in the Wassermann reaction in the spinal fluid.

Menzies (17) found that of 41 patients treated by tryparsamide alone serological improvement was obtained in 33. Of these only 2 gave negative findings. His results showed that the findings varied somewhat. There had been periods in some cases when the serological tests were negative, but subsequent examinations showed a return of enough positive features to put the case in one of the other groups. In all patients who enjoyed a good remission there had been a great serological improvement.

Treatment by Malaria.

McAlister (37), in reporting the effect of malarial treatment on 12 cases of general paralysis, stated that in his experience the treatment did not modify the laboratory findings.

Grant and Silverston (38) in 1924 reported that in 40 cases treated by malaria an improvement in the Wassermann reaction and in the colloidal gold reaction was obtained in 30%, and that the globulin and cellular content were improved in 20.3%. A negative Wassermann reaction in the blood was obtained in 7.5%, and in the cerebro-spinal fluid in 15%. Sixteen cases were given, in addition to malaria, a course of salvarsan, and of these the improvement in the serological findings were (1) diminished cell-count, 100%; (2) serum, Wassermann reaction reduction, 68.7%; (3) lowered protein content, 46%. Combined alterations of (1), (2) and (3) occurred in 43.7% of the cases.

Nicole and Steele (39) found that in repeated examination of the cerebro-spinal fluid in 25 cases after treatment by malaria, changes indicative of improvement were found in the colloidal gold and the globulin reactions. These changes did not necessarily correspond with the presence or absence of clinical improvement.

Rudolf (40) found that after treatment by malaria 21.7% of cases showed a

diminution in the cellular and protein content, and that 48% showed a diminution in the Wassermann reaction in the cerebro-spinal fluid. In 12% of these the Wassermann reaction was negative.

Pönitz (25), as the result of his observation on cases treated by malaria, noted that the first element to be altered in the cerebro-spinal fluid was the cellular content. If the clinical improvement persisted the cell-count approximated to normal. Later he found improvement in the protein content, which became negative or only weakly positive. Often the Wassermann reaction in the blood and cerebro-spinal fluid showed improvement, and the mastic curve was pushed to the left. He found that if recovery lasted for months or years, then, as a rule, there was a parallel improvement in the serological findings.

Gerstmann (41) reported that, in the early stages after treatment by fever, slight changes of a favourable nature were found in the cell count or the amount of protein, but that the other elements of the cerebro-spinal fluid showed no change. These improved subsequently if the remission endured. He found the Wassermann reaction in the spinal fluid to be the most resistive element, and when a relapse occurred the Wassermann reaction and the globulin content were the first to become more strongly positive again. The blood Wassermann, he noted, was irregular in its behaviour, and was often more resistive to treatment than were the abnormal elements in the cerebro-spinal fluid. He quotes Dattner, who examined 70 of the cases treated between 1922 and 1924, and found that—

32 patients clinically improved and 4 patients clinically unimproved gave completely negative serological results.

19 patients clinically improved and 8 patients clinically unimproved gave weakly positive serological results.

2 patients clinically improved and 5 patients clinically unimproved gave completely positive serological results.

In the two cases of the remission group who gave completely positive serological findings there had been signs of a relapse in the interval. The five completely positive, unimproved cases showed a progressive course.

Malamud and Wilson (42) recorded that serological improvement was a usual if not an invariable result of the malarial treatment of general paralysis. It occurred apart from the clinical course and generally more slowly, so that the clinical improvement as a rule preceded the serological.

Ferraro and Fong (23) showed that in cases treated by malaria the percentage of serological improvement increased from 15% within the first six months to a maximum of 86% after a period of three years.

Relapsing Fever.

Plaut reported that with treatment by relapsing fever the Wassermann reaction in the blood became weakened or negative in 50% of the cases. In the spinal fluid a similar change was noted in 61%. The cell count usually rose during the fever, but thereafter became reduced, and in some cases became normal. The protein content and the colloidal gold reaction were favourably influenced. There was nothing to distinguish the cases who received salvarsan in addition from those only subjected to relapsing fever therapy.

From a survey of the serological findings recorded by these investigators one notes a great similarity in the results, irrespective of the method employed. More marked serological changes appear to be obtained with greater regularity where a combination of specific and non-specific forms of therapy are employed. The cell count and the protein content have been most frequently modified, but it must be remembered that Barbé and Sezary found this to be true also in untreated cases. The majority have found the colloidal gold reaction the most resistive element to treatment.

With regard to the Wassermann reaction in the cerebro-spinal fluid this has been favourably altered in most cases. The majority of these workers have also found that the blood Wassermann reaction diminished in intensity at a comparatively early stage. Gerstmann, however, found that in many of his cases this element was most resistant, and the results in this series under review support this observation. With regard to the correlation between the serological and the clinical change, all are agreed. The clinical improvement as a rule precedes the serological, and in the early stages there is no parallelism between the two. Later a partial parallelism exists in that all cases showing clinical improvement show a concomitant serological improvement. This serological improvement is, however, not confined to those showing clinical improvement, and has been found frequently in clinically unimproved cases.

Considering these results one is led to ask whether the submission of these patients to prolonged treatment has been justified. Some, though enjoying a good remission, continued treatment until their serological reactions gave negative results. I should here draw attention to Cases 36 and 38, who respectively seventeen and twenty-five months after treatment by fever showed clinical but very slight serological improvement. Since then as the result of additional treatment by tryparsamide they have shown further clinical and marked serological improvement. One of these, Case 38, has given on the last two examinations completely negative serological findings. Case 20 is also of interest, as in April, 1926, he showed marked improvement in the cerebro-spinal fluid findings. The reactions then were W.R. +8+, cells 10 per cmm., protein 35 mgrm.%, and the Lange was negative. A month later he relapsed, and was admitted to one of the London mental hospitals on May 19, 1926. His cerebro-spinal fluid was re-examined. The reactions were W.R. +8+, cells 40 per c.mm., protein 70 mgrm.%, Lange 5432100000, showing therefore an increase in the strength of the Wassermann reaction, in the number of cells and in the globulin content. I would repeat Dattner's comment on two of the clinically improved group in his series who retained completely positive serological findings, namely that they had since treatment shown signs of a relapse.

The matter resolves itself into the considerations of the question whether the presence of a positive Wassermann reaction in the blood or cerebro-spinal fluid should be made the object of attack. Opinions on this are divided, as has been pointed out by Stokes (44).

He quotes Nonne, an eminent neurologist, and Wile, an eminent syphilologist, who contend that serological findings are not conclusive, or even at times important elements in a decision to continue or to stop treatment. He adds: "Do we know at the present day whether it is, after all, for the ultimate best interests of the patient to have his spinal fluid Wassermann rendered negative, his pleocytosis and globulins returned to normal? We do not know; we only infer that it is. We infer that these abnormalities are symptoms of the disease to be removed as part of a restoration to normality if it can be accomplished without too great effort and cost." Pönitz (25) suggests that the positive serological findings in those showing only slight clinical defects may be like a fire which has been damped down, and may be expected to burst into activity later. In our present state of knowledge, however, he considers that we are not justified in definitely saying so, and in some cases the positive findings remain as yet a relatively meaningless feature.

Cases occur in this series, and many such may be found in the literature, who have relapsed while their serological reactions remained positive. I have been unable to find any reference in the literature to any cases who have relapsed after showing clinical improvement and negative serological reactions. No such cases in this series have relapsed, but time alone will answer this question. Meantime, it would appear expedient and advisable to remove as far as it is possible the pathological abnormalities found in these patients, and it is with this aim in view that this work is being continued.

SUMMARY AND CONCLUSIONS.

1. Fifty cases of general paralysis were submitted to treatment by tryparsamide. Seventeen were treated by this drug alone, and in 33 others the drug was combined with fever therapy.
2. Of these, 36% have had a good remission; 32% have had a partial remission, 14% are unimproved and 18% are dead.
3. The effect of treatment is influenced by the duration of the mental symptoms prior to treatment, by the age of the patient and by the clinical type of the illness.
4. The chances of a successful outcome after treatment diminish in direct ratio to the duration of the mental symptoms prior to treatment.
5. The chances of remission are diminished with the increase of years over 40 years of age.
6. The most favourable types in order of degree of improvement

are the manic type, the euphoric type, the simple type and the tabo-paretic type.

7. The outlook is much better in the simple " apathetic " type than in the simple " fatuous " type.

8. The speech defect and the tremors have been the neurological signs which showed the most improvement as the result of treatment. The changes in the reflexes were slight and inconstant. The changes in the pupillary reactions were likewise variable. No pupil which was inactive prior to treatment showed a response after treatment.

9. In the early stages the clinical and serological changes do not run parallel. A partial parallelism exists in the later period, as all cases then showing clinical improvement show a concomitant serological improvement.

10. Complications resulting from treatment by tryparsamide in this series have been very few. Visual disturbances occur in a small percentage of cases, and are sufficiently important to demand a careful ophthalmoscopic examination of all patients prior to treatment. The best method of administration of the drug is the intravenous one. It should not be administered subcutaneously, nor intramuscularly. No bad results have followed its extravasation in small amounts into the tissues around the veins. The drug is not cumulative, and has been administered regularly at weekly intervals over a period of many months without any detrimental effects.

11. Tryparsamide is a most valuable drug in the treatment of general paralysis of the insane and the results obtained in this series are encouraging. It forms a valuable substitute for fever therapy where the latter is contra-indicated, but the most effective method of treatment consists in a combination of tryparsamide with fever.

The serological reactions on all except two of these patients have been carried out by Mr. F. J. Partner at the Central Pathological Laboratory of the London County Mental Hospitals, and to him I desire to express my thanks. I should also like to take this opportunity of thanking Dr. Golla, Director of the Central Pathological Laboratory, and Dr. Mapother, Medical Superintendent of the Maudsley Hospital, for their interest and encouragement in these investigations.

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THE ORGANIC ACIDS OF THE CEREBRO-SPINAL FLUID.

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THE electrometric titration method for the investigation of "organic acids," as developed by Perlzweig and Delrue (1) and applied to the examination of sera, indicated a method of investigation of the organic acids of the cerebro-spinal fluid, and an attempt has been made in this paper to investigate the significance of the organic acid titration in mental disorders. Owing to the difficulty of obtaining normal cerebro-spinal fluid, the research had to be confined to the investigation of paretic and non-paretic cerebro-spinal fluids obtained from mental cases. In the former case adequate specimens were obtainable during the process of collection of fluid for diagnostic purposes, and the results obtained in some cases were confirmed by independent collection.

Estimation of lactic acid and electrometric titration of the total organic acids were made, and in some cases, where the quantity of cerebro-spinal fluid permitted, estimation of amino-acids was also carried out.

PROCEDURE.

Amino-acids.—The cerebro-spinal fluid was submitted to a preliminary deproteinization. 5 c.c. cerebro-spinal fluid were measured into a centrifuge tube, and 0.5 c.c. of $\frac{3}{4}$ N sulphuric acid added. The addition of two drops of 10% sodium tungstate solution produced complete precipitation of the protein, which was removed by centrifugalization, and an aliquot part of the protein-free fluid was taken for estimation of the amino-acids by the Folin colorimetric method (2).

Lactic acid, and total organic acid titration.—For the estimation of "total organic acids," the electrometric titration method developed by Perlzweig and Delrue (1) for blood-serum was adopted. This consisted in treating the sample with metaphosphoric acid to remove proteins, and then with copper sulphate and solid calcium hydroxide to remove carbonates, phosphates, sugar, etc. The filtrate was concentrated and an aliquot portion taken for titration. This was acidified with hydrochloric acid to pH 2.3, and titrated with 0.1 N sodium hydrate, using the saturated calomel-quinhydrone electrode system. A control titration was carried out with sodium chloride solution treated in exactly the same way as the plasma.

In adapting this method to cerebro-spinal fluid, which contains a smaller amount of organic acids, it is desirable to obtain as large a specimen as possible. In cases of general paralysis it was usually possible to obtain 10 c.c. samples. After the removal of proteins, the volume was made up to 50 c.c. for treatment with copper sulphate and solid calcium hydroxide. The filtrate and washings from this were diluted to 100 c.c., and 25 c.c. were taken for a separate lactic acid determination by the Friedemann and co-workers' modification (3) of the Clausen method (4). It should be pointed out that these results are approximate, since the method is not specific for lactic acid.

The remaining 75 c.c. of the filtrate were evaporated almost to dryness on the water-bath. In transferring the contents of the evaporating dish to a small No. 42 Whatman filter-paper, 5 c.c. of recently boiled distilled water were first used, and then three successive portions of 2 c.c. It was found important for uniformity to be observed in this stage of the procedure, otherwise conflicting results were obtained with duplicate experiments on the same sample. The filtrate was made up to 13 c.c., of which 10 c.c. were taken for titration. In the control experiments, 10 c.c. of 0.6 M sodium chloride were treated in exactly the same way as the cerebro-spinal fluid.

The curves for control and cerebro-spinal fluid titrations are plotted with pH values as ordinates and c.c. N/10 sodium hydrate as abscissæ. The organic acid content is represented by the difference in equivalents of sodium hydrate between the points of inflection of the control and cerebro-spinal fluid curves. Typical curves are shown in Fig. 1.

It became evident at the beginning of this work that if the titration was commenced at pH 2.30, the result obtained often by

no means represented the whole "organic acid" content of the sample. For if the titrations of both control and cerebro-spinal fluid samples were begun at successively lower pH values, corre-

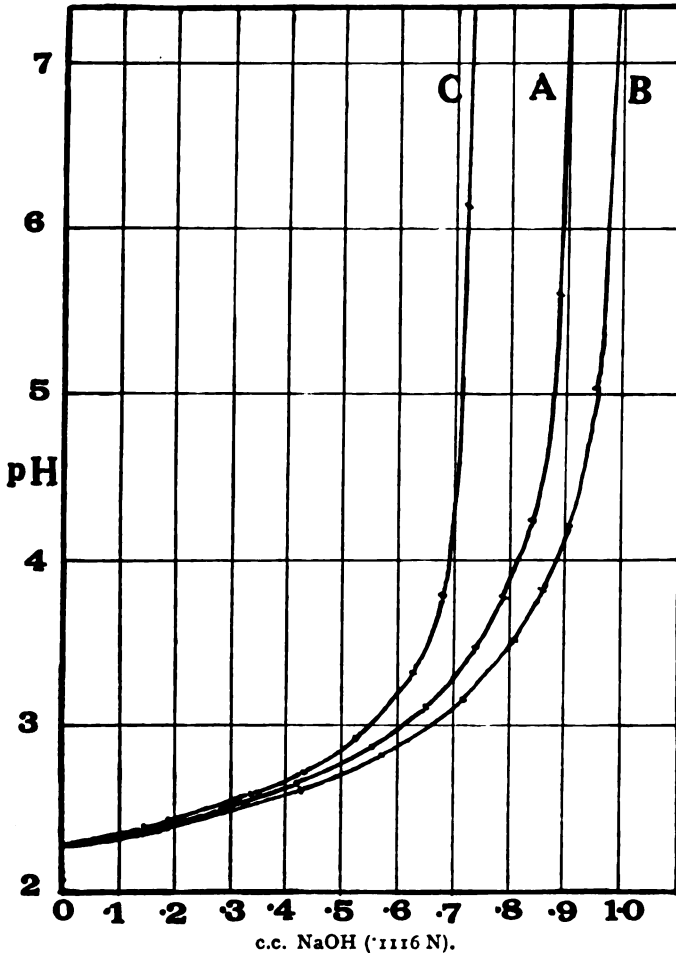


FIG. 1.—Showing titration curves : C, control ; A, general paralysis, Case IX ; B, general paralysis, Case IV.

spondingly larger divergencies between the two curves were obtained at the "neutrality" point. This will be shown to be due to the presence of weak bases.

The cerebro-spinal fluid organic acids, the lime-salts of which are soluble in water, consist of fatty acids and protein cleavage products. Taking lactic acid and glycine or tyrosine as representative of these types, we may calculate the amounts of these which are theoretically estimated in titrating between any two pH values.

The "dissociation constant" for lactic acid is approximately 1.4×10^{-4} at 25°C ., and for dilute solutions of the acid in the presence of its alkali salt—

$$K_a = 1.4 \times 10^{-4} = \frac{(\text{H}^+) (\text{salt})}{(\text{acid})}$$

Substituting the dissociation exponent $\text{pK}'_a = \log \frac{1}{K_a}$.

$$\text{and also } \text{pK} = \log \frac{1}{\text{H}^+}$$

this becomes—

$$\begin{aligned} \text{pH} &= \text{pK}'_a + \log \frac{(\text{salt})}{(\text{acid})} \\ &= 3.85 + \log \frac{(\text{salt})}{(\text{acid})}. \end{aligned}$$

At the pH values, 2.3 and 7.0, we obtain the following percentages of free lactic acid :

pH.	Free acid % total.
2.3	98.2
7	0.07

In the case of the amino-acids the $-\text{COOH}$ group practically does not enter into titrations below pH 6 or 7, but the basic $-\text{NH}_2$ group binds acid, which affects the titration to a considerable extent.

For tyrosine, the "dissociation exponent" due to its acidic properties is—

$$\text{pK}'_a = 8.40 = \text{pH}^+ - \log \frac{(\text{salt})}{(\text{acid})}.$$

The association exponent due to the acid-binding power of the basic group is—

$$\text{pK}'_A = 2.51 = \text{pH} + \log \frac{(\text{salt of base})}{(\text{free base})}.$$

The values for glycine are, for our purpose, not very different from these. Substituting values of pH as before we obtain :

pH.	Free - NH ₂ % total.		Free - COOH% total.	
	Tyrosine.	Glycine.	Tyrosine.	Glycine.
2·3	38·1	48·2	100	100
7	100	100	96·2	99·8

It is clear from the above that any such basic substances, not necessarily with -COOH groups, which are present in appreciable quantities, will have a marked influence on the titration curves presented in this paper.

The titrations were carried out between pH 2·3 and pH 7·0, the lower limit being chosen so as to obtain results comparable with those obtained by Perlzweig and Delrue (1) with normal blood-serum. It is not advisable, in any case, to commence the titration much below this limit, since at lower pH values the electrode becomes insensitive to slight changes in pH, and also the relatively large amounts of sodium hydrate required introduce a volume error.

The results recorded in the tables thus appear to include practically the whole of the fatty acids, and very roughly 50 to 60% of weak bases of the amino-acid type.

TABLE I.—*Non-paretic Cases.*

Case No.	Diagnosis.	Organic acids. Milli-equivalents per litre (titrated between pH 2·3 and 7·0).	Lactic acid.	
			Milli-equivalents per litre.	Mgrm. % .
I.	Epilepsy . .	2·2	1·7	15·1
II.	Hysteria . .	2·7	1·5	13·1
III.	Epilepsy . .	3·1	1·1	10·1
IV.	Post - encephalitic paralysis agitans	1·4	1·4	12·9
V.	Progressive muscu- lar atrophy .	1·6	1·4	12·4
VI.	Cancer of stomach	1·5	..	..
VII.	Epilepsy . .	2·9	..	..
VIII.	Dementia . .	2·7	..	..

TABLE II.—Cases of General Paralysis.

Case No.	Organic acids. Milli-equivalents per litre (titrated between pH 2.3 and 7.0).	Lactic acid.	
		Milli- equivalents per litre.	Mgrm. %.
I.	2.9	1.1	9.7
II.	3.3	1.6	14.3
III.	4.4	1.2	10.8
IV.	5.0	1.1	10.1
V.	4.6	1.2	10.5
VI.	4.6	1.3	11.6
VII.	2.9	1.4	12.8
VIII.	3.7	1.2	10.8
IX.	3.3	1.2	11.1
X.	4.6	..	..
XI.	3.2	..	..
XII.	3.9	..	..
XIII.	2.5	..	..
XIV.	3.9	..	..
XV.	2.7	..	..
XVI.	3.4	..	..
XVII.	2.5	..	..
XVIII.	2.2	..	..
XIX.	2.9	..	..
XX.	3.2	..	..

The amino-acid determinations carried out on a few separate samples indicated an amino-nitrogen content in cases of general paralysis of between 1.2 and 1.5 mgrm. %. This would give an amino-acid content of roughly between 0.8 and 1.1 milli-equivalents per litre, and about 50 to 60% of this, or 0.4 to 0.6 milli-equivalents per litre, would thus be included in titrating between the pH limits of 2.3 and 7.0.

It is clear from these results that a large portion of the "organic acids," particularly in the case of general paralysis, is unaccounted for. The fact that increase in "total organic acids" appears to be in no way related to increase in lactic acid, indicates the presence of varying amounts of other titrable nitrogenous acids and bases.

The nature of the curves obtained affords some general indication of the amounts of the acids and bases present.

For the acids we have—

$$pK'_a = pH - \log \frac{\text{salt}}{\text{acid}}$$

At the point of half neutralization of the acid,

$$(\text{salt}) = (\text{acid})$$

$$\text{and } pK'_a = pH.$$

For lactic acid, pK'_a is approximately 3.85.

Similarly, for the weak amino bases,

$$pK'_A = pH + \log \frac{\text{salt}}{\text{base}}$$

and at the point where $(\text{salt}) = (\text{base})$

$$pK'_A = pH.$$

For tyrosine pK'_A is 2.51, for glycine it is 2.33.

When the titration is confined to the limits of pH 2.3 and 7.0, the *apparent* pK'_a value for lactic acid is 3.83—almost the true value—but for tyrosine the *apparent* pK'_A is increased to 2.76.

For mixtures of lactic acid and tyrosine, the apparent composite pK' value as read from titration curves would lie between 2.76 and 3.83.

The curves in Fig. 1 show apparent composite pK' values of approximately 3.4 and 3.2. The decrease in pK' suggests that the increased "organic acid" content in curve II is due mainly to a larger concentration of basic material. This is typical of the results in general, an increase in "organic acid" content being usually accompanied by a decrease in the apparent composite pK' . The wide variation in the results of the tables thus appears to be due mainly to weak basic material, and this can only to a small extent be accounted for by variations in the amino-acid content. It appears therefore that, particularly in the case of the cerebro-spinal fluid in general paralysis, the results lead to the same conclusion that Perlzweig (5) arrives at when dealing with blood-plasma and urine, namely, that the greater part of the so-called "organic acid" titration consists of a variety of organic bases and protein cleavage products.

SUMMARY.

1. Lactic acid and "total organic acids" were estimated in cerebro-spinal fluid from cases of general paralysis and from non-paretic patients. In a number of fluids from cases of general paralysis the amino-acid content was also determined.

2. The results, which are tabulated, show no increase of lactic acid in general paralysis, but a definite increase in "total organic acids."

3. It is argued from the nature of the titration curves obtained, and from other evidence, that the results for organic acids include weak basic material unaccounted for by ordinary methods of analysis, and that this is responsible for the increase in the case of general paralysis.

The author wishes to thank the Director of the Central Laboratory, Dr. F. Golla, for his advice, and Dr. S. A. Mann for helpful criticism.

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THE REACTIVE MANIC EPISODE: ITS IMPLICATIONS AND SCOPE.

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BLEULER, in his *Text-book of Psychiatry*, says that "Reactive mania is unknown." This statement occurs in the section devoted to the consideration of the reactive states; temporary psychoses, that is to say, where the ætiology is so clear and in such temporal contiguity to the onset of the symptoms that the illness can be definitely laid at the door of some recent alteration in the patient's total life situation.

In the same section Bleuler discusses fully the reactive depressions and considers that they are recognizable as such, although rare, and are usually manifestations of "manic-depressive insanity, and . . . psychopathies and neuroses."

This at once opens up a very large question, *viz.*, when are we entitled to regard any of the affective psychoses as reactive and episodic? Many of the depressions and exaltations which one sees clinically are essentially episodic and reactive in the sense stated in the first paragraph, but they recur from time to time in the life-history of the patient—similar reactions, separated temporally from each other by a longer or a shorter interval of normality. Consequently we are entitled to regard them as cyclic.

How many years or months must we allow to elapse between attacks before we consider ourselves entitled to regard episodes as clinical entities and not part of a manic-depressive psychosis or other condition? And this takes no account of the significance and weight we are entitled to lay on the clearness of the ætiology. Must we, as Wernicke suggested, make of our case-record a complete biography of the patient before we can truly evaluate any apparently episodic manifestations?

Here, however, we are concerned chiefly with the question of

the reaction in the light of the thought-content during the acute illness, and the relationship to it of the supposed ætiological factor and the total life situation.

The problem of psychopathology presented by the acceleration of psychic tempo, with its alterations in affect, thought and centrifugality is a difficult one. In many ways it is even more difficult than an attempt at comprehension of the depressive counterpart, for all of us are more familiar with depression than with exaltation. It is a phenomenon of the psychic life of the normal which has commonly more introspection devoted to it than odd bursts of mild euphoria, even if the result of the introspection is merely a decision to take an aperient.

One difficulty which stands directly in the path of elucidation is the rush of talk, with its varying degrees of incoherence, found in the excited affective reactions. This has led to the belief that what can be made out of the stream of talk in these states has but a slender connection with the real mental trend, and that the reason for the elation breaks through only occasionally in a fragmentary way.

Another problem of equal intricacy is the question of a clear ætiology.

It is obvious that the endogenicity of any affective response is a difficult thing to assess. We must remember Freud's important principle of separating out cases where the cause is in the present from those in which it lies in the past. Psychological factors producing mood changes also may well work at a distance (speaking of time), and give a false appearance of a mood change without any present cause. The two most important suggestions as to this factor in the affective reaction types come from McCurdy and MacDougall. The former suggests that the onset of a manic or a depressive attack is in response to the fulfilment of a wish. If the wish is consonant with the personality's conception of a proper social setting and relationship, then the resulting affective release is in terms of excitement. If, on the other hand, the wish is such that it is anti-social, or against the ideals of the individual, the response is in terms of a depression.

To say that all manifestations of mental disease are the expression of difficulties in facing up to life is, by now, a truism. We can only add to the postulate by saying that if one person reacts to these difficulties by schizophrenic fantasy, another by the elaboration of a paranoia and a third by some predominatingly affective response, then the difference must be determined by factors of

constitution and endowment. It is the old question of nature and nurture. This leaves us very much where we were.

McDougall's explanation of the phenomena is, naturally, along more definitely psychological lines of an almost academic nature. He says that in the depressive and excited phases respectively we can see the temporary overaction of the opposed instincts of submission and aggression. This couple, he says, normally form a balanced pair; from time to time they may be thrown out of equilibrium, and as a result we see the overaction of one or the other without (and this is the essential point) the braking effect of its "psychological antagonist."

Here is merely a guess at a mechanism; and we are as much in the dark as ever as to what the patient is trying to do with himself. It is a guess at a "how" but not a "why."

It is true to say that if the mechanism be a wish-fulfilment one and the affective response be in terms of gratification or fear, yet we can see only fragmentarily, and from time to time, the real thought-content underlying the condition. Still less often can we clearly make out a definite mental trend, and it is true to say that the schizophrenic, with all his mystery, is often really easier to understand than the affective psychotic—at any rate from the point of view of finding out what the patient's thought-content means to him.

It is essential for discussion of the affective psychoses to admit frankly that we can read no other meaning into the long-maintained depressions or excitements than that they are the expressions of endogenous mechanisms. And the slighter mood changes in normal subjects follow the same rule. The duration of the mood, however determined, we must, as has been said, regard as constitutional. Also to the careful observer it is clear that there are changes in an excitement and in a depression, fine, yet definite, so that we are entitled to regard the affective state as showing a predominating emotional tone which is not absolutely constant. It is the difference between the same tune played on the bass and on the treble part of a keyboard.

Most important of all is the need for getting all the facts before we call an exaggerated affective response "endogenous." With these considerations in view the case here considered formed a significant picture, if not typical, at least suggestive.

CASE I.—The patient was a single woman, *æt.* 29. She had a clean heredity as far as mental disease was concerned and she had a hood personality. She had been a post-office clerk since her

early teens and was a good and steady worker. She was described as buoyant, thoughtful, unselfish, a fairly good "mixer" and having a marked musical bent.

After a short period, during which she was noticed to be below "par" physically and to have a degree of anæmia, she suddenly developed an excitement which soon became an acute mania.

At the outset of her condition, however, her thought-content was not so altered as to be undecipherable, and she is noted as declaring that she was Peter Pan, "the boy who wouldn't grow up," and wanted to fly away out of the window and to "get away from everything."

Here it should be mentioned that she had a peculiar home situation, in that she lived in dull and quiet family surroundings, where she had a good deal of care in the presence of an invalid mother. To this must be added the fact that her work at the post office was exacting and arduous.

The illness progressed to mania, and lasted almost without remission for two years. She fell ill in March, and from then till June she was continuously excited. She then improved, but was quiet, fatigable and lacking in concentration for a few days, after which she again became excited. Early in the first year she was noted to be wet and soiled. She finally recovered and remained well for eighteen years. During this illness, from time to time she had fever and gastro-intestinal disturbance with diarrhœa. The existence of febrile phenomena is significant.

After her recovery she remained at home, and never resumed her work but kept perfectly well.

One night her mother, now likely to die suddenly, called her to rise and do something for her. The patient, thinking something was amiss, rose hurriedly and fell, hitting her head against the bed-post and cutting it. In a few days the wound suppurated, and at the same time she was seen to be looking ill. She admitted that she had not been sleeping well. Then she became talkative and excited; she was so restless that her brother had to sit up all night with her. She told him that she felt as if she were rushing down a steep place, and that the past events of her life were coursing rapidly through her mind.

The excitement increased, she soon became uncontrollable and had to be removed to hospital.

On admission she was deeply narcotized and was on that account confused and disoriented. The stream of talk was slow and hesitant, and memory for recent events was lost, as

was retention. As she came out of the narcotized condition it was seen that she was maniacal. Her mental trend showed the presence of a thought-content which compared interestingly with that found at her previous attack.

This was the presence of confabulations of the most detailed type. She began by telling a confused story of a visit paid by a relative who was far distant at the time, and then launched forth on a long story of considerable detail to the effect that she had, during the past few weeks, had a most enjoyable trip. She, with some cousins, had travelled across France by express to Marseilles and thence by boat to Port Said. There they had joined the ship in which the patient's brother was chief engineer. (He did in fact occupy such a post in a liner on the India run.) In this ship they had come home and then she had fallen ill. It was suggested to her that this was imaginary, and she laughingly said, "It might well be, for it is not like me to do an adventurous thing like that, but it is quite true."

Another brother related that the trip which she had confabulated had been for a long time talked of by the engineer brother, that it was quite a possible arrangement, and that it was tacitly agreed that it might come off when the patient's aged and invalid mother should no longer be a responsibility.

A clearer mechanism could hardly exist.

She rapidly improved, and was discharged a fortnight after the onset of her illness and has remained well. There were no regressive phenomena at this time. The recovery was smooth. She retained no memory for her confabulations, but agreed that she would like to make the trip she had imagined.

To sum up as briefly as possible, the case is that of a woman with a good external and personal background who has had two manic attacks. In each attack there are the same significant points. (1) The definite indication of a dissatisfaction with the actual life situation. In the first attack the difficulty was more unalterable. A young and healthy woman, she was faced with a life of exacting and uninteresting work. In the second, shorter attack the difficulty is the care of the invalid mother. "To end, when?" she asks herself, perhaps. At the end of this responsibility, there is the projected and long anticipated voyage; then the sudden call in the night, with the implication of some serious turn in the invalid's condition; the fall, and its consequences. (2) The toxic factor: In the first attack it will be remembered that she was fevered, toxic, albuminuric and anæmic. In the second attack

there was a septic process with quite a definite general toxic reaction.

It is felt that the guessed-at psychological ætiology of the condition, and the existing toxic conditions, or states of low resistance, must be kept close together. They mean, so placed in juxtaposition, that we are dealing with a whole individual. It is a total reaction. From this rather remarkable syndrome of wish-fulfilment excitement, with toxic general disturbance, not as an initial phenomenon or a sequel, but as an integral part of the condition, we come to the consideration of the second case.

CASE 2.—This patient was a single woman, æt. 47. She was admitted to the Clinic on a stretcher. She was restless, throwing body and limbs about, striking, clutching and scratching those near her in a purposeless and confused manner. She was muttering incoherently and unintelligibly, and could not carry on a conversation. She was resistive, and had to have all her bodily wants attended to.

The illness had begun four weeks before, and she had been in the condition described for about ten days.

In the house where she lived there had stayed as a visitor a man of between fifty and sixty, accompanied by his two sisters. They all became very friendly and began to go about more and more as a party, until finally they were spending morning, afternoon and evening together. They were all vivacious, and there was a great deal of talk, activity, and stimulating conversation. The effect of this was to speed up the patient's responses; she became active, alert, euphoric, restless, sleepless, and this was intensified when the man made a tentative, but quite genuine, proposal of marriage to her. With arrangements for a future discussion of this they parted, and he returned to his own home.

The next day the patient was much upset to find an old lady who lived with her looking very ill. There was some fuss over the doctor's visit, and the old lady died. Within the next twenty-four hours the patient's sister was a little alarmed by the patient's quickness. She was talkative and extremely witty, making all sorts of penetrating remarks. She paid several calls and impressed her hosts with her appearance of great vigour and well-being. Subjectively there was a marked euphoria.

At the end of thirty-six hours the stream of talk was faster and her sister was sometimes unable to follow the train of thought. The patient began to mislay things and to wander hither and thither hurriedly, without plan.

The physician prescribed a strong sedative, and as it was taking effect the patient said, "How glad I am to be resting like this." Twelve hours later she was in an acutely maniacal state, and there was marked interference with orientation, in all spheres. In spite of sedatives and nursing it was impossible to manage her in a private house, and so she was sent to the Clinic.

The family history was negative. The patient had lived all her life in the rather gossip-ridden small town where she had been born. Well educated and of middle-class stock, she had lived an uneventful life at home. For some years they had kept boarders. She had never had any psychic disturbances, love affairs or other crises of that type. From time to time after "doing too much" she would become "run down." The usual tonic was successfully exhibited. She had no other illnesses. This fluctuation in her general biological level is significant. She was the business head of the family, aggressive, active, determined, rather vain of her personal appearance, quick tempered, a trifle "affected," not over-religious, not living a very full intellectual life, but rather relying on tea-party talk for mental pabulum.

She was in poor physical state on admission. She looked toxic, the skin was sallow, and the tongue dirty. She covered her head, wept miserably, laughed foolishly, plucked and clutched at all objects. She muttered incoherently, "O Jesus Christ . . . it is thus that we do so . . . wherefore . . . it is so we pray . . . O Christ, I never, I never . . ."

By the end of a week she had become very ill. The temperature ran up to 103°. There was diarrhœa, some melæna, evidence of dehydration, and an evanescent erythematous toxic rash on the flexor surfaces. Appropriate treatment abolished these in a week, at the end of which she gradually began to converse coherently.

This was the most striking period of her illness. She was completely disoriented, but was indignant at being where she was, as she wanted to be with her "husband." She referred repeatedly to her status as a married women and mentioned by name the man already mentioned. She wanted to rejoin him at once. In a few days her mental condition began to fluctuate. For some hours she would be oriented for persons (doctors and nurses), but not so well for place. At these times she was tearful and grateful. Then would come a spell of complete disorientation, with mis-identification, hostility, demands to get away, complaints of being separated from her "husband," and so on. At these times there was flight of ideas, distractibility, clang association.

At the end of ten weeks she was perfectly well. When the question of after-care was being discussed she expressed a wish to visit the man who had played such an important part in her illness. There was no concealment; she freely described her feelings and wished to carry out their agreement. She was, however, persuaded to let the matter drop. She had a complete amnesia for her whole illness from the time when she was shocked to see the old lady almost dead.

The patient was discharged recovered.

The parallel between Cases 1 and 2 is sufficiently obvious, and requires no straining to make the facts fit the theories. In each case there is essentially a reactive excitement. In each there is the presence of some wish for an alteration in the life situation, which wish is in conflict with ethical considerations. In Case 1 there is the repugnance from wanting anything which could only be made possible by a mother's death. In Case 2 the death of the old lady meant a lessening of burden for the patient and more freedom to do as she wished. There is the presence in both examples of the "*choc émotif*," of something in the nature of "trigger energy" which fired off the charge. In both cases it is the question of the removal of a responsibility by death. The content of thought in each case bears exactly the same relation to what reality meant for the patient. In Case 1 it is a connected and confabulated story of a happening to which the patient had long looked forward. It is not too much to suggest that not only the voyage but the circumstances making it possible were both equally desired. It is noteworthy that no mention of the patient's mother ever escaped her when she was in her excitement. In Case 2 there is a home responsibility, a wish and a prospect of quitting it, by marriage, a late marriage, and one which was a little ridiculed by the patient's sister.

The toxic factor is important but difficult to assess. These women were both of the small, quick, active type, tending towards the thyroid-adrenal with a labile vaso-vegetative system. In each case there was, integrated with the syndrome, a toxic disturbance. The only way in which we can feel that this is something more than accident is by remembering that we are dealing with an individual, with a whole organism, and that to separate physiogenic and psychogenic is to cloak ignorance with words. Looked at thus, what do we have? In the one case a woman who receives a severe blow on the head and a scalp wound. She suffers some "shock." In the other case a rather frail little woman, exhausted

by continuous excursions, work and talk, enters a room to find, apparently, a corpse. She develops a panic-like state. Subsequently both become a prey to bacterial invasion. In the one case a staphylococcus, in the other an unknown gastrointestinal toxin. Along with this failure to control the infection there is with, and in, and through it an alteration of another function, the function of making reality a part of the individual. We have to take account of both processes. And this can only be done by regarding our cases as "experiments of Nature," as Prof. Meyer calls them.

These two women had a personality total to respond with. This cannot be expected to be at a constant. No biologist will allow that the potentialities of any living thing are as constant as those of a steam engine. It is the essential point of living structure, this curve of potentiality. Now here we have to consider two well-known curves. One is the general ebb and flow of emotional tendencies, and the other is what Prof. Meyer calls "the fitness curve." There is a general harmony between these two, and it will at once be seen to what extent this has been interfered with in the history of the respective illnesses. Especially we must remember the early health of Case 2. It would be meaningless to describe the cases as toxic exhaustive psychoses. The clinical picture is not that of a toxic disturbance. The content of thought in each case had a meaning, clear to everybody—not only to the patient. And the meaning was that a wish had been gratified without benefit of reality. The separation from autism and fantasy is clear. There is no distortion.

The invasion with toxins, *pari passu*, makes the way clear for us to feel that here is an organism and there a set of very complex stimuli. The two come together, and we get a result which affects the whole organism. It is a reactive excitement with, superadded, manifestations of invasion of the general system by what we can only loosely describe as a toxin.

From the purely "mentally" integrated point of view, that is, taking obvious psychological mechanisms alone, it is a point of importance to note the difference between the first and second attacks of Case 1. It is common to talk of the behaviour of an individual as a response or reaction. It is less common to realize that the individual makes adjustments of two types—long-term adjustments with subservience of the present to claims of the more distant future, and short-term adjustments dealing with the more immediate present. In Case 1 the first attack came in a typically

long-term situation. The patient, a young woman, was faced with a life of uncongenial work. Escape was not easy; the situation was not easily modifiable; conscience and the financial position were in the way. Hence the long-drawn-out psychosis. It can be seen how this differs from the second attack. This, which is essentially a point of reactivity, is important. It seems to indicate that in the cases quoted there is some relation between the nature of the causal situation and the type of response. It remains for further research to confirm or refute this in the field of the affective episodic psychoses. Howbeit it is felt from the analysis of the cases quoted that excitement of the manic type does occur clinically in response to definite life-situation factors, and that in the thought-content of the patient there can be seen proof of this. It is suggested that these cases, episodic and with good prognosis, may justly be called episodic reactive manic excitements.

Summary.—The existence of reactive manias is denied by some authorities. The ætiology of the affective psychosis is discussed, and two cases are quoted in which excitement with manic features and toxic phenomena (indicating a reaction of the whole personality) appeared as a result of definite situational difficulties, the proof of this lying in the thought-content of the patient during the more acute stages of the illness.

The importance of the formulations which have been here made lies more especially in our ability to give a more definite prognosis in cases of this really quite common type. It is of paramount importance that if, as has been indicated, the content of thought has a very close connection with the total series of events in the illness, then a careful evaluation of these will assist us in deciding whether we are dealing with a condition of a long-term or a short-term nature. It is felt also that a more proper evaluation of toxic factors, as suggested in this paper, would to some extent clear up the status of many of those so-called delirium-like reactions which frequently do not belong to that category.

FOCAL SEPSIS IN MENTAL DISORDER: THE "PATHOGEN-SELECTIVE" METHOD OF DIAGNOSIS.

By ARTHUR POOL, M.D., B.Ch.Liverp., M.R.C.P.Lond., D.P.M.

THE rôle of focal sepsis as a causative factor in mental disease has received increasing attention during the past few years since Cotton published his results in this field of inquiry (*Journal of Mental Science*, October, 1923). In England, prominent workers in this branch of medicine, while unable to report the striking therapeutic results of Cotton, have confirmed his main contention that many acute and subacute psychoses seem to be intimately related to some focus of sepsis. Thus confirmation of this main thesis has come from Graves (*Journ. Ment. Sci.*, October, 1923 and 1925), Chalmers Watson (*ibid.*, October, 1923), Hunter and Moynihan (*Brit. Med. Journ.*, November 5, 1927). On the other hand, equally prominent psychiatrists have called in question the results claimed, and the alleged "proven relationship" of sepsis and mental disorder, chief among whom are Henderson and Menzies (*Brit. Med. Journ.*, November 5, 1927, p. 818).

The fact that chronic sepsis is as common in the sane as the insane, and the difficulty of determining in any particular case whether a focus of sepsis is causative or incidental, constitute the core of the problem. Henderson says, "It is very dangerous to state that because something (a septic focus) existed in a given mental case, that something was the specific agent." And he goes on to say, "Many a healthy abdomen has been mutilated and many a serviceable tooth removed as the result of ill-grounded theories of the ætiology of mental illness." Is there any method whereby, before resort to wholesale dental extraction or other surgical intervention, we can confirm or eliminate a known focus of sepsis as the causative factor in any particular case? The present paper constitutes an attempt to answer the above query, but before proceeding we may profitably make a further quotation. Graves

(*Brit. Med. Journ.*, November 5, 1927, p. 817) is reported as saying, "Dr. Bruce believed that the cause (of mental disorder) lay deeper than a toxæmia, *being the result of a failure to form antibodies.*" Or in other words, in any particular case where focal sepsis exists, if the defence mechanisms of the body (blood- and lymph-streams) were to "rise to the occasion" and produced antibodies of sufficient quality and quantity, these would prevent the occurrence in other parts of the body of remote effects consequent upon the local disease focus. If this hypothesis is correct—and it is certainly plausible enough—then we have a ready means whereby in any particular case we can incriminate or exonerate a focus of sepsis as the ætiological factor.

The method is that known as the "pathogen-selective" method, introduced by Solis Cohen in America, and utilized and elaborated in this country by Cronin Lowe, to whom I am indebted for introduction to the method and help in the early cases. Essentially it consists in the use of the patient's own blood as a factor in bacteriological culture. Where antibodies have been formed and are present in sufficient quantity they will effectively inhibit organismal growth, and such organisms can then be ruled out as causative. Originally we had intended to extend the method and employ the cerebro-spinal fluid in a similar inhibitory capacity to that of the blood, but repeated failure to demonstrate any inhibitory qualities in the cerebro-spinal fluid led us to abandon this procedure.

The actual technique employed is as follows: Under sterile conditions a platinum loopful (of constant size) of septic material is removed from the alleged focus—tooth-socket, tonsillar crypt, nasal cavity, accessory sinuses, etc.—and in a wide-mouthed sterile test-tube is mixed with three loopfuls of sterile normal saline. Two loopfuls of this mixed bacterial emulsion are then removed and "sown" on a plate of blood-agar. Then, employing aseptic technique, 5 c.c. of the patient's blood is removed from a vein and inoculated into the test-tube containing two loopfuls of the saline bacterial suspension. Both test-tube and agar plate are incubated (at 37° C.) for twelve hours, and then sub-cultures from the material in the test-tube are made on a fresh blood-agar plate and further incubation undertaken. Thus we now have two separate cultures on agar plates, viz. :

Plate A. Direct culture.

Plate B. Indirect culture through the patient's blood.

As a general rule in the direct culture (plate A) a very mixed growth of organisms occurs, but in plate B (indirect culture)

the inhibitory action of the blood is manifest, occasionally completely inhibiting all bacterial growth, but more usually limiting it to only one or few organisms. The explanation is obvious, and appears to be a practical vindication of the hypothesis attributed to Dr. Bruce by Graves and quoted above. Where the defence mechanism of the body has produced antibodies to the organisms of a septic focus, such antibodies will inhibit the growth of their complementary bacteria when culture thereof is attempted. Thus those organisms which grow on plate B (indirect culture) we assume to be pathogenic, as there are no antibodies in the blood capable of inhibiting their growth.

As we have stated above, we originally attempted to extend the method to the cerebro-spinal fluid. But we soon found that the latter has no power of inhibiting bacterial growth—an experimental confirmation of the clinical fact that bacterial invasion of the cerebro-spinal fluid is a most serious condition, the organisms multiplying rapidly and the condition generally ending fatally.

The clinical material which forms the basis of this paper is constituted by the following cases :

Post-encephalitis	26 cases.
Confusional insanity	1 case.
Delusional insanity	1 „
Dementia paralytica	1 „

The reason why we have investigated so many cases of encephalitis from this point of view is that clinical observation, together with subsequent investigation of *post-mortem* material, has led us to the conclusion that in many such cases the lesion is not the sequel to an acute process only, but a chronic progressive encephalitis (see paper by author on encephalitis in the *Journ. of Neur. and Psychopath.*, 1930). Most observers are agreed that the source of entry of the "virus" of this disease is through the nose and throat and associated sinuses, and in repeated examinations of this region in these cases we have been impressed with the marked degree of chronic inflammation (a granular naso-pharyngitis) present in practically all of them.

While this chronic naso-pharyngitis was present in all of these cases, in some of them there were in addition other possible sources of sepsis and infection in the teeth, tonsils, and in one case the middle ear. In such cases the pathogen-selective method of investigation has helped us to determine which of the foci was the causative factor and which were merely incidental.

The table which we have compiled shows not only the chief clinical features of the cases from the point of view of infective foci but in addition the results of the direct and indirect cultures of septic material obtained from the various foci.

Before proceeding to a detailed analysis of the table it will probably illustrate the value of the method better if we instance in some detail certain individual cases thus investigated.

CASE I.—Female, æt. 40. Post-encephalitic Parkinsonianism.

The onset of the illness occurred in 1924, since when the patient had been increasingly crippled by the disease, and in addition had become acutely depressed and melancholic, requiring certification. When admitted to hospital she was in a helpless, bed-ridden state, and she remained thus for about 18 months until treatment based on the present investigation was instituted.

The foci of sepsis present in this case were the teeth and naso-pharynx. The former were very bad indeed, the upper set consisting of numerous carious stumps in septic sockets and much associated gum absorption due to pyorrhœa.

The naso-pharynx was typically granular, and on mirror examination of the posterior nares numerous small lymphoid follicles crowned with beads of pus were visible. Transillumination revealed no infection of the accessory sinuses, and all other systems were free from ascertainable sepsis. Thus in this particular case there were two septic foci to be investigated, and, on the face of, it it looked as if dental caries and sepsis were the chief factor.

Septic material was obtained from the sockets of two of the worst teeth and also from the naso-pharynx, and subjected to the "pathogen-selective" method of culture. The following were the results thus obtained—

A. *Teeth*:—

Direct plate: Pneumococci and *Staphylococcus aureus*.

Indirect plate: Sterile, *i.e.*, complete inhibition.

B. *Naso-pharynx*:—

Direct plate: *Streptococcus hæmolyticus* and *B. proteus*.

Indirect plate: Pure growth of *B. proteus* only.

If the original hypothesis (attributed to Dr. Bruce and quoted by Graves) enunciated above is correct, then we must on the above findings adjudge the naso-pharynx and not the teeth to be the causative focus, the latter being merely incidental or companionate sepsis.

On the basis of the above findings the following treatment was instituted: Daily saline irrigation of the naso-pharynx together with antiseptic gargles to the throat and the bi-weekly administration hypodermically of a selective autogenous vaccine of *B. proteus*. The teeth were given no further attention at the time. On the above therapeutic régime the patient's general physical condition showed marked improvement, to the extent that she was able to get up from her bed and begin to help herself with regard to her toilet, etc. This physical improvement with corresponding brighter mental outlook has now been maintained for the past nine months, although the patient is still bowed down by the flexion attitude of her Parkinsonianism. Thus what improvement has been effected has been due to the treatment of the less obvious focus of sepsis, even while an apparently glaring focus is retained as part of the body economy. To complete the rationale of the above therapy the carious teeth and stumps were removed to see if any further improvement would ensue, but none has as yet occurred. Thus we have bacteriological and therapeutic confirmation that an apparently obvious focus of sepsis (the teeth) may in a given case be merely incidental and not causative.

Another case may be cited illustrative of the same truth enunciated by Henderson—"It is very dangerous to state that because something (septic focus) existed in a given case that something was the specific agent".

CASE 2.—Female, A. G—, æt. 48.

A case of delusional insanity. When admitted she was in very poor physical condition, the main features being advanced dental caries and pyorrhœa, flatulent abdominal distension with distressing eructations, and fibro-myositis of the hamstring group of muscles, resulting in contracture at the knees, the pain associated with which was interpreted by the patient as electricity being played upon her by imaginary persecutors. The teeth were so rotten that the visiting dentist said they were not worth saving and accordingly they were removed *in toto* under a general anæsthetic, the opportunity being utilized to obtain from the teeth-sockets septic material for culture. The following were the bacteriological results:

Plate A:

Direct culture—*Staphylococcus aureus*, *Micrococcus catarrhalis* and diphtheroids.

Plate B:

Indirect culture—Sterile.

Some time after the dental extraction the patient showed evidence of infection of the urinary tract (pyrexia, frequency of micturition, etc.), and on investigation of catheter specimens of urine the causative organism was found to be *B. Welchii* (*B. aërogenes capsulatus*). Pathogen-selective culture made from the urine revealed the same organism in pure culture, there being no inhibitory factor in the blood. In view of this bacteriological finding in the urine (a gas-producing organism), and the known clinical fact that flatulent eructation was a distinctive feature of the case, it was thought advisable to investigate the bowel content from the pathogen-selective point of view. In direct culture of material obtained by saline irrigation there was a luxuriant growth of *B. coli*, *Streptococcus faecalis* and *B. Welchii*, whereas the pathogen-selective plate only grew *Streptococcus faecalis* and *B. Welchii*. Therefore we concluded that the latter organism (*B. Welchii*) was the causative factor, and that the primary focus was located in the bowel. On this rationale, treatment was directed to the alimentary canal in the form of daily colonic lavage and the administration of an intestinal antiseptic orally, resulting in immediate clearing up of the physical symptoms, both alimentary and urinary, and allaying of the mental and physical restlessness. Up to the present time we cannot claim that the patient is in any sense cured mentally, but there has been undoubted improvement consequent upon the removal of the toxic restlessness.

At this juncture let us make an apparent digression, the reason for which, we trust, will become apparent as we pursue the theme. During the past three years the writer has treated some hundred cases of dementia paralytica, and has frequently been at a loss to account for the bizarre therapeutic responses of some of them. An apparently early case of the disease will run a fulminating and rapidly fatal course despite all treatment, while another case, seemingly more advanced and less hopeful, will make a fair recovery under similar treatment. In order to try and arrive at some assessment of prognosis in general paralysis the personal, clinical and serological details of 24 cases were carefully analysed, and as far as we could determine the chief factor common to these rapidly fatal cases was sepsis, generally in the oral cavity and genito-urinary tract. The latter especially is a serious factor with regard to prognosis. Now with the advent of malaria and tryparsamide as the important therapeutic measures in this dread disease, the possibility of factors other than the immediate syphilitic process has been overlooked and the investigation thereof neglected. It

will be remembered that before the essential syphilitic nature of general paralysis was established as a fact Ford Robertson and McRae described a diphtheroid bacillus as the cause of the disease. It is quite feasible that the presence of this organism was evidence of accessory sepsis, and if not actually causative, was probably contributive to the morbid destructive process in the brain. In this mental hospital laboratory we have on occasion found, in the brains of cases of general paralysis and in other conditions, diphtheroid organisms which have been looked upon as evidence of a terminal infection. The writer is of the opinion that the cumulative clinical and pathological evidence points to the importance of accessory sepsis in these cases as a factor which weights the scales against the response to the antisymphilitic measures.

The following case serves to illustrate the above line of argument, and also emphasizes in some measure the value of the pathogen-selective method of investigation.

CASE 3.—Female, A. P.—, æt. 42.

Clinically a melancholic type of general paralysis. Treated with ten weekly injections of tryparsamide followed by a course of malaria. No definite improvement at the end of five months. Some weeks later the patient became pyrexial and showed signs of pyelitis. On investigation this yielded the ordinary coliform organism, but culture thereof by the pathogen-selective method demonstrated complete inhibition of growth by the blood. Treatment of the genito-urinary tract by the usual measures (alkalies and antiseptics) soon cleared up the local infection, but there was no corresponding improvement in the general clinical picture. While it had been noted on admission that the dental condition was unsatisfactory, no immediate investigation or treatment had been undertaken owing to the fact that the more pressing malarial-tryparsamide therapy occupied the field. Later, dental consultation recommended the removal of all the teeth, but as some appeared sound it was decided to remove in the first instance two only, one obviously diseased and the other looking fairly serviceable, although there was definite associated pyorrhœa. Cultures from the sockets of both teeth yielded identical bacteriological findings, the direct plate growing *B. Pfeiffer*, pneumococci and *Micrococcus catarrhalis*, while the pathogen-selective method yielded a growth of *B. Pfeiffer* and pneumococci. In view of this bacteriological confirmation of the teeth as the causative focus, complete removal was undertaken, with immediate improvement in the physical and mental health of the patient.

Twenty-Six Cases of Chronic Encephalitis.

No.	Name.	Sex.	Septic foci.	Bacteriological findings.								
				<i>Streptococcus hamolyticus.</i>	<i>Streptococcus viridans.</i>	<i>Streptococcus non-hamolyticus.</i>	<i>B. Pfeiffer.</i>	Pneumococci.	<i>Catarrhalis</i> group.	Miscellaneous organisms.		
1	M. S—	F.	Naso-pharynx	+	○	○	○	○	○	+	○	
2	M. O—	F.	"	○	○	○	○	+	+	+	○	
3	E. J—	F.	"	○	○	○	○	+	+	+	○	
			Teeth	+	○	○	+	+	+	+	○	+
4	S. F—	M.	Naso-pharynx	+	○	○	+	+	+	+	○	+
5	G. H—	M.	"	+	○	○	○	+	+	+	○	
6	A. R—	M.	"	○	○	○	+	+	+	+	○	
7	J. D—	M.	"	○	○	○	+	+	+	○	○	
8	R. P. T—	M.	"	+	○	○	+	+	+	○	○	+
9	N. M—	F.	"	○	○	○	○	○	+	+	○	○
10	S. D—	F.	"	+	○	○	○	○	○	○	○	+
			Teeth	○	○	○	○	○	○	+	○	+
11	W. L—	M.	Naso-pharynx	+	○	○	+	+	+	+	○	○

12	E. G—	M.	Naso-pharynx	+	+	+	+	+	+	+	+	+	+
			Tonsils large and infected	+	+	+	+	+	+	+	+	+	+
13	J. H—	M.	Naso-pharynx	+	+	+	+	+	+	+	+	+	+
			Teeth carious	+	+	+	+	+	+	+	+	+	+
14	K. C—	M.	Tonsils large and infected	+	+	+	+	+	+	+	+	+	+
15	W. H—	M.	Naso-pharynx	+	+	+	+	+	+	+	+	+	+
			"	+	+	+	+	+	+	+	+	+	+
16	J. H—	M.	Teeth good; early pyorrhœa	+	+	+	+	+	+	+	+	+	+
			Naso-pharynx	+	+	+	+	+	+	+	+	+	+
17	T. G—	M.	Tonsils infected	+	+	+	+	+	+	+	+	+	+
			Naso-pharynx	+	+	+	+	+	+	+	+	+	+
			Teeth	+	+	+	+	+	+	+	+	+	+
18	T. M—	M.	Naso-pharynx	+	+	+	+	+	+	+	+	+	+
			Pyorrhœa	+	+	+	+	+	+	+	+	+	+
19	J. B—	M.	Naso-pharynx	+	+	+	+	+	+	+	+	+	+
20	T. R—	M.	"	+	+	+	+	+	+	+	+	+	+
			Teeth	+	+	+	+	+	+	+	+	+	+

+ and o = Direct culture. * and — = Indirect or pathogen-selective culture.

+

(Staph. aureus.)

*

(B. Friedländer.)

Twenty-Six Cases of Chronic Encephalitis—continued.

No.	Name.	Sex.	Septic foci.	Bacteriological findings.						Miscellaneous organisms.								
				<i>Streptococcus hemolyticus.</i>	<i>Streptococcus viridans.</i>	<i>Streptococcus non-hemolyticus.</i>	<i>B. Pflüger.</i>	Pneumococci.	Catarrhalis group.									
21	W. J—	M.	Naso-pharynx Pyorrhœa	++	0	0	+	0	+	0	0							
22	J. C—	M.	Naso-pharynx Teeth	++	0	0	++	0	+	0	0							
23	E. G—	M.	Naso-pharynx	++	0	0	0	+	+	0	0							
24	H. S—	F.	Left tonsil large and infected Naso-pharynx	++	0	0	0	++	+	0	* (<i>Staph. albus.</i>)							
25	W. B—	F.	"	+	0	0	0	**	**	+	(Diphtheroids and <i>Staphylococcus aureus.</i>)							
26	S. H—	F.	"	+	0	0	0	++	+	0	+ (<i>Staph. aureus.</i>)							
Totals				19	1	0	14	13	20	4	4	2	0	0	1	0		
Totals				10	0	0	7	9	7	4	5	2	0	0	0	0	0	0
Totals				7	0	0	0	2	1	3	3	1	1	0	0	0	0	0
Totals				3	0	0	1	3	1	3	1	1	0	0	0	0	0	0
Totals				2	0	0	0	2	2	3	1	1	0	0	0	0	0	0
Totals				1	0	0	0	0	0	1	1	0	0	0	0	0	0	0

Three Other Representative Bases.

No.	Name.	Sex.	Septic foci.	Bacteriological findings.						Miscellaneous organisms.	
				<i>Streptococcus hemolyticus.</i>	<i>Streptococcus viridans.</i>	<i>Streptococcus non-hemolyticus.</i>	<i>B. pyifer.</i>	Pneumococci.	Catarrhalis group.		
27	A. P.—	F.	Teeth Urinary tract	0 —	0 —	0 —	++ **	++ **	0 —	0 —	0 — + (<i>B. coli.</i>)
28	M. C.—	F.	Cervix uteri, leucorrhoea Teeth	0 —	0 —	0 —	0 —	++ —	++ —	0 —	+ (<i>Staphylococcus aureus.</i>) ** (Diphtheroids and <i>Staphylococcus aureus.</i>)
29	A. G.—	F.	Colon	0 —	0 —	0 —	0 —	0 —	0 —	0 —	* (<i>B. coli</i> , <i>Streptococcus faecalis</i> , <i>B. Welchii</i>) * (<i>B. Welchii</i> , <i>Streptococcus faecalis</i> .)

+ and 0 = Direct culture. * and — = Indirect or pathogen-selective culture.
 Ordinary figures = Direct culture.
 Italic figures = Indirect or pathogen-selective culture.

Now to return to an analysis of the table indicating the cultural results, both direct and indirect, of material obtained from the various infective foci.

1. Twenty-six cases of chronic progressive encephalitis were investigated. All of these cases showed a typical granular naso-pharyngitis from which septic material for culture was obtained. In addition 6 of these cases had defective and carious teeth, and there were 3 cases in which, while the teeth appeared fairly healthy, there was widespread pyorrhœa. In addition 4 of these cases showed tonsillar infection. On analysis of the bacteriological findings the following results emerge :

(a) Five of the cases, while yielding bacterial growth in the direct culture, showed complete inhibition of all organisms in the " pathogen-selective " plate.

(b) The remaining 21 cases yielded a very mixed growth in direct culture, but the pathogen-selective culture usually reduced the growth to one or two organisms, hæmolytic streptococci and pneumococci being the preponderating bacteria.

(c) In the 14 cases in which the *B. Pfeiffer* was isolated in direct culture from the naso-pharynx, agglutination tests were undertaken, using the patient's own serum against the bacillus isolated. It will be noted from the table that only 7 of these 14 cases proved positive on the indirect plate and they gave the following agglutination results :

Name and Table number.	Agglutination.
M. S— . 1 .	Negative
S. F— . 4 .	"
K. C— . 14 .	Positive 1/125 dil.
J. H— . 16 .	± 1/125 "
T. G— . 17 .	± 1/25 "
T. M— . 18 .	± 1/25 "
J. C— . 22 .	± 1/65 "

(d) Referring now to those cases in which other foci of sepsis existed besides the naso-pharynx, we find that in the case of the teeth those organisms which did grow on the indirect plate were also to be found in the cultures from the naso-pharynx. And the same statement is true also of those cases showing involvement of the tonsils and gums. This suggests that originally there was a primary infective focus in one of these sites, and that the infection spread thence to involve the

other areas. Further, it points the therapeutic maxim that where certain organisms shown on bacteriological investigation to be pathogenic in a particular case are found to be located in several different areas, treatment to be effective must be directed to eradicate each focus.

2. The other 3 cases representative of three different groups of psychoses—confusional insanity, delusional insanity and general paralysis—with added sepsis, 2 of which (27 and 29) have been dealt with in detail in the previous text, show the importance of fully investigating such cases from a bacteriological standpoint before incriminating as the specific causative factor a particular focus of sepsis.

3. *Therapy.*—In addition to eradicating the particular focus of sepsis (teeth, tonsils, etc.) and to local antiseptic applications, 20 of these cases were treated with autogenous vaccines prepared from the pathogen-selective cultures. Three of the 6 untreated cases were removed by their friends before any treatment could be undertaken, and the other 3 proved too obstreperous and antagonistic to warrant its continuation. Of the 20 who received a full course of vaccine therapy together with other local treatment the following is the end analysis :

Two have been discharged as recovered; that is, they have recovered sufficiently mentally and physically to be removed from certification, the physical signs of encephalitis still being present, although mitigated to some extent.

One male improved remarkably in his physical condition and was allowed out on trial, but had to return owing to getting into trouble with the police. His physical improvement is still maintained and he is capable of doing a good day's work.

Two others show definite physical improvement with accompanying brighter mental outlook.

Three advanced cases have died. Two are in a degenerative condition, and the other ten remain stationary.

With regard to the three non-encephalitic cases, all have registered distinct physical improvement and slight accompanying mental improvement, which as far as one can judge up to the present appears to be of a progressive nature.

SUMMARY.

A series of cases of chronic encephalitis, confusional insanity, etc., have been investigated in order to assess the rôle of chronic sepsis as an ætiological factor.

The "pathogen-selective" technique has been employed throughout, and its utility in incriminating or exonerating particular foci of sepsis as causative has been illustrated in three cases.

Details of bacteriological results are set out in the table adjoined. They illustrate how by this simple method of using the patient's blood as a factor in culture the causative organisms can be detected, the method being based on the hypothesis enunciated by Dr. Bruce ("That the cause of mental disorder is deeper than a toxæmia, being a failure to form antibodies").

This method adds bacteriological *finesse* to the preparation of autogenous vaccines, and makes such more selective in their action.

Where this method is employed, unnecessary surgical intervention (Henderson—"Many a healthy abdomen has been mutilated, etc.") will be avoided and what is undertaken will be based on a demonstration of causal pathology.

Finally, owing to the fact that in this particular series we have been dealing with chronic cases in which there has been much permanent damage to the brain, results have of necessity been meagre, but we believe that the method will be found distinctly useful in cases of recent origin. Perhaps in a mental hospital one of its most useful applications will be in the investigation of the accessory sepsis which complicates so many cases of general paralysis, and which we believe contributes materially to the high mortality.

I am indebted to Dr. Cronin Lowe and Mr. H. Bean for help in the technical laboratory investigation. The expenses of this work were defrayed by a grant from the B.M.A.

EMOTIONAL CYCLES IN MAN.

By REX B. HERSEY,

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PSYCHIATRISTS and psycho-pathologists, on the whole, have never been subject to the error of thinking that a man is a unit whose reaction to a given stimulus does not vary. Their work in the clinic and hospital would quickly force them to give up any such supposition. They naturally look for the conditions under which fluctuations occur and would probably be interested to hear that there are rhythmic changes in man's emotion apparently characteristic of the individual himself. Whether such cycles can be traced to specific factors and principles may be a difficult task to determine. The mere fact of its existence may be of value in making the economist and manager of work mindful of individual factors, as well as of the many impersonal factors in the important question of emotional attitude toward work.

This rather surprising discovery of cyclical fluctuations, if not actual rhythms, came as a by-product of an investigation with a different purpose. Modern employers have begun to accept the theory that high wages and steady employment for their employees pay dividends. It is not so generally admitted that the mental attitude of their employees is of equal importance. Here and there, however, we find a real desire to take the question of mental attitude into account. The employer who expresses such a desire is still handicapped by the lack of real information about the emotions of men at work.

It was as a result of this gap in our industrial knowledge that a large public utility corporation in the East invited the writer, under the auspices of the Department of Industrial Research of the University of Pennsylvania, to devote an entire year to the observation of a group of "normal" workers of various occupations, ages,

personality types and nationalities. They were studied carefully in regard to (1) overt behaviour, such as efficiency, lateness, co-operativeness, verbal outbursts, constructive ideas, absenteeism, etc.; (2) emotional behaviour; (3) dominant trends in thought and revery; and (4) such physical and physiological items as could be either detected or measured readily at the works, such as blood-pressure, colloid content of the blood, weight, hours of sleep, illnesses or pains, and feelings of fatigue. Special emphasis was laid on the analysis of the relationships existing between these items and environmental conditions or personality traits.

Such a study involved many real difficulties as to both the technique of fact-finding and the interpretation of the data. Since the number of men who could be kept under observation was limited to some twelve or fifteen at most, the paucity in the number of cases had to be overcome by the thoroughness of the analysis of each case. This called for co-operation in a number of different fields of knowledge; and the writer was very fortunate in securing the collaboration and friendly advice of Dr. Adolf Meyer, of the Johns Hopkins Hospital, Dr. L. L. Thurstone, of the University of Chicago, Dr. S. Dewitt Ludlum and Dr. Morris Viteles, of the University of Pennsylvania, and Dr. W. V. Bingham, President of the Personnel Research Federation. These men were a source of very great assistance and encouragement and the writer cannot express too great appreciation for the help which they have given.

After the fact-finding technique had been roughly agreed upon, the next step was to present the idea of the study to the representatives of the workers and secure their co-operation. They were very willing to assist in every way after they had convinced themselves of the writer's impartiality. The next two weeks were spent in company with the chairman of the workers' committee in visiting the various departments in order to get the best laboratory for the study. Two departments were finally chosen, lying contiguous to each other and involving different working conditions and hours of work. After six more weeks had been spent in these departments to allow the observer to become a part of the scenery, so to speak, and after the workers had begun, of their own accord, to relate intimate problems of their lives, a number of men were picked by the foremen, the workers' representatives and the writer. Each man picked twenty-five workers, and out of the various lists it was found that agreement had been reached on some nineteen workers. The basis for the choice was as follows: they were men of average intelligence, and they liked their job fairly well, possibly a little

better than one usually finds. They had no important personality difficulties or physical handicaps tending to prevent proper adjustment. In a sense of the word, they could be looked upon as "normal" workers—the type of man that does not usually come under observation in the clinic. Altogether, seventeen men agreed to co-operate; twelve of these were studied throughout the entire year, the other five were included for periods of several months only. Since that time eight additional cases have been studied with reference to the cyclical changes. The data on which the conclusions are based were supplied primarily by the twelve men who continued throughout the year, though the information obtained in the case of the other thirteen men adds clear-cut confirmation. It is realized that the number of cases observed, only twenty-five in number, is not sufficient to warrant generalization. Nevertheless the evidence *in each case* is enough to raise the question of rhythmical cycles in such a way that a statement of the facts as discovered seems imperative.

The investigation was first pursued for a period of thirteen weeks. Each day was divided into four periods, and a man was usually interviewed four times each day. Shortly after the study began all the men were given a thorough physical examination through the co-operation of the Graduate School of Medicine of the University of Pennsylvania. Some time later most of them were put through a battery of psychological tests in the Psychological Clinic of the University of Pennsylvania. These tests consisted of the Witmer cylinder test, maze C, memory span, Dearborn form board, Stenquist mechanical aptitude test, A-s reaction study, Morgan mental test, and personal inventory C-2. In general, the result from the tests which is of most importance for this paper is that various ranges of normal emotional personalities seem to be well represented, varying from introvert to extrovert and from aggressive to submissive personalities. The scores in the intelligence test for a majority of the workers were lower than had seemed probable from their general appearance and conversation. Physically they were all in good health, only two minor imperfections being found. One man had a tooth abscess and another enlarged tonsils.

After thirteen weeks it seemed best to give the workers a rest. If one goes to a man early in the morning and asks him about everything that has transpired since one last saw him, and then comes round again about eleven o'clock to find if there is any change in his emotional state, and again about two o'clock, and later just before

it is time to go home, such questioning has to be handled very carefully if the proper relationship between the observer and the subject is to be preserved. In other words, the investigator must not allow himself to become a nuisance; he must observe the workers as much as possible, and let them tell him their story rather than be always asking questions. Besides spending the whole of the working day in almost constant contact with the workers studied, much of the time after work was also spent with them either in their homes or elsewhere in order to obtain a clear picture of their whole life. All of them had complete knowledge of the purpose of the study, and co-operated fully in describing and analysing their behaviour. After eight weeks' rest the study was resumed for ten more weeks. Another rest period of four weeks followed. The third and final period of the study covered thirteen weeks, though the workers were told that it was to continue four weeks longer than it really did. This was done as another means of preserving a completely satisfactory relationship between them and the observer.

The first question that arises is: Did these men tell the truth? There can be no doubt that they did tell the truth as they saw it, except one man, now and then, and I could readily tell when he was lying. One cannot live with a person day in and day out and have him talk confidentially, without his laying bare his true feelings and situation, particularly if one has any skill in drawing him out. This question would, however, be much more important if some less general phase of the data were under analysis. Here we are concerned primarily with the analysis of what may be called average emotional and objective behaviour, rather than with concrete single situations where the determination of the definite cause and effect relationship is the significant objective. Since, moreover, neither the workers nor the investigator realized, while the data were being collected, that a periodicity in man's efforts and emotions was probable, any long-continued series of falsehoods would be likely to destroy the evidence for a cycle, even though such a cycle really were present. This being the case, we may dismiss, at least as far as the cycle is concerned, the question of their veracity.

The next question may be as to the control effect of a study such as this. At the beginning of the study a certain amount of apprehension was felt lest, as a result of the study itself, the workers would learn how to control their output, their emotions, and many other factors in their lives, so that they would be different individuals at the close of the study than they were at its beginning. In order

to be able to answer this question as accurately as possible, the observer included himself in the study, and kept a record of his own reactions just as carefully as he did of those of the workers. There seems no doubt that the effect of the study itself on both the workers and the observer was for all practical purposes negligible. Of course, it must be remembered that all the records were kept away from the workers until the close of the investigation. They really had no opportunity or capacity to make use of the records in a way that might change their various emotional responses to any important degree. Moreover, the observer was always very careful never to assume a critical or a suggestive attitude. Such being the case, no control effect could be detected.

The third question which should be answered is the way in which the emotions of the men were measured. So far, no test has been worked out which will readily distinguish when a man is worried, indifferent or happy. The only method, then, which could be used, was the common-sense interpretation of his feeling-tone. The observer first watched the man's actions and general behaviour, his appearance and attitude. From these he attempted to decide in what general emotional state the subject was. If the man's own analysis of his feelings coincided with the opinion of the observer, his emotional state as given was accepted; if there was any doubt, the matter was again brought up later in the day and this later analysis almost always brought agreement. Naturally, such a method cannot fathom completely all the different emotions a man may have, but it would seem to portray with sufficient accuracy the major emotions of men at work.

After the data were secured, the first problem was that of correlation and analysis of the various factors in the industrial and home environment causing variations in efficiency and emotions.

Hitherto the term "stimulus" has often been used to express the causes of our behaviour. Life, however, may be more aptly designated as a series of crises. The expression "crisis" has usually been reserved for those important situations which would bring serious consequences to an individual or nation if great care were not exercised to meet them. The loss of a job, marriage, the death of a very important member in a household and divorce are some of the events which we ordinarily consider to be crises or turning-points in the life of almost any individual. Whether they are or not depends to a large extent on the individual's own capacity for readjustment. The fundamental idea involved is that a certain situation is presented to which the

organism as a whole must make a suitable response. When we consider the ordinary day-by-day activities of human beings, there can be little doubt that the word "crisis" connotes much more clearly the inaugurating influences of human reactions than other words that are used more often by psychologists to-day, the most prevalent of which is "stimulus." These crises may be classified as major and minor, though, of course, there can be no sharp dividing line between the two categories. Some of the major crises have already been mentioned; others are—birth, critical illness, the first school day, final examination periods, particularly in European universities, the first job, promotion to an important position, realization of old age. Examples of some of those which would usually be termed minor are as follows: Lack of sleep, wife wants a new car, ate too much, didn't get in the lodge, wife won't cook breakfast, children steal, children fail to pass in school, girl turns him down, foreman tells him off, job goes poorly, weather too cold or too hot to work, work going wonderful, fellow worker tells on him for smoking, can't get material, tools no good, a fellow-worker hurt, and so forth.

One might say that one of the essentials of normality is the individual's capacity to keep these minor crises from becoming major.

The first step in working up the data was to arrange the various crises of a similar nature in the case of each worker under the same heading and to ascertain what the effects were. This work had not proceeded far before it was found that an individual's reaction to the same crisis often varied considerably without apparent reason. For example, it was seen that at certain times a job would be going poorly, and yet the worker would laugh the situation off with little emotional tension. A couple of weeks later, with sleep, weather conditions, home relationships and all other circumstances practically the same, so far as one could tell, failure to do a job well would greatly depress the same worker. The same situation manifested itself in regard to the various other minor crises which often recurred in the workers' lives. On many occasions an explanation could be found in the influence of another crisis emanating from some other source as, for instance, a particularly pleasant relationship at home might make the worker much less influenced by the difficulties in his work. These peculiar periods of unusually high and unusually low emotional resistance seemed to follow each other with more or less regularity. In order to portray these changes more clearly, it was resolved to chart the ups and downs of the men's moods,

though the difficulties involved were clearly apparent. After considerable thought and discussion with the advisers of the study, it seemed most logical to construct a scale of the emotions in accordance with their effect on the human mechanism, as psychiatric experience suggested. This meant that happiness or elation should have the highest positive value on the scale, since it is the most pleasant emotion one can experience. On the other hand, the most destructive emotion, that which more than all others tends to bring men to an abnormal state, is without doubt worry. It received the most negative value on the scale. In between, the various other emotions that had been recorded, such as apprehension or fear, sadness, pessimism, disgust, anger, peevishness, and suspicion, gradually arranged themselves. Next to happiness or elation came hopefulness or confidence, then a feeling of co-operativeness and interest in the work. After those clearly recognized moods, came three emotional states, for which I was forced to find names after the study had begun—neutral plus, neutral, and neutral minus.

Neutral merely means, "Well, I am not happy; I am not unhappy—I'm just 50-50," as the workers often expressed it.

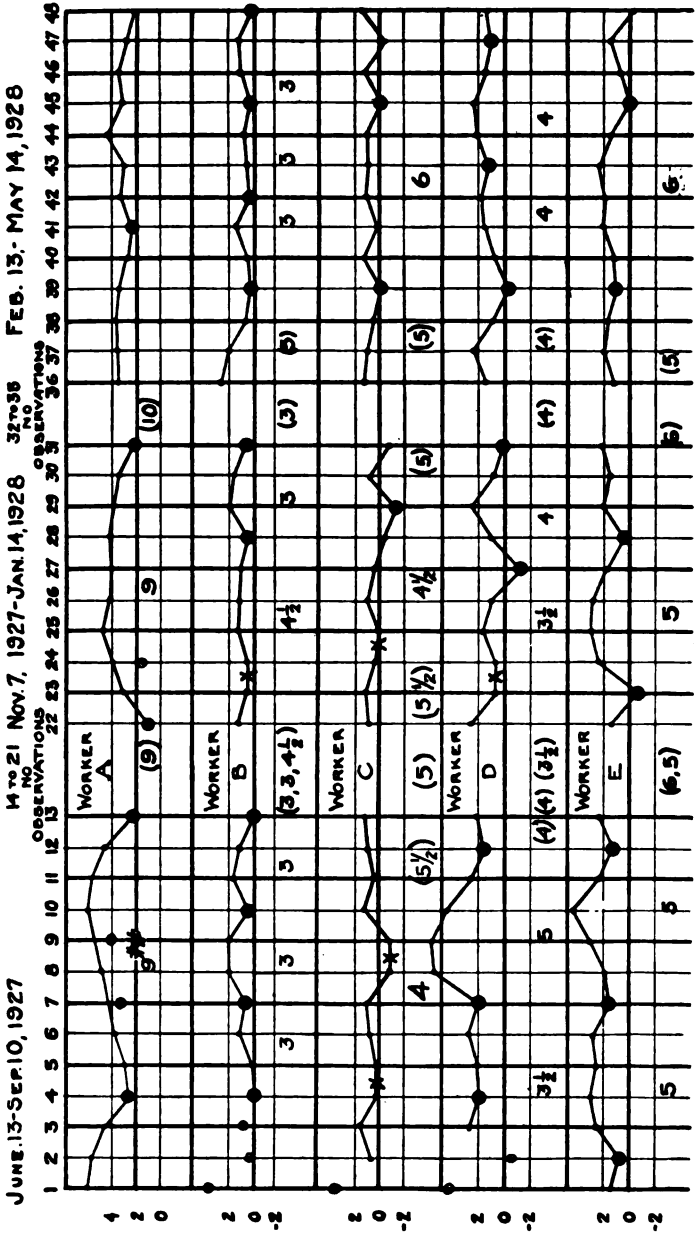
Neutral plus means a rather pleasant feeling-tone but not happiness. It implies a pleasant, confident feeling of reserve power and energy that will enable us to tackle a task and do it, in spite of a realistic conception of its difficulties. Neutral plus, I would say, is the ideal emotional state for all of us to aim at. Too much elation is not so bad for us as too much depression, but it does have its drawbacks.

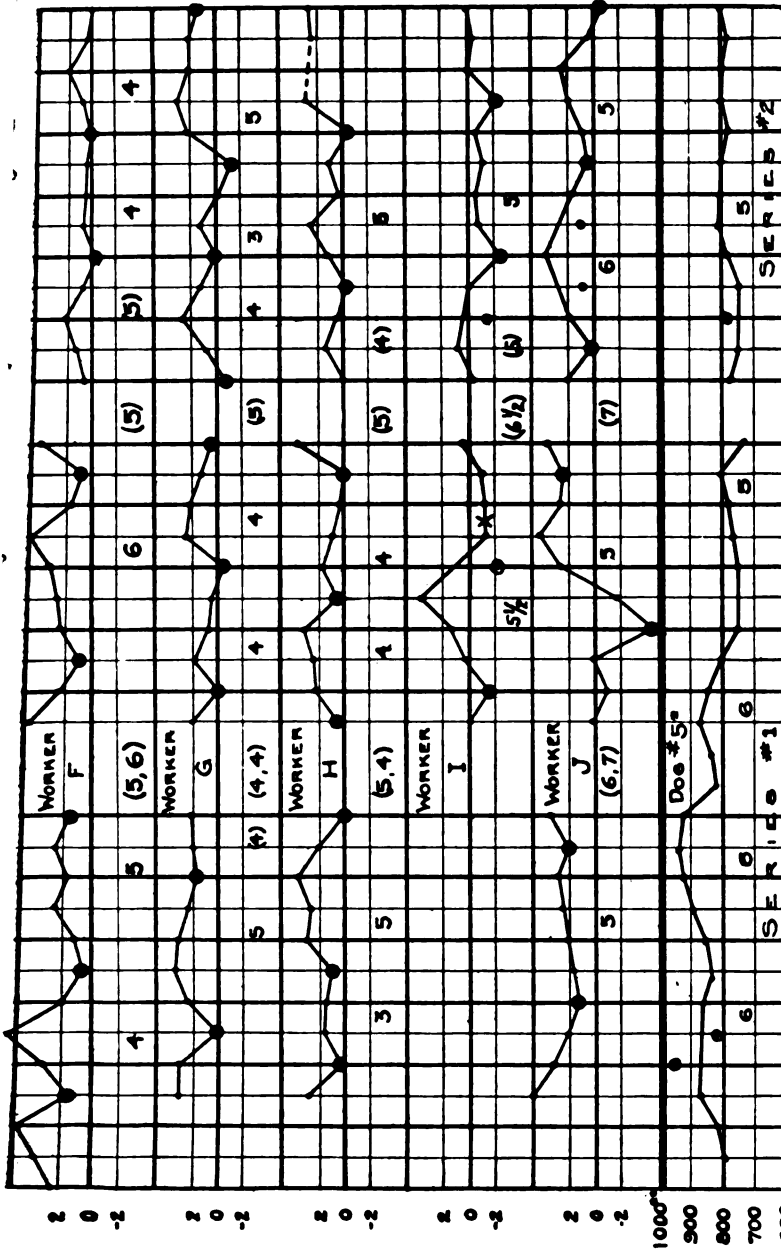
Neutral minus is naturally the opposite state to neutral plus. The actual numerical ratings assigned to each of these emotional states are shown in the following table:

RATING SCALE OF EMOTIONS.

Happy—elated	+6
Happy minus	+4 to +5
Cheerful or hopeful	+5
Interested—joking—co-operative	+3 to +4
Neutral plus: pleasant feeling-tone	+1 to +3, usually +2
Neutral: indifferent, tension, equilibrium, mixed	+1 to -1, usually 0
Neutral minus: unpleasant feeling tone; no definite negative emotions clearly defined	-1 to -3, usually -2
Peevish, suspicious, uninterested	-1 to -2
Angry	-2 to -3
Disgusted	-3 to -4
Sad or pessimistic	-4 to -5
Apprehensive	-5 to -6
Worried	-6

FIGURE I
AVERAGE WEEKLY EMOTIONAL STATES OF TEN MALE WORKERS





* No. 5 gives supplementary data: average weekly metabolic rate of a dog. Taken from "Exercise and Metabolism in Dogs," A. H. Steinhaus, *Amer. Journ. of Phys.*, 1928, lxxviii, No. 2. Series No. 1 begins with the week of May 10, 1925; series No. 2 begins with the week of June 20, 1926.

* Calories per sq. meter per 24 hours.

These numbers indicate observed cycle-lengths, while those in parentheses are estimated in order to test in another way the factor of periodicity.

The italicized values were used unless the intensity of the emotional state clearly indicated a greater or lesser score.

Three series of charts were plotted for each worker. One showed his position during the four periods of the day corresponding to the four daily interviews; another chart took the day as an average unit; while the third chart took each week as a unit. All of them showed clearly that emotional tonus varied not only from time to time during the day and from day to day but also, for no accountable reason, seemed to exhibit a longer cyclical trend, apparently characteristic of the individual. The third series of graphs, that taking each week as a unit for ten of the workers picked at random, is presented in this paper as Fig. 1.

In this figure the numerals at the top assign a number to each week of the year during which the investigation took place; while each point in the graph represents an average emotional state for a week. The periods from the 14th to 21st week, and from the 32nd to 35th week inclusive were the times when no observations were made. A weekly emotional state is taken, as a rule, from the average of 22 analytic interviews, Sundays and Saturday afternoons not being included.

If we take worker "A" we find the first cycle to be nine weeks. To check this hypothesis, to see if there really is anything in this matter of periodicity, one should be able to construct hypothetical cycles for those weeks when no observations were made, and have them show the same cycle lengths as the observed weeks. The numbers in parentheses represent such an effort. The next cycles then run: (9), 9, (10), with a cycle at the close of the study that is probably not complete.

Worker "A" is the oldest man in the study, nearly 60. He is very happily married, has two fine sons and a daughter, all of whom make him justly proud. His position, while he gets only the rating of mechanic, is one of some responsibility in the shop. He claimed, all through the study, that he never changed as other men did. Now it may be that many of us have the same sort of very long, gradual change—so gradual, in fact, that we do not realize when we are slipping, when we are down and when we come up. On the whole, he was very happy, practically always above the neutral line. His low periods were marked chiefly by a refusal to joke with his chums, by a withdrawal into himself, and by a readiness to criticize his superiors that was never seen at any other time.

The next man, "B," a helper, is one of the youngest men in the group, 22 years of age, and unmarried. His cycle shows a very

small amplitude and covers about three weeks. Once his observed cycle length went to $4\frac{1}{2}$ weeks. The interpolated cycles seem to run over twice, once to $4\frac{1}{2}$ weeks, another time to 5 weeks. This is no more than a woman's menstrual period might vary, when affected by some unusual cause. During his low periods his usual emotional state was indifference. He had little interest in the way his work was going, and little desire to carry on his art work at home in the evening.

"C," a mechanic working in the open, is in his thirties and is married. He was subject to many temperamental flights during the day. For instance, if he was on a job and it went badly, or if his wife did not treat him as he thought he should be treated, he went down into the dumps. A careful study of his record shows his cycle to run between four and a half and six and a half weeks. A peculiarity in his cycle, not observed in any of the other cases studied, is a sort of secondary or reverberatory decline which several times during the year seems to appear the second week after the usual cyclical decline. This unusual feature is to be noticed in the 11th, 31st, 41st, and 47th weeks.

"D," another helper, is a married man about 28 or 29. His cycles are almost perfectly regular, even to the interpolated ones.

"E," is a man of about 36 and married. In his case the cycle length is always about the same—five or six weeks. One of the other cases will be discussed in detail later.

A study of the list shows that these apparently periodic changes nearly always run within one week of the worker's own average. In other words, if my usual cycle is five weeks, I may have a six weeks' cycle or a four weeks' cycle. If your cycle is usually seven weeks, you may have one of eight weeks or six weeks. But almost never, so far as could be noted, in spite of all the buffets of misfortune, in spite of difficulties at home, in spite of great pleasure and unusual success, does this periodicity depart more than one week either way from its norm.

This is surprising. It is really hard to realize that in the midst of our highly organized civilization, composed as it is of complex human beings, there can be at least a semblance of law and order through all our tangled emotional lives. But what does it mean? Let me give you a general picture of a typical high and typical low period, with the understanding that the details of these periods vary not only for the different individuals, but also sometimes for the different periods in the case of the same person. During the high weeks, a person's drive toward activity in general is greater. He

usually goes at his work with vim, and does those things that may have been waiting two or three weeks and which he has put off from day to day. He feels so well physically that, when he goes home in the evening, he wants to go to a picture show or a party instead of going to bed. He anticipates the pleasures of the future, or he plans ways and means of increasing his money-earning power, getting a new automobile, or rising in the world in some way. Almost nothing seems impossible.

What is the other side of the picture? In the lower period it is often a drag to work. If the subject is forced to solve a problem requiring mental effort in planning and physical effort in its accomplishment, he has great difficulty in keeping at it. If compelled to carry on several activities at the same time, he feels the effort most clearly. He does not mind just sitting quietly and thinking, but any task requiring energy, especially creative energy, becomes a heavy burden.

Strange to say, during the high period he tends to sleep less each night. His weight, if the two periods lie close together, is also relatively less during the high period.

What about sexual activity? It is usually greater, and possesses more driving force as a factor in shaping human behaviour, during the high period. Yet, in the case of married workers, one often finds that the frequency of intercourse is greater in the low period than it is in the intermediate periods. This anomaly seems to be caused by a restlessness at night, which the sex activity tends to quiet, rather than by an energetic force driving the worker on, as it does during the high period. Naturally he tends to feel tired more often during the low weeks if he is carrying the same load.

In the high period, the way to stimulate him is with a problem. At that time he usually likes to tackle difficult tasks. If he does not do his work quite as his employer would like to have it done, it is no use "telling him off," because criticism just rolls off his back. He feels he is more powerful than his environment; he is the master of his destiny. Yet this energy, when not properly focused on the job, often causes him to get less work done than in the low periods. For instance, he sees his friend Bill over there and thinks of something he wants to tell him, and if there is any way of doing it at all, he stops his work, walks over and has his chat. It so happened, in the case of a certain executive whom I studied, that a greater amount of his own work was always accomplished when he was in a low emotional state. For in his high period he was always calling on other executives, talking to them, and trying to

tell them how to run their departments. He just felt so good, he had to share his capability with others. In the low period, however, he stuck to his desk. If anyone came to see him, he growled at him till he got out, and thereby got an immense amount of work done. Thus, as can be seen, there are certain difficulties involved in making a general statement that will hold good for everyone; not only must each person be studied individually, but also the man and his environment must be analysed as a single unit.

Perhaps enough material has been presented to give an idea of the way the cycle hypothesis was formed, the evidence upon which it is based, and its general outlines. But why does it occur? I must admit that, as yet, I have not been able to arrive at a satisfactory explanation of the cause. It does seem to be linked up with changes in the rate of metabolism. Consider Dog No. 5, the very last graph on the chart. It is taken from Dr. A. H. Steinhaus's researches in the metabolic activity of dogs, and represents the weekly average rate of basal metabolism of one dog picked at random. His graph shows, as you will notice, metabolic changes similar to the emotional changes of the workers. No such laboratory tests could be made on the workers in the study, but observation of their digestive functions seems to indicate differences between the metabolic activities during the high and those during the low periods. The exact nature of the variations could not be determined, but as a rule during the low phase the appetite is less, the fæces drier and thicker, and a greater tendency toward constipation is noted.

A second series of physiological variations seems to be concerned with glandular activity. I have definite evidence only in the case of the sex-glands, but it would seem probable that the whole system of glands is concerned. In the high periods they are more active, or, it may be, the observable results of their previous activity are more evident.

A third factor is one I shall merely mention, namely, a variable relationship within the autonomic nervous system. The sympathetic system seems to be in control most of the time when one is in the high phase. Since the sympathetic system is linked up with the glands and all our vegetative organs, and the glands in turn are linked up with all our bodily activities, there is naturally a relationship between the speeding-up effect of those three factors and the high phase. On the other hand, there is seemingly a slowing down of bodily functions and glandular activity, probably coincident with a rise of parasympathetic control, when one is

in the low phase. This series of relationships, at any rate, seems to hold true for the cases studied.

The final physiological variation to be noted is that of blood-pressure. Measurement indicates two possibilities, depending probably on the nature of the individual and his condition: (1) The average blood-pressure, both systolic and diastolic, of some individuals is lower during the low period than in the high week of the same cycle. The pressures of these persons when standing up are, as a rule, higher than when lying down. (2) In other individuals whose pressure, standing, is usually lower than it is lying down, no such clear-cut correlation can be detected, but in their cases the average drop in pressure, standing, is less during the high period than the low.

A survey of bodily changes is, however, no answer to the question, "Why?" It merely adds another question-mark. The first factor that comes to one's mind as a possible cause is climate. It does not take long, however, to determine that there can be no particular relationship between the cycles and climatic conditions unless each person responds very differently to changes in weather conditions; for the emotional cycles of the different men do not move with any sort of agreement, as one would think they should if climate were the basal cause upon which they depended. Since there is no other single influence of which we have knowledge that effects us all so equally without reference to individual conditions, one can only conclude that the basic cause of this very interesting human phenomenon is yet to be found. So far, the data on which the conclusions are based have been presented only in generalized form. It would now seem appropriate to offer another means of judging as to the accuracy of the conclusions by presenting the course of a major crisis in the case of worker "G."

CASE OF WORKER "G."

Worker "G." was a high-strung, sensitive and conscientious employee. His chief difficulties were a too great emotional excitability, and a lack of confidence in his capacity to measure up to the demands of his job. This latter weakness did not manifest itself until a new foreman was placed in charge of his department. Before that his standard of craftsmanship had amply sufficed for the requirements of the work. The new foreman was much more concerned with getting out work of a high standard than the previous foreman had been. Thus in many jobs not only were much higher standards of inspection applied, but also the methods of doing the work were completely altered. It can be easily seen that a worker who had received much of his training under the old system, as "G." had done, might very readily have great difficulty in altering his working equipment so as to meet the new situation adequately. Both temperamentally and circumstantially "G." faced difficult problems of adjustment. He was supposed to be a skilled mechanic competent to perform any item of work in his line, and any known lack of efficiency

might lead to his reduction in rank. "G." was also loth to give up his present position because of pension and seniority rights, which were his by reason of almost twenty years' service. Naturally, this struggle to "keep up appearances" placed him under a definite strain. Though "G." cannot be classed as an older worker, yet this situation confronting him is typical in many respects of many such crises confronting the older man in industry to-day. While the results are not always the same, the psychological mechanisms at work are sufficiently similar to add a great deal of interest to the discussion of the way "G." responded to this major crisis.

As might be supposed, the new foreman had been on the job some time, in fact almost two months before the acute phases of the crisis developed. Standards were being gradually tightened, but "G." had no definite clash with the new foreman until December 13 (27th week). During the morning of that day his work went fairly well and he claimed to be on the happy side of life, though the previous day he had been moody and indifferent. In the afternoon he wanted to align a defective crankshaft. However, he encountered a certain amount of difficulty with the two centre journals, which seemed to be off centre. He explained the whole situation as follows: "I did a poor job, though it was the best I could do with the materials at hand. I tried hard to finish and took a chance in order to do so; that is what hurt. I didn't intend to at first, but a couple of the chaps in the machine shop said it was O.K., so I gave in. When C. (the new foreman) hopped me about it he said, 'Don't look so black. If you don't know enough to earn 85c. an hour you'd better quit.' Later he said, 'Forget it.' But I don't know how to take that, so I'm disgusted, downhearted and ready to quit if I had another job."

His production during the afternoon was lowered very much as a direct result of this emotional upheaval. When he left he said he did not know whether he felt tired or not, though he did have a headache from worrying which gave him a tight feeling across his forehead. After he got home he still did not know whether he was tired or not, but none the less he went out to a friend's house because he "couldn't bear to sit about." The next day he remained "disgusted all day as an aftermath of yesterday, with a trace of worry and apprehension thrown in." His mind kept turning over whenever possible the events of yesterday, and pondering over where he could get another job. Production was average, but the effort was much greater. The day after that a reaction set in, when the work went very well. He explained further, "The boss seems O.K., and seems to have forgotten the other day." Though these external conditions without doubt played a part in bringing up his emotional state, it is also likely that his rise to "neutral plus" constituted in part a natural reaction to the extreme depression of the previous two days. Acute emotions of such a painful sort are very wearing on the physical body, and it seems quite general for each depression to be followed sooner or later by a definite reaction toward a happier state. That the acute emotions of the past two days had taken quite a heavy toll is evidenced by the fact that though he went to a party, a rather lively one, that night he "could hardly keep his eyes open." His wife had to keep nudging him. This was in spite of the fact that he had had at least eight hours' sleep the previous night. The morning after the party he woke up tired and remained tired throughout the day, except for a few hours after he had got into the swing of the work in the morning. Both this and the fact that he was held up by the difficulty of getting some work out of the machine shop caused his production to be considerably lowered during the entire day. His emotional state was partly neutral and partly pessimistic.

Though this matter was on his mind now and then we do not again notice any particular results in either his objective or his emotional behaviour until the afternoon of December 22, when C. told him that he was sorry for what he had said about the black looks and for telling him off. This lifted him from "neutral plus" to "happy" all the afternoon. Any logical analysis of this crisis would lead one to think that its effect was now passed. No worker can expect to be perfect all the time in the eyes of a strict foreman, and certainly C. had been very fair in apologizing for his brusqueness. However, the particular incident of the foreman's reprimand was in reality merely a high light in the larger problem of "G.'s" adjustment to the new conditions of his work. On those occasions when his difficulties seemed unusually great he often referred to it, and the probabilities are that it offered a tangible definite situation upon which his mind could focus, and which he distinctly felt to be the beginning of any serious difficulty in holding his job.

In spite of C.'s apology, "G." still feared that C. thought him to be an incompetent and unconscientious worker. He felt that not only his capacity but his honour was called into question thereafter in the foreman's eyes, whenever his work went poorly or defects developed.

However, in spite of the difficulties of his work he did not reach the point of acute tension again until February 14 (36th week), nine weeks after the first outburst, though a very evident inclination to be moody without due cause had appeared during the week of January 9 (31st week), four weeks later. He started the week on the 13th somewhat lower than usual, saying, "Everything went along all right, but I don't feel very cheerful to-day." The first period of the following day, Tuesday, was begun in much the same mood. About 9 o'clock, however, he was made partly disgusted and partly worried because a motor on which he had been working was returned for adjustment. He said that it was not his fault, as he had reported to his gang leader that the rod was loose, but that he hated to get others into trouble. C. did not criticize him, and as it was not his fault he admitted he really had nothing to worry about. Things, however, did not seem to work out that way. He said, "I somehow can't help worrying to-day, though at some other time I wouldn't have minded it." The next day his mood had changed very little, the same trouble still being on his mind. He said to me, "I tell you what—if you get hold of a job in your travels let me know; I'll take it, even if it pays less. The wife was saying last night that I used to come home happy. Now I'm always worried and grouchy and tired. She tries to cheer me up, but it's getting on her nerves too. Such a life takes too much out of you and is not worth it. Every time I get into a jam I swear it will be for the last time, but then someone asks me as a favour to let something go and I do it and trouble ensues. A man gets hell if he does and hell if he don't."

By Friday the acute edge of his low emotional state had worn off. He explained further, "I had a long talk with the wife last night and made up my mind not to worry. If the worst comes and I get fired there are only two of us, and certainly I can get enough of a job to support us. *I didn't worry* and everything went fine. Mental worry takes more out of you than physical labour." His production was higher than it had been on any other day that week. This illustration brings up a number of important problems. Why should "G." drop so low emotionally at this particular time, though the objective reason for it was much less important than others that at other times had exercised much less effect? Physically he did have a very slight trace of cold, but not enough to be termed a major factor in causing him to have such a low emotional resistance. Furthermore, an interesting point is raised when we question how much effect his resolving not to worry any more had. If we could all so regulate our mental and emotional processes that by a mere resolution we could stop ourselves from acute worry or apprehension, there is no doubt that we would solve our problems much more satisfactorily and sensibly. However, the ordinary experience of mankind is to the effect that such a happy state of mental and emotional control cannot be reached by the mere magic of saying, "I shall not worry about this or that." Only three days previously "G." was saying that he had nothing to worry about in regard to that particular situation, yet he could not desist. It is very likely, of course, that the catharsis of talking the whole situation over with his wife, and thereby getting a clearer perspective of the difficulties and possible outcome involved, led "G." to realize that his whole life would not be completely ruined even if he did lose his job. During the week of March 12 (40th week) he was again in a depressed state, but seemed unable to connect it with any definite factor in his home or working relationship.

Yet beginning with Sunday, April 1 (43rd week), practically the same situation of the week of February 13 duplicated itself. Even in spite of a change in working conditions that enabled him to have Sunday of one week and Wednesday of the next week off instead of merely one Sunday every two weeks, he did not recover until Friday afternoon. While at Asbury Park on Wednesday he could not get the thoughts of the work-a-day situation out of his mind. The results on Monday of the next week show an entirely different attitude. On Monday he said in the first period, "I came in fine this morning and in different mind from last week. I lit into it and installed a new clutch." At the end of the day he said, "The work went fine, and my physical condition was so good it kept me up, in spite of wondering how the road test would turn out and the problem of what to do with mother. She

is worse and shouldn't be left alone." All through the day he was neutral plus or better.

As far as could be determined no active effort was made to cease worrying, yet the results are very much the same as they were when he did so resolve. On the Monday previous, when he was worried all day he said, "It is no use denying it, C.'s got my goat. I can't forget the telling off I got several months back. I get excited now if things don't go right and can't do as well as I ought to. It seems I haven't got the confidence in myself I used to have under Witmer (the former foreman). I could kid back with him. I'm almost ready to tell them to take their damn job. The wife says, 'Stop worrying; there's only us two, and I know you can make enough for us to live on.' I try not to worry, but often it gets the better of me, particularly when I'm a little blue anyway."

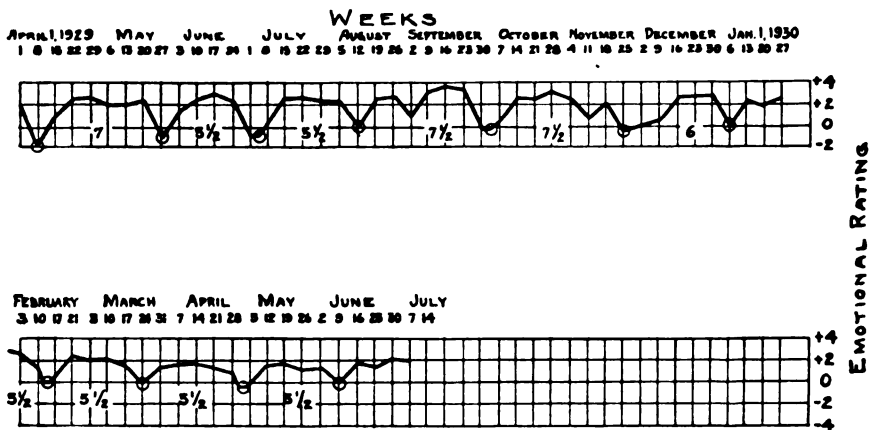
Though the problem was often in his mind and tended to lower his general emotional state, the next acute stage occurred some five weeks later—in fact, during the last week of the study. Some four weeks after that another unfortunate combination of external circumstances and low emotional resistance induced the most acute stage yet developed, as the observer had occasion to learn from a visit back to the works. Physical symptoms of persistent tiredness and a continuing headache led him to visit his doctor, who advised him to take a couple of weeks' vacation. On his return to work the same problems still showed themselves, but in diminished form, and in the year which has passed since that time a slow improvement, also cyclical in nature, has been noticed in his case, though even to-day complete adjustment cannot be said to have been made.

In analyzing the causes and course of this major crisis in "G.'s" life we see two fair-minded and conscientious men thrown into conflict through no desire of their own. It may be that a different attitude on the part of C. would have prevented the feeling of culpable insufficiency from developing in "G.'s" mind. Had C. understood "G.'s" nature better he would have said to him at the very beginning, "Look here, old boy, I realize that you have developed lax methods of working, of which I do not approve. There are some parts of the work which you do not know thoroughly enough, but even if I do at times tell you off, just remember that it is not personal; that I know you are on the whole a good mechanic as well as a conscientious one. Don't be afraid to come to me for advice or help about anything you do not know." The situation would then very likely never have developed to the acute stage it did. It is true that on February 21, C., for the second time, did tell "G." to forget about his reprimanding him two months before. He also told "G." to come to the office if there was anything he wanted to know and he would either show him or find it out for him. "G." remarked at the time, "That was nice of him." We must conclude, then, that as foremen ordinarily go C. did his best to handle the problem very sensibly. His chief fault lay in the fact that he did not realize "G.'s" nature until the feeling of inferiority had been too thoroughly grounded in him. Moreover, when C. at the time of the first reprimand told "G." he had better look for another job if he didn't know enough to earn 85c. an hour, he injected a personal element into the relationship between the two of them that could not be entirely eradicated from "G.'s" mind except by kindly actions over a long period of time.

So far, instances of manual workers have been cited. Among the other eight cases studied since my formal investigation was brought to a close were included an artist, two students, two insurance salesmen, a college professor and a draftsman. In all of them the same cyclical fluctuations in emotional tonus was clearly manifested. None of them were studied for over four months, with the exception of one man whose chart I now reproduce. This chart, as will be noticed, runs from the week beginning April 1, 1929, until the week beginning July 7, 1930. The cycles run clearly between $5\frac{1}{2}$ and $7\frac{1}{2}$ weeks, the average being slightly over 6 weeks.

During this time this subject's outward conditions were very different, and yet, in spite of all those varying changes his cycle did not vary by more than two weeks. During that whole time, likewise, only two weeks were thrown out of line. The first was during the week of September 2nd, when the fact that he had put off work which he should have done during the high weeks of August 19 and 26 led him to be depressed for several days during the following week. The low week of November 11 is out of line because of a great loss of sleep.

FIGURE II



AVERAGE WEEKLY EMOTIONAL STATE OF SUBJECT "K"

It would seem as if sufficient data have been presented to give you a clear idea of the way in which the periodic cycle in men functions. What should we do about it? Two general courses of procedure present themselves. On the one hand, we may feel we should do everything possible to eliminate the cycle. We may consider it is enough to be compelled to worry about our daily variations in mood and efficiency, which may be due to definite causes such as indigestion, lack of sleep, illness, or difficulties in our work. Unfortunately, that ambition cannot be fully realized until the cause of the periodic changes is discovered; yet it is true that the whole trend of our modern civilization is towards demanding a man without variations, a man who can be on the job punctually every morning and function in many ways as a machine throughout the day. Such a tendency, without doubt, adds weight to the

argument that the cycle should be eliminated. One cannot, however, as yet answer with definiteness whether the mechanization of the human element would prove advantageous in the long run or not. Human nature does not seem, however, to have functioned at any time in such a precise manner. Even the slave could not be forced to do so. The Indian fought or hunted, and then enjoyed a period of inactivity. Practically all uncivilized peoples tend to follow such alternating periods of activity and relaxation. We seem to be getting away from that practice, but the evidence offered by this study shows the human mind and body still functioning in long rhythmic movements that the new tendencies cannot alter. The same man at various times may possess as widely contrasting emotional characteristics as are exhibited by two different individuals.

Personally, I would like to say that I am able to forecast the general appearance of my own low periods, with advantage to myself. My cycle runs between $5\frac{1}{2}$ and $6\frac{1}{2}$ weeks. During my low period I am in a very critical mood and do not like to be bothered. At such times I enjoy solitude, and employ the time as much as possible in research work or in the laboratory. I refuse to accept engagements where I shall have to talk in such a way that it is a question of giving myself away.

During my high period, I enjoy consultation work and activities that require a lot of energy and vitality. Unfortunately I sometimes become too restless to confine myself to a long-continued task requiring careful minute work. In many ways I have to be more careful of my high period than my low period, or else I may be led into trouble.

I would like to insist that the discovery of these rhythmic cycles does not invalidate in any way the previous work done by men in this field. The emotions of man, from the scientific standpoint, are largely unplumbed, and this is merely one effort to understand more fully the laws which govern their functioning. I trust it may be of some real service to those who are required to deal in human reactions, by throwing a little more light on the causes of man's emotional behaviour.

In view of these considerations, are we not then justified in accepting the existence of periodic changes in mood and ability as something akin to a fundamental law of our nature, and in endeavouring to adjust our lives to its demands?

THE YESTERDAYS AND TO-DAYS OF AN ALIENIST.

By LIONEL A. WEATHERLY, M.D.

RICHARD JEFFREYS, in one of his fascinating books, tells us he has often met with those who spend half their lives wishing for to-morrow and the other half wishing for yesterday. I thank God I do not come under this category. I love to look back at many of my "Yesterdays," although, as with most of us, some of these have been overshadowed by dark clouds, but, by an inherited determination and an inborn optimism, I have, I am thankful to say, been able "to push dem clouds away" and once more the sun has shone brightly. As to my "To-days," I do my best to get every ounce of happiness out of them, and as I believe in the philosophic teaching that happiness is infective, so my life is made the brighter by the hope that, being cheerful myself, I may be able to brighten the lives of some I have to associate with or work for. As to my "To-morrows," I am afraid I have never given much thought to these, being content to leave them in the hands of what I hope is a kind Providence, and I trust I have little to fear.

Sitting in my chair and musing on what lines my chat with you would be, back to my mind came those wonderful words of Christina Rossetti :

" I have a room whereinto no one enters
Save I myself alone ;
There sits a blessed memory on a throne,
There my life centres."

And so musing, back from my memory came the faces and the voices of many old friends in our department of medicine who have "gone before." Some were those I was proud to know, some were those I revered, and many were those I truly loved. With some of them my life was very intimately entwined, and episodes of the greatest interest to me are associated with these men. And so this afternoon I purpose mentioning many names familiar to all of you, with any episodal associations still fixed on my mental tablet.

• A paper read at a meeting of the South-Western Division, Bournemouth, April 24, 1930.

It was as far back as the late 'sixties that I first met a man connected with lunacy, who indirectly created in me a liking for this branch of medicine. He had come to visit an old resident patient of my dear father. This patient was a well-known man who often made my brothers' mind and my own happy by the stories he would tell us from *Gil Blas*, *Don Quixote*, *Baron Münchhausen* or *The Arabian Nights*. His eccentricities not only amused me but created in me a new interest. He had been a school companion of Thackeray at Charterhouse, a personal friend of Gladstone at Christ Church—a friendship which lasted all his life—and he had travelled through Italy with Sir Walter Scott. And who was the man who came to visit this interesting personality? None other than *Samuel Warren*, one time Master in Lunacy, and the author of those books that will always live—*Ten Thousand a Year*, and *The Diary of a Late Physician*. I can see him now in his shepherd plaid suit, his black stock and his white hat. The authoritative way in which he spoke to my father much impressed me and for years I stood in awe of any Lunacy official—an awe which has long departed from me since I have known these officials better and more intimately.

In 1873 I started to help my father in general practice and in 1876 I married. My wife and I soon after our marriage were dining in Clifton with my teacher in medicine, Edward Long Fox, and he asked if we would care to take a resident patient. We decided to do so, and through this case, the daughter of a well-known man in Parliament, I got to know some of the leading alienists of that day, and very soon had many early cases of mental disease located in suitable families living near me. Later my own home became a provincial licensed house. I may here interpolate an interesting fact. Some three years ago we celebrated our golden wedding, and we were able to say that during our fifty years of married life we had never sat down to a meal other than breakfast without having with us mental or nervous patients. I pride myself in the belief that this is a unique experience.

Prior to my taking up my residence at Bailbrook House I had been in correspondence with *Dr. John Bucknill* (afterwards Sir John), author with Daniel Hack Tuke of that well-known textbook, *Psychological Medicine*. I had found how we mutually agreed regarding the treatment of many early cases of mental disease in private dwellings, and was delighted when he allowed me to quote freely from his writings on this subject in a paper I was to read at a meeting of the Medico-Psychological Association. The

meeting took place at Bethlem Royal Hospital with *Dr. Rayner* in the chair. He was the well-known superintendent of Hanwell, and indefatigable in his interest in the After-Care Association. The paper created a lively discussion, which was adjourned till the next meeting. I was severely handled by the proprietors of some of the private asylums, who were not sparing in their denunciation of single care. Going down the stairs of Bethlem Hospital after the meeting, my friend *David Bower*, of Bedford—only recently lost to us—wanted to know if the Secretary had asked me for my paper for the *Journal of Mental Science*. On my saying "No" he became very indignant, and declared that the paper and the discussion ought to be published *in extenso*. What was I going to do about it? I suggested we should interview the firm of Griffith & Farran, who had published my first book, *Ambulance Lectures*, which had turned out a success. Away we went, and after the head of the firm had glanced at my paper and heard all David Bower had to say about it, he decided that if I enlarged it and got some well-known person to write a foreword he would at his own risk publish the book. Off we went to *Lord Shaftesbury's* house and were lucky to find him in. I had already had some correspondence with this wonderful friend of the insane, and after hearing all David Bower had to say he graciously agreed to read my paper, provided I gave him permission to delete anything he disagreed with, and said that I could dedicate it to him and that he would see it through the press. I went home very delighted and with gratitude in my heart. The little book met with an excellent reception, made me many friends and brought me many patients. I never forgot my good friend David Bower's kind advice, and almost up to the time of his death we met and corresponded. He was one of the most regular attending members at our Association's meetings.

In that book I pleaded for single treatment for many early cases, without certification and without the fear of prosecution, and with simple notification as in Scotland, but always with some legal supervision—a proviso Lord Shaftesbury insisted on. Nearly fifty years have passed since the publication of this book, and to-day the Early Mental Treatment Bill has come into being.

Dear *Daniel Hack Tuke* was beloved by all of us. He was most regular in his attendance at our meetings and I always rejoiced to have the opportunity of a chat with him, and was delighted when in 1891 he allowed me to dedicate to him *The Supernatural?*, which I had written with John Maskelyne. Not only did he accept dedication, but he read many of my chapters and made many valuable

suggestions. Assuredly no member was ever more respected and loved than this dear old Quaker.

It was during my early days of general practice, when I had many early cases of mental disease sent me that I came into intimate touch with *Henry Maudsley*. Never have I forgotten the impression his great mind made on me in our consultations. I devoured his writings, and amongst the most marked books in my library are his *Natural Causes and Supernatural Seemings*, and his classical work, *Responsibility in Mental Disease*, while his presentation copy to me of *Body and Will* is constantly read and re-read. All lovers of the genius of Maudsley must rejoice that the foundation of the Maudsley Hospital, his generous gift to the Nation, will keep the memory of his name and genius ever green.

I was proud to know those three great Scotsmen, *Clouston*, *Yellowlees* and *Urquhart*. Clouston I admired for his shrewdness, Yellowlees for his humanity, and Urquhart, whom I knew best of all, for his Scotch common sense. How interesting our discussions were when these stalwart Scotsmen opposed each other in debate!

It was in my early professional life that I knew *Savage*. A mutual friend of ours, *Edwin Burrell*, who only recently died at a great age, had suggested to Savage, who was a fellow student at Guy's, that he should take up the study of insanity, and induced him to apply for a clinical post at Bethlem Hospital, of which institution he afterwards became the well known Superintendent. He was a very prominent member of our Association. His little book on *Insanity* published by Cassell's in their Medical Series is constantly referred to by me, for it is full of practical hints and common-sense advice. I have often wished that he had delayed writing it till later in life, when his vast experience of medico-legal problems might have been so instructive. Surely no alienist before or since has ever had such Law-Court experience!

Hayes Newington was assuredly one of our Association's stalwarts in every sense of the word. We all listened to anything he said, for we knew he always spoke words of practical wisdom. During the passing of the 1890 Act he was Chairman of the Medico-Psychological Parliamentary Committee, upon which I had a seat as representative of private asylum proprietors, and only those who sat on that Committee can fully realize his indefatigable and far-sighted work and interest. His death was a great loss to our Association.

Perhaps the most loveable personality to sit in our Presidential Chair was dear *Conolly Norman*, of Dublin. What a delightful

companion, wise, just and sympathetic, and with it all so humorous and witty ! What a loss to us and how truly we mourned !

I saw a great deal of my old friend *Shuttleworth* during the latter years of his long life. He had gained the affectionate regard of all. It was at his house here that I often met *Fletcher Beach*, for so long our Hon. Secretary, and had chats over days gone by. I always thought his great work as our Secretary was his constant endeavour to introduce new members to the old ones and make them feel "at home," What a useful asset that is in a secretary, and one not always found !

Frederick Needham I knew some years before I joined your Association and had visited Barnwood House, in the days when it was not the fine institution it is to-day. My visits were always brightened by the kindly welcome I received at the hands of the late Mrs. Needham, who did so much for the institution she loved. I cannot forget his earlier days as a Commissioner ; he seemed to have forgotten that he had once been a medical superintendent, full of anxieties and worries, and that appreciation is always more helpful than trivial, irritating complaints.

Yet I soon got to realize he had a sympathetic heart, and I felt he did excellent work as a Government official. I had many chats with him after his retirement, when I was fighting, with others, for a Royal Commission to investigate the many charges brought against the treatment of the insane and the sensational and foolish articles in the public press. He was very outspoken on some very necessary reforms, and told me with great earnestness that the Board as constituted could not possibly carry out adequately all the duties the Lunacy Act of 1890 put upon them. For many years he had agitated for the amendment of this Act.

Thomas Clifford Allbutt—what a great mind his was ! I had always admired this great physician and wondered how he could have been induced to become a Commissioner. What a fearless member he was during his short period of work in this capacity ! I felt highly honoured by his correspondence with me during the time I was writing *A Plea for the Insane*, and he allowed me to quote much he wrote me. His letters up to a short time before his death were most illuminating and I treasure all he wrote me. He was a great opponent of the huge unwieldy barrack-like asylums. He will always hold an honoured place in the history of medicine.

Julius Mickle—whenever I met him I wondered how in his state of ill-health he was ever able to pursue with such vigour his researches

into the pathology of mental diseases, especially that of general paralysis of the insane. I travelled with him to Berlin to the International Congress of Medicine, at which he was down to speak in the Psychology Section. I never thought he would reach Berlin alive, for he suffered terribly from train-sickness. Yet on that long journey during his periods of betterment his conversation was of the deepest interest, and much that he told me is fresh in my memory to-day.

Edmund Whitcombe, President in 1891—who can forget this precise and common-sensed member? I can see him now in his Shakespeare collar and white pique tie, always genial, always ready with his kindly words of wisdom and interest. I met him more than once, in consultation at the Birmingham Asylum, over which he so ably presided, and shall not readily forget his kindly welcome.

Beveridge Spence, President in 1899, a fine stalwart member and at one time our respected Registrar. I remember how unanimous was the wish that he should fill a vacancy on what is now called the Board of Control, and how disappointed we all were when someone unknown to our Association was given the appointment. He would have made an excellent Commissioner.

And now last, but assuredly not least, that genius *Charles Mercier*. I think I knew Mercier as well as any member of your Association. Rarely did I come to our London meetings without lunching or dining with dear Mercier, and often did he pay me a visit when he came to Bath. We stood shoulder to shoulder at the York meeting in 1892 when we fought for Divisional Sections of our Association. Who can forget his dramatic speech on that occasion. Under the presidency of Robert Baker, Medical Superintendent of the York Retreat, we carried through the wise proposal of these Divisional Meetings, but not without a great deal of opposition from our London and Scotch friends, who at that time were dubbed "The Gang." In 1894, at the Annual Meeting of the B.M.A. held at Bristol under the Presidency of my old medical teacher and life-long friend Edward Long Fox, I had the honour of opening a discussion on Criminal Responsibility of the Insane in the Section of Psychology presided over by David Nicholson, then the respected Medical Superintendent of Broadmoor Criminal Asylum. For the first time in the history of the B.M.A. barristers and solicitors were admitted to our discussion. Pitt Lewis, Q.C., joint author with Percy Smith of that well-known work, *The Insane and the Law*, was the most prominent of the barristers present that day.

I proposed the resolution, "That in the opinion of this meeting

the present law relating to the defence of insanity in criminal cases as laid down by the Judges in 1845 is not in accord with modern mental science and should be re-considered." Mercier, in an eloquent and earnest speech, seconded this, and it was carried unanimously.

He and I were elected to a Committee to confer with the Parliamentary Committee of the Medico-Psychological Association. The latter appointed a special Committee, of which I was a member and Mercier was our Secretary. Before our report was drawn up Mercier somehow became much more satisfied with the legal procedure relating to this important question, and made some excellent reports of trials in our Journal to prove his altered attitude. As time went on, however, he demurred to some of our judge's rulings, and he had some unhappy experiences when giving evidence in criminal trials.

I admired his writings, though I always felt his genius must be rather likened to that of a combination of Bernard Shaw and Chesterton, and that he often wrote with his tongue in his cheek. Truly I wondered at his ability to write learned books on the structure, the planning, the management of large institutions for the insane, of which he really had had little practical experience. Next to Maudsley I place him as our most brilliant writer on anything appertaining to mental diseases. An episode in his life I shall never forget, and maybe there are some who may possibly recall it. For some years Mercier had been the Hon. Secretary to the Education Committee, upon which I had a seat. His minutes were written in an extremely clever manner, and to my mind always conveyed an impression that they were Mercier's ideas and wishes rather than the hard facts of our proceedings. That this habit was a source of irritation to many soon became evident. At last at a meeting held in Cork when important matters were coming before our Committee there was no Mercier, no apology for absence and no minute-book. Everything had to be adjourned to our next meeting in London. It was decided unanimously that another Hon. Secretary would have to be appointed and a member was to be proposed for that post. The Committee met in London with Percy Smith as Chairman. Mercier arrived just as the Chairman had stated that the next business was the election of an Hon. Secretary. Before anyone could propose anything Mercier rose, and addressing the chairman said, as far as I remember, words to this effect: " Mr. Chairman, I have just had a most earnest chat with your Hon. Secretary, and I can assure you he realizes most

keenly all his sins of omission and commission during the past year; he will not attempt to excuse himself, but he promises most faithfully that in the future no possible fault shall be found in his earnest endeavour to carry out to the fullest extent all his duties." Immediately the member who was about to propose the name of Mercier's successor got up, and amidst the excitement of all present proposed that Mercier be re-elected and it was carried *nem. con.* No one but a Mercier could have arranged this *coup d'état*. After carrying on his work as Secretary, he became Chairman of the Educational Committee. His sad illness to my mind created a new and different Mercier, and in the last months of his life I found him a very altered man to the Mercier I knew so well. I shall always hold him in affectionate memory, and am strong in my belief that next to Henry Maudsley he was the greatest genius our branch of medicine has ever seen.

And now what about my "To-morrows?" I have already told you that I leave these in the hands of a kind Providence. Though I cannot look forward to many more to-morrows, I can have my wishes and hopes regarding that branch of medicine which so deeply interests me, and in which to a great extent my life is bound up. I do wish for more enlightenment regarding the influence of endocrine secretions on mental disease; I desire more knowledge of the sympathetic nervous system and its power over emotional states and impulses in functional conditions of insanity; I want more clinical study in our mental hospitals, better classification of our patients, greater use made of psychotherapy, if by that is meant, gaining the confidence of our patients, and persuasion by logical reasoning to remedy morbid imaginings; and lastly I look forward to a great extension of occupation therapy in the treatment of mental disease. I realize to the full how difficult this is to carry out successfully, how impossible it is in some patients to induce interest in games, reading, handicrafts, etc., but we can insist upon such occupations as weeding, sweeping up leaves, mowing lawns, cutting up wood, household work, etc. Occupation is all to the good of physical health and in checking that introspection which is so fatal; it gives rest to the worried brain, and may and does in many cases lead on to recovery.

May I live to see some of these wishes accomplished, making my remaining short time of life happy and interesting!

PSYCHIATRY IN ITS SOCIAL ASPECTS.*

By GEORGINA R. F. MCTAVISH,

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THE social aspects of psychiatric work are assuming more importance, and it is being recognized that the work of an out-patient department for psychiatric cases is greatly facilitated and enhanced by the co-operation of social service workers, who have made a study of the economic and environmental conditions of the family.

A previous report of this work was published in the *Glasgow Medical Journal*, February, 1927, and the present report re-emphasizes a good deal of what was written then.

Cases are sent to the out-patient department principally by general practitioners, but various organizations, such as the National Vigilance Association, the Council of Social Service, the Invalid Children's Aid Association, and schools make use of it as well. When the officials of these organizations recognize that anyone under their care is showing mental symptoms, or is exhibiting behaviour which is difficult to correct, they recommend such a patient to the clinic, in order to have the benefit of a complete psychiatric examination. The use of the clinic at an early stage often means that much money and time is saved, as often a definite recommendation can be given at once.

The National Vigilance Association exists for the purpose of giving three to six months' training in domestic work to girls between the ages of fourteen and seventeen years. Most of these girls are sent on account of domestic difficulty in their homes, or because the girl has been unable to adjust herself adequately to the freedom of the house and life outside after the routine of her school years. An investigation of the home conditions, backed up by the report of the psychiatrist, is often helpful in finding a way out in some such difficult situation.

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Again, a teacher in a special school may send a child who is not only mentally deficient, but also may have been showing abnormal behaviour. In such a case, too, a combination of social service investigation of home conditions and surroundings with a mental examination may help considerably in elucidating the problem.

The Council of Social Service was asked by a Local Committee to obtain employment for a youth of sixteen years. The Secretary discovered that this youth had attended the Clinic, and before anything further was done the results of the mental examination were carefully gone over. The report showed that he was unable to compete in industry with boys of his own age, and it was wasting time to seek ordinary employment for him, but through a special arrangement of the Local Committee he was placed in farm service.

The Invalid Children's Aid Association sent a child for examination because they had been asked to arrange a holiday. They were dubious about whether this was the right way to deal with the child or not. The child was two years old, was backward, and could not be admitted to any convalescent home. A mental examination showed the necessity for admission to a mental institution. The home was visited, and home conditions were found to be very unsatisfactory. There were five other children in the family, the oldest being fourteen years of age. The mother was separated from her husband; she and her children were living with her father and brother. The doctor's recommendation was reported to the parish inspector, who arranged to have the child admitted to an institution for mental defectives.

This co-operation between charitable organizations and a psychiatric department is of tremendous value, and of great use to the public.

In certain cases it is not so much the individual himself who is at fault as the difficult social and environmental conditions. A case in point is that of a girl who on several occasions had been in one of the large general hospitals, and on two occasions had been sent to a convalescent holiday home. This patient, according to the medical reports, had not suffered from any specific illness, but merely from a state of general weakness, and was obviously unable to care for herself adequately. On every occasion she improved under hospital treatment, but within a few weeks after her return home she relapsed and her weakness returned. In this case it was pointed out that the patient would show more progress if a betterment could be effected in the home conditions. Her home was investigated; it was found that the girl lived in a room and

kitchen with her mother and two brothers. The house was dark and miserable, and the brothers were unemployed. The patient had to do the drudgery of the housework, and could only occasionally leave the house in the evenings. In consequence she had practically no friends, and lived a very restricted and unhygienic type of life. It was evident that unless something was done to brighten her lot there was little chance of making any material difference in her condition. She was visited regularly, was encouraged to take a more optimistic outlook, and induced to join a girls' club, where she readily formed contacts with many others. As a result of this she has improved greatly, and there has been no further necessity for hospital treatment.

Another girl who suffers from epilepsy has also been greatly helped. Her mother is dead, her father is a sailor. He is away for weeks at a time, and occasionally for months. He worried greatly about his daughter and ten-year-old son, who were left without supervision. He wanted them to be placed in a home, and left his allotment note to pay for any expenses incurred and also for the rent of his house. The girl and the boy could not be placed together in the same home, and as a compromise a room was acquired for them in the country, with attendance. The income at my disposal was insufficient, so a grant was obtained from the "Earl Haig Fund," which enabled them to remain for a period of nine weeks in the country. I called at the school the boy attended, and arranged for a temporary transfer to a school in the country, so that his progress was not hindered. Since their return I have kept in touch with this family, and a great improvement in their lot has been effected. The girl attends a girls' club regularly, where she has been introduced to many others of her own age. It is of importance to note that the number of her fits has shown a considerable decrease.

A difficult problem is that associated with advising admission to a mental hospital. It may be that the patient has so much appreciation of his own illness that he is willing to go voluntarily and place himself under treatment. Many of the parochial hospitals, in addition to the Royal Mental Hospitals, admit patients on a voluntary basis. There is, however, great prejudice against mental hospital treatment. The relations frequently object, and they are sometimes more difficult to deal with than the patient himself.

A man was brought to the Clinic by his two daughters, with the assistance of two other friends. His disordered mental condition was so obvious that the psychiatrist advised immediate

admission to a mental hospital, and requested me to make the necessary arrangements. A visit was made to the home; his wife, who was in bed largely through her anxiety regarding her husband, was interviewed. The situation was explained, and why the doctor had advised mental hospital treatment, but even under these circumstances she was unwilling to give her consent. She stated that she had already been advised by the parochial authorities to have this arrangement made, but at that time, too, she had not been in favour of it. The matter was more fully discussed with her, and eventually she gave me permission to make the necessary arrangements. Within the course of a relatively short period of time her husband made a good recovery and was discharged.

A girl was brought by her sister-in-law. In this case the home conditions were very complicated. The patient, it is said, would do nothing for her sister-in-law, refused to associate with her, and made home life miserable. Her brother was between the devil and the deep sea. He wanted to please his wife, yet he felt that he would like to do more for his sister. The patient complained to her neighbours about her sister-in-law; the neighbours annoyed the sister-in-law by discussing the matter. Things came to such a pass that one night the patient threatened her sister-in-law, threw something at her, and struck her. The local doctor was called in, but said that he did not detect any form of mental disease. He apparently looked upon the matter as a family squabble. It was at this stage that the psychiatric department was consulted. The patient's mental condition was such that she was advised to be placed under observation. I consulted the patient's brother, and he was willing to make this arrangement. They lived outside the city boundary, so I called on the local parish council and reported the doctor's recommendation. This parish had no observation wards, and as the local doctor did not advise her removal, the girl had to remain in her brother's house so as to be partly under the supervision of the parish inspector. A few weeks ago I visited the house, and was informed that the patient had been in a situation as a domestic servant, but had been discharged as unsuitable after a period of one month. For several weeks her brother had no idea where she was, nor how she subsisted. Later it transpired that she had been walking the streets, and had slept one night in the police station. She returned to her brother's house, scantily clad, a miserable and pathetic woman. She applied to the parish, and obtained indoor poor relief. In this case the local doctor was not of the same opinion as the psychiatrist, and so the patient was left

to her own resources. If more consultations took place between the psychiatrist and the local practitioner, a more definite form of treatment for the patient might be the result.

In any home where a member of the family exhibits abnormal behaviour, and there is a lack of understanding and sympathy, there is not much chance of betterment.

A girl of seventeen years, slightly mentally deficient, proved a general nuisance to her family. In this family there were two other sisters who were working, and four boys who were at school. The household were in reduced circumstances. The father had contracted an incurable disease, and was unable to work. They lived in a two-room-and-kitchen house, the rent being £2 11s. 8d. per month, and a total income of £2 18s. per week. The mother complained that the patient was dismissed from a situation because she was slovenly and untidy. At home she teased the younger members of the family, and her sisters complained not only of this, but of the fact that she was unable to do her share of the housework. The sisters were smart, enjoyed themselves at dances and other amusements, and left the patient in the house to sit and mope. The mother had already so much on her hands in running the household and in nursing her husband that she was unable to cope with this difficult situation. At times she complained of the patient, and spoke bitterly of the lack of sympathy of her other daughters, and it was imperative that something should be done at once to ease matters. I suggested that this girl should be taken in hand by the National Vigilance Association for training in domestic work. Under this arrangement the girl is now doing extremely well, and the whole family situation has been greatly benefited. I was further able to help by obtaining extra nourishment for the father, and a small grant of money for the family.

A boy, æt. 14½, was referred to the Clinic because of a record of pilfering and stealing. When sent on an errand he purchased a cheaper quality of goods than he was asked to do, and retained the surplus change. He worked as a message-boy, and it was usual for him to receive money from customers to pay their accounts. He wrote notes to his employers requesting goods on credit, signing as if from his parents or neighbour. While behaving in this way he was most plausible, and he was described by his parents as most affectionate. His school record, too, was good. His mother was divorced, and his father had re-married, but his mother was most anxious for his welfare. This boy was recommended for an industrial school, but was over age and could not be admitted.

He is being kept under supervision, and has been put in touch with a boys' club, and it is hoped to make some further provision for him in the way of being admitted to a training colony.

Other problem cases which one is called upon to deal with are those affecting young married women after the birth of their children. There is always a certain amount of physical disability, and, along with this, the increased responsibility of the home causes a serious strain. One woman who lived in a comfortable house with her husband and two children had caused her husband to break up two homes, and he was about to break up the third. It was at this point that she was referred to the Clinic. She had become depressed, and instead of remaining in her own home she insisted upon going to her mother's house, and took her children with her. Her husband was therefore in the position of having partly to support two houses, and on this account strife arose between father-in-law and son-in-law. The patient's father accompanied her to the Clinic. The psychiatrist reviewed the whole situation, tried to get the woman to realize her responsibilities, and advised her to take up life again with her husband. I visited the husband and explained his wife's condition to him, recommending him to give her a certain amount of domestic help, and he agreed to do this. This re-arrangement of the household effected a very great improvement. They were happily re-united, and they have come to a much clearer understanding.

A frequent and unfortunate type of case is the man who is unemployed, and who, on the basis of his unemployment, develops a depression. It is indeed difficult to help such a case. Many a time it seems as if work would be the solution, but it is impossible to get the Employment Exchange to cater for any person who is not of the fittest.

A man, *æ*t. 58, had been employed as a clerk in a large firm. The firm closed down, and he—like many others—was discharged. He removed to the city in the hope that he might obtain employment there, but was disappointed. He became greatly depressed, and the situation was aggravated by the fact that his wife was ill and suffered from rheumatoid arthritis. She could not understand her husband's plight; she constantly reproved him because of his inability to assist the home, and was unable to appreciate the seriousness of his mental illness. I visited his wife, and she admitted that she did not fully appreciate her husband's state. The circumstances were explained to her, and she said that she would try as far as she could to be more helpful. This man at present

receives £1 1s. per week from the parish, while his rent is £1 13s. 4d. per month. At present, during his wife's illness, he has to pay 3s. per month for domestic assistance. Is it any wonder that he is unable to improve under such conditions?

From the foregoing report it will be observed that many mentally depressed and otherwise disordered people come to the Clinic, but greater advantage could be taken of it. The cases reported, brief though they are, indicate at once the help that can be given. The remedy in some cases is simple, as it may merely be a wider social life and more recreation that is required. There are many social agencies which lay themselves out to supply just these needs, and it often requires only a suggestion to get patients interested in these clubs.

The importance of home investigation lies in spreading a knowledge of mental disorder, and enabling people to appreciate and understand each other's difficulties much more clearly than otherwise would be the case. A great deal of tact and consideration is required in dealing with such circumstances. The public should realize more clearly the importance of mental disorder as a social problem, and when such is the case more help will be forthcoming to relieve those who are mentally afflicted.

Clinical Notes and Cases.

Three Cases of Nasal Sinus Disease. By KATHLEEN A. H. SYKES, M.D., B.S., D.P.M.Lond., and WILLIAM HENRY SHILVOCK, B.Sc., M.B., Ch.B.Birm., Rubery Hill Mental Hospital.

DETAILS of three cases met with in a mental hospital are given.

They appear widely dissimilar in age of onset, lesions found and clinical course—whereas the account of two cases includes the *post-mortem* findings, the third has been discharged and is doing well; but widely different as they appear, they have one factor in common—a chronic infection of the accessory nasal sinuses.

In one case death was sudden, and the long-standing sinus infection was demonstrated at *post-mortem* examination. The lesions responsible for death had developed in the absence of the usually accepted ætiological factors.

In the second case an empyema of the antrum of Highmore acted as a reservoir for bacilli which later invaded the intestines and caused a fatal enteritis, the same organisms being demonstrated in the antrum and intestines during life and at *post-mortem*.

The third case is interesting from many standpoints, and is given to illustrate the improvement obtained after draining an infected sinus, in spite of persisting infection in the tonsils and of damaged kidneys.

It would appear that not only can a long standing focus of infection, represented in these three cases by diseased nasal sinuses, act as a reservoir of organisms, but that the toxins these produce are capable of influencing adversely the tissues throughout the body.

CASE I.

A CASE OF ORO-NASO-PHARYNGEAL SEPSIS AND ATHEROMA CAUSING SUDDEN DEATH BY OCCLUSION OF THE LEFT CORONARY ARTERY.—BY WILLIAM HENRY SHILVOCK.

Male, married, cabinet maker, æt. 58 on admission on August 10, 1929. First certification.

History.—No psychotic heredity. Standard VI on leaving school. Always a steady worker. Indulgence in alcohol and tobacco limited. Had "colds in the head" each winter.

The onset of recognized mental symptoms was gradual until a week before admission, when definite insomnia developed. His manner became "strange"; he was afraid of being left alone; he stated he thought someone was following him, and he refused to go to bed. There was loss of weight and appetite. He was later found by the police wandering near a police station. He said he had been "frightened out of the house by gas bombs."

On admission.—He stated that his thoughts were read by means of a periscope and dictaphone, and that he heard "people" shouting names after him, such as "Consumptive throat" and "Cancer." His conduct indicated the presence of fear, being restless, suspicious and resistive to examination and nursing attention. Physically he was fairly well developed and moderately nourished. Height, 5 ft. 9 in.; weight 10 st. 4 lb. Temperature, 98.2°; pulse, 80; respirations, 18.

Circulation: Apex-beat in sixth intercostal space, $\frac{1}{2}$ in. outside left nipple line. Sounds clear and accentuated; rhythm regular. Pulse full; arteries thickened; blood-pressure, 168/112 mm. Hg. Peripheral circulation, pale face, hands and feet cyanotic. No œdema.

Lungs, *nil* abnormal.

Mouth: Gross pyorrhœa. Many carious teeth and roots, especially in left maxilla and right mandible.

Ears normal.

Nose: Anterior rhinoscopy: crusting of anterior nasal space; posterior nasal space not seen; septum deflected to right.

Nasal sinuses: On transillumination, antra dim, frontals fair.

Tonsils: Fibrotic, adherent, septic.

Nervous system: Pupils equal in size, reacting equally and briskly to light and accommodation. Bilateral ptosis. Bilateral flexor plantar response. Deep reflexes present and equal. No clonus, no anaesthesia. Articulation, gait, equilibrium normal. No tremor.

Abdomen: Superficial veins enlarged over epigastrium. Viscera appeared normal.

Urine: Sp. gr. 1018, acid; albumen, heavy cloud; uratic deposit. No blood, sugar or pus.

Blood: Wassermann test negative; Widal test negative to all groups.

Course.—Restlessness and resistiveness, especially marked at night, continued for four days. He then became more composed and more co-operative in nursing. He continued, however, to utter delusions and fear was still manifested by his suspicious manner. He refused to be shaved.

On September 6 he suddenly collapsed at 7.15 a.m., showing extreme pallor, with feeble and thin pulse, and died a few minutes later.

At autopsy.—There were no external signs of injury. Skin and face very pale. Ribs intact. Lungs free, light, voluminous, no congestion or consolidation.

Heart: Pericardium normal; myocardium fairly firm. Both sides of the heart dilated, especially left, and contained blood-clot.

Well-marked atheroma in the aorta, on the semilunar cusps and extending down on to the mitral valve and around the coronary arteries. A patch of atheroma was situated within and completely occluded the left coronary artery for $\frac{1}{2}$ in. The right coronary artery was fairly patent. The pulmonary artery and valves were normal.

Larynx, trachea and œsophagus clear.

Nasal sinuses: The frontal and sphenoidal sinuses were clear, but the left antrum contained much greenish-yellow pus and in the right antrum there was pus on the medial wall.

The tonsils contained pus.

The naso-pharyngeal mucosa was œdematous and the surface muco-purulent.

Skull was intact. Some adhesions of pia-arachnoid to dura over the vertex. Pia-arachnoid milky over vertex and veins very congested.

No hæmorrhage either within or without the brain substance.

Peritoneum normal. Retroperitoneal glands enlarged. There was subacute inflammation of the atrophic gastric mucosa. Suprarenals soft and friable.

Spleen very soft and friable.

Liver was fatty and enlarged. No gall-stones.

Kidneys: Venous congestion, greasy on section; distinction between cortex and medulla almost obliterated. Capsules adherent.

Comment.

The causes of sudden death are not very numerous. In this case the absence of the commonly accepted ætiological factors of atheroma obscured the reason for the sudden collapse; although there was kidney disease of some years' standing the blood-pressure was not unduly raised. There was no family history of sudden death, no strenuous occupation or history of over-eating and no reason to suspect chronic lead poisoning or gout. This case has affinities to the reported experiments in which atheroma has been produced by the injection of bacterial toxins. The foci of infection here were in the nasal accessory sinuses and mouth, both apparently of long standing, and it seems reasonable to assume that this chronic infection was directly connected with the atheromatous condition of the heart responsible for the patient's death.

CASE 2.

A FATAL CASE OF *B. Pyocyaneus* INFECTION, ILLUSTRATING THE RELATION BETWEEN INFECTION OF THE NASAL SINUSES AND ALIMENTARY TRACT.—BY KATHLEEN A. H. SYKES.

F. C—, a single woman, was, when at. 24, in a mental hospital for three months. One sister was in a mental hospital; their father was a heavy drinker.

After her discharge she remained well for three years, and during this period she married.

She was again admitted to a mental hospital on September 3, 1907, when she was confused, restless, noisy and destructive, and continued so during the three years that elapsed before her transfer to another hospital. Her physical condition was poor. She was thin, and there was some suspicion of tubercle of the right lung. Her urine was normal, and there is no record of any abdominal disturbances.

She continued unchanged mentally and physically, and was eventually transferred to this hospital in 1920. She was considered to be a case of dementia præcox.

A simple, childish woman, at times quiet, asocial and apathetic, on other occasions restless, noisy, impulsive, destructive and faulty in habits.

Examination of the blood was negative to syphilis and typhoid. Examination of the fæces was negative, except that on two occasions *B. Friedländer* was found. Her physical and mental condition improved slightly, and at her best she would do some ward work, but was still subject to periods of confusion with excitement. At an ear, nose and throat examination at the end of 1926 it was noted that the tonsils were reddened and pus could be expressed from both; the tympanic membranes were retracted; on transillumination the nasal sinuses lit up fairly and equally well. She did not complain of headache. Early in 1927 she was given an intensive course of non-specific protein therapy, consisting of T.A.B. vaccine intravenously, beginning with 250 millions and increasing to 125,000 millions. To these injections she gave medium temperature responses, between 100·8° and 102·8° F., with some facial herpes. Otherwise there was nothing abnormal in her reaction to T.A.B. There was no change in her condition for some time, but about a year after the vaccine course she began to improve. She became much less confused, was quietly behaved and worked well in the ward and it was possible for her to have parole, and on one occasion week-end leave in the care of her mother. This improvement was maintained for a year, but during 1929 she relapsed into her former confused, noisy state. Early in February, 1930, she became

acutely ill and on examination appeared to have abdominal pain. Temperature rose to 99° and 100° F. at night, with a pulse of 112 and respiration-rate of 24. She was incontinent, but did not pass more than three motions during the twenty-four hours; the stools were offensive and fluid, but contained no mucus or blood. *B. Friedländer* was found in these stools. There was loss of movement and a sensation of fullness in the lower part of the abdomen, but no tenderness, resistance or mass. Nothing abnormal was found on rectal examination.

She died on the seventh day of the illness without any other signs or symptoms having appeared.

Autopsy.—The principal points noted were old adhesions between the right temporal lobe of the brain and the adjacent dura.

The nasal sinuses showed slight thickening of the sphenoidal mucosa and definite disease in both antra. The right antral mucosa was much thickened and the cavity contained pus; the mucosa of the left was thickened and the exudate catarrhal. Ears were normal.

There were some old adhesions at the bases of both lungs, but no tuberculous deposit was found. The stomach showed submucosal hæmorrhages, especially marked along the greater curvature; the mucosa of the small intestine was slightly inflamed. The large intestine was dilated and inflamed; this inflammation was extreme in the transverse colon, where there were extensive hæmorrhagic sloughing areas.

Bacteriological examination showed the presence of *B. pyocyaneus* in both antra, liver and spleen, and *B. Friedländer* in both antra and intestines. *B. para-Grünthal* was also found in the pus from the right antrum and in the intestines.

Comment.

The points of interest which this case presents are the recovery of the same organisms from the nasal sinuses, liver, spleen and intestines.

B. Friedländer had been found five years previously in the fæces, in the absence of any evidence of enteritis. It reappears in association with an acute fatal illness which gave few of the clinical signs of bowel infection, although at *post-mortem* an acute inflammation of the whole alimentary tract was found.

In the chronically diseased antra this organism was also found. It is concluded that the alimentary inflammation resulted from a mass infection originating in the antra.

Another inhabitant of the antra, *B. pyocyaneus*, obtained access to the blood-stream and was recovered from spleen and liver. This infection was probably the actual cause of death.

CASE 3.

A CASE OF POLYCYSTIC DISEASE OF THE KIDNEYS, PYONEPHROLITHIASIS AND NASAL SINUSITIS WITH MENTAL DISORDER.

—BY KATHLEEN A. H. SYKES.

Mrs. D. G.—, married, housewife, æt. 30 on admission on November 19, 1926. First certification.

History.—*Family:* No history of insanity. Patient is the eldest of a family of six. The other five, and her father, are healthy. Her mother, at 40, had one kidney removed for "sepsis," and six years later died from hæmorrhage from the

remaining kidney. Three maternal aunts and her maternal grandfather also died from "kidney trouble."

Personal: Had three attacks of measles during school age. Left school when *æ*t. 13, in Standard VII. She worked as a machinist for six years and then married. There have been no conceptions. She states that from childhood she has had pain in the lumbar region. Shortly after marriage she had an attack of frequency of micturition and scalding, since when the pain has been more severe and the urine has at times contained blood and pus. For this she attended the General Hospital, where, on January 24, 1924, the blood-urea was found to be 81 mgrm. per 100 c.c.

She was admitted and cystoscoped on February 11. The report was as follows:

The right ureter is raised. Left ureter is not so high as right. Blood-stained fluid coming from right ureter. Enlarged vein seen running across base. Phosphate deposits on bladder floor.

On February 15, 1924, the right kidney was exposed and found to be cystic, and on exploration of the left kidney this was also found to be cystic and a little larger than normal. The condition appeared to be that of congenital bilateral cystic disease of the kidneys. The wounds were closed. She was discharged to home care.

She continued to pass blood and pus at intervals, and although able to do light work she was regarded as a semi-invalid.

State prior to admission to mental hospital.—In August, 1926, she lost weight and became very depressed. At the beginning of the following October the lumbar pain and urinary disturbance grew worse and she became still more miserable. She was continually threatening to make away with herself, and on one occasion left home and walked into a pool of water.

On examination it was found that she was greatly depressed and agitated. She stated that she was afraid to go out alone, and if she did she would not come back. She said she had nothing to live for and would like to die.

On admission to mental hospital on November 19, 1926.—She was extremely depressed and agitated. She lay in bed with her face covered and cried. Little could be elicited from her beyond incoherencies to the effect that she was "not worthy." She said she wanted to but could never die. She was afraid of the dark, and of being left alone. She imagined that the other patients and nurses were constantly talking unkindly about her. Her nails were bitten close, and she was continually biting them. The right pupil was slightly irregular and excentric to the nasal side; both pupils reacted to light and accommodation. The left field of vision was normal, but on the right side there was diminution of visual acuity with a contraction of the temporal half of the field. The retina appeared oedematous. Blood-pressure was 143/96 mm. Hg. A few septic papules were present on the skin. Face was sallow. Temperature was 99° F., pulse 88. Although seriously ill physically, description of her feelings and depressed ideas was far easier to obtain than any statement concerning her sensations, aches and pains.

It was elicited, however, that she had headache, and on examination she admitted pain in the right lumbar region, where a boggy, indefinite, tender mass could be palpated. The lower pole of the left kidney could be felt on inspiration. On the night of the 20th, temperature rose to 102° F., and during the next twenty-four hours she passed 36 oz. of acid urine, red with blood and containing a heavy deposit of pus. During the next day temperature fell to 97.8° F. and thereafter rose to 100° F., then fell and rose again to 99.4° F. and 99° F. until the 28th, when it fell to 97° F. and remained about 98° F. The urine now contained less blood and pus, the pain and tenderness were not so marked and the mass in the right lumbar region was no longer palpable.

It was elicited that the constant depression had periods of exacerbation, which appeared to precede the passage of urine containing more pus and blood than usual. This appeared to be the case on this occasion, and the acute mental symptoms were evidently coincident with an exacerbation in a pyonephrosis, and were relieved by its partial natural drainage.

Examination of the nose showed pus in both sides of the naso-pharynx; tonsils were septic. The nasal sinuses on transillumination lit up well.

A blood-culture was sterile. Wassermann and Widal tests in the blood were negative. An aching carious molar was removed. Her temperature remained normal, and her urine contained pus but no blood.

At this stage she was able to be up and walk about the ward. She was quietly behaved, but obviously very depressed and still retained the idea that she was "unworthy." Depression varied and was worse on dull days.

She had constant lumbar pain, but still complained very little about it—she had had it so long that she had come to accept it as part of herself.

The diagnosis of the renal condition was considered to lie between a pyonephrolithiasis and tuberculosis, in either case superimposed on congenital cystic kidneys.

A catheter specimen of urine was found to contain a very large amount of pus-cells and free bacteria.

Stained preparations showed the presence of numerous large cocci, but there was no evidence of tubercle bacilli. On culture only *B. acidi lactici* were obtained; there was no coccal growth.

No evidence of tuberculosis was found on animal inoculation. On December 11 she was sufficiently well to permit of a radiographic examination.

The report was as follows:—Renal: Large irregular calculus on right side. Kidney outlines appear ill-defined, but right appears atrophied and left very considerably enlarged. Pulmonary: All functions good. Considerable coarse peribronchial thickenings in both basal zones. Otherwise normal.

Urea concentration tests were now carried out. The results were as follows:

8.20 a.m.: Blood (fasting), 16.1 mgrm. urea per 100 c.c.

Urine, 0.97% urea.

8.30 a.m.: Fifteen grammes of urea in half a pint of water given on an empty stomach.

9.30 a.m.: Urine, 0.98% urea.

10.30 a.m.: Blood, 75 mgrm. urea per 100 c.c.

Urine, 1.55% urea.

Cerebro-spinal fluid, 31.6 mgrm. urea per 100 c.c.

No alteration of symptoms followed this procedure.

On January 15 she consented to be examined by Mr. H. H. Sampson, F.R.C.S., who considered that the stone in the right kidney should be removed and that she was an operable risk for nephrolithotomy, but not for nephrectomy. At first the patient dreaded the idea of operation. She said she would die in any case, and that she preferred to do so without the operation.

Finally she consented, and on February 17 she was admitted to the General Hospital under the care of Mr. Sampson. Here the clinical and pathological findings were confirmed, and she was pyelographed.

On March 7 the right kidney was exposed. It was found to be very friable, and densely bound down with adhesions. It was enlarged and cystic, and a hydro-nephrosis had to be incised before the large stone could be palpated and removed. A quantity of "shale" was also scooped out.

The main body of the calculus was found to be an irregular oxalate stone weighing approximately 3 drms.

The convalescence was somewhat stormy. On the third night the temperature reached 100° F., and she became excited, noisy and delirious.

The temperature continued to fluctuate between 100° F. and 103° F., and the delirium recurred each evening, until a subdiaphragmatic abscess was opened and drained on April 10. Within two days of this procedure it was noted that "the temperature was falling and the mental state clearing up." Later it was noted, "Temperature dropped; mentally normal." She was discharged from the General Hospital on May 21, 1927, to her home, where she remained in apparently good physical and mental health. The fears which formerly obsessed her had gone, and she was able to take up her normal life again.

During a seaside holiday in the summer of 1927 she indulged in sea-bathing. A "chill" followed and again she became depressed. The depression during the following month increased, and she showed irritability and restlessness. She ran away from home several times and wandered aimlessly in the neighbourhood. For two days she refused food and when questioned did not answer. She was re-admitted to the mental hospital on August 30, 1927. She was depressed and agitated. Wringing her hands and pulling at her hair, she said, "Everything is wrong and all is dark," and constantly repeated, "I want to die."

Her physical state was, however, better than on the previous admission. Heart and lungs were healthy. Constipation was extreme. There was some tenderness in the left kidney region. Urine contained albumen and pus. Examination of

the nose showed a streak of pus coming from the right middle meatus. The right antrum was on transillumination dimmer than the left. When questioned she admitted the presence of headache.

Under local anæsthesia using the Watson-Williams technique the ethmoids and antra were investigated. A bilateral ethmoid infection was found and *Bacillus alkaligenes faecalis* was cultured from all four cavities. She continued mildly depressed.

In November she volunteered that a right-sided headache which she "had always had" had vanished after the sinus irrigation, and had only returned on the first day of her menstrual period.

The physical state had improved, and it was decided to drain the infected sinuses and if possible remove the chronically diseased tonsils. This was done on November 10. The sphenoids were clear of exudate, there was thick pus in both ethmoids and muco-pus in both antra. The ethmoids and antra were drained intranasally.

Anæsthesia was not well tolerated, and the removal of the septic tonsils was not proceeded with.

Although the sphenoids had been found to be devoid of macroscopic exudate, culture of their washings showed the presence of *Staphylococcus aureus*, *B. alkaligenes faecalis*, *B. proteus* and *Streptococcus equinus* as against a sterile control.

Ethmoids and antra gave *Staphylococcus aureus* only, the controls also being sterile.

Following this operation it was noticed that although the returns of the antral irrigations were very soiled, there was definitely less pus in the urine.

She was given a small dose of T.A.B. vaccine intramuscularly. She continued cheerful and was regarded as convalescent. During the cold weather of January, 1928, she became more depressed, her manner was furtive and she was found to be hiding pieces of glass in her clothes. The depressed state continued during the whole of that year and was not noticeably improved during the warmer weather, although there was a slow physical improvement, including a gain of over a stone on her admission weight.

In October she was given a 200-million T.A.B. vaccine intravenously.

During the following winter there was no marked change in her mental state. In March, 1929, she developed a carbuncle on the back of her neck, which did not heal until well into April.

A slow steady improvement was noted in her mental state from this time and by June she was definitely convalescent. This continued, and in August she was transferred to a non-observation ward.

At a review in October, 1929, she was quite composed, neither depressed nor exalted, had insight into her illness. She stated that prior to May, 1929, the menstrual periods had always been very irregular, but since then had been quite regular. She showed with pride her finger-nails, now grown so long as to require cutting for the first time in her life of thirty-three years; previously she had always bitten them until they bled. Facial colour, mobility and tone much improved. Teeth and gums quite healthy. Urine: No pus or albumen.

She was discharged in October, 1929, and subsequent reports were satisfactory.

On March 21, 1930, she visited the hospital. She appeared cheerful and interested. She stated she had had no attacks of depression, no lumbar pain, even during or following domestic work, and no headache. She had experienced some irritability at the first day of menstruation (which was still regular, 5/28), but was not depressed. She had gained weight. Skin was clear; nails still unbiten. The right pupil was slightly larger than the left, and did not react so briskly to light. Both fields of vision were normal. There was still some blurring at the nasal side of the right disc. Blood-pressure 192/114 mm. Hg.

Comment.

This case is interesting from both the physical and the mental standpoint.

A woman with a well-marked family history of kidney affections

is found to be suffering from bilateral polycystic disease of the kidneys, a renal calculus and pyonephrosis. Symptoms referable to these complaints date back to childhood, and progress with exacerbations, each exacerbation being accompanied by an attack of depression. The suicidal attempt which necessitated her first certification was coincident with a state of acute toxæmia. When the pyonephrosis drained, her mental state improved and further improvement followed the removal of the stone, so that she was discharged from hospital care for three months. On her return nasal sinusitis was treated and this was followed by an immediate improvement in the condition of her kidneys—as shown by a lessened amount of pus in the urine. This suggests that the already damaged kidneys were labouring to excrete organisms which were being absorbed into the blood-stream from the affected sinuses. Her general physical condition was stimulated by the dose of typhoid vaccine. The improvement became marked about April, 1929, and thereafter continued steadily, so that on discharge in October she was in a better physical condition than she remembered herself to have ever been in her life. The regularity of her menstrual periods, as contrasted with the previous irregularity, is most interesting, indicating an improvement in the functioning of the whole ductless gland system.

She has now been discharged for fifteen months, and her improvement has not only been maintained but has continued. At the same time the ultimate prognosis is not good. It is impossible to deal adequately with her diseased kidneys, and the steady rise in blood-pressure is significant.

All that can be said is that a definite remission in her physical and mental symptoms has been obtained as a result of treatment.

May, 1930: She reports in a letter that she is back at work and is keeping well.

January 1931: She continues well.

We wish to acknowledge our indebtedness to Mr. H. H. Sampson, F.R.C.S., Mr. W. Stirk Adams, F.R.C.S., Mr. A. B. Danby, F.R.C.S. Ed., and Mr. Thomas Yoxall, M.R.C.S., L.R.C.P., L.D.S., of the Consulting and Visiting Staff of this Hospital, and Dr. F. A. Pickworth, of the Research Laboratory, for their observations on these cases, and to Dr. T. C. Graves, Medical Superintendent, for permission to publish them.

Aural Sepsis in Relation to Mental Disorder. By A. McCAY, F.R.C.S.Ed., Consulting Aurist, and F. H. HEALEY, M.B., D.P.M., Senior Assistant Medical Officer, County Mental Hospital, Chester.

The subject of aural sepsis as a factor in the production of psychosis has been given special attention by T. C. Graves (1, 2, 3). He has analysed two series of cases of acute mental disorder, and found 31·7% in the first series and 42·1% in the second series to have aural sepsis, chronic otitis media occurring most frequently. He discusses the relationship of ear diseases to auditory hallucinations, showing that such hallucinations may be associated with either the healthy or the diseased ear.

H. Shaheen (4) has described a case of mastoiditis associated with mental symptoms, in which recovery from the mental symptoms followed operation for the relief of the mastoiditis.

The following case seems worthy of record because recovery from mental symptoms followed the removal of the septic focus, and because aural hallucinations were present on the sound side and ceased after operation. It also proves the great value of teamwork in the diagnosis and treatment of cases of mental disorder.

J. K—, æt. 32, married, bricklayer, admitted April 25, 1930. Family history: No mental disorder traced.

Personal history: Had right ear discharge for first time in 1915, with marked increase of discharge and discomfort in last six months.

Mental state: Said to have been out of sorts some weeks, but more acutely ill during the last week. In a state of restlessness with clouding of consciousness. Speech confused and incoherent. Disorientation for space and time. Talks continually to voices of his enemies, which voices he hears in his sound ear. Has some vague non-systematized delusions relating to religion, persecution and Royalty.

Physical state.—Well-built man, but sallow and emaciated.

Circulatory system.—Pulse 76, regular; vessels palpable.

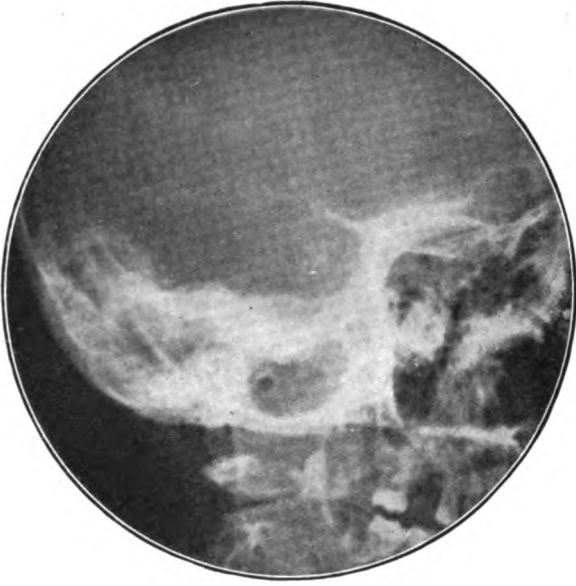
Heart.—Normal in size, mitral systolic murmur present.

Blood-pressure.—128/80.

Alimentary system.—Tongue very coated; constipated.

Respiratory system.—Bronchitis. X-ray screening: no evidence of pulmonary tuberculosis.

Central nervous system.—Right pupil larger than left; reacts poorly to light and for convergence. Slight lateral nystagmus. Slight weakness of left side of face. Left knee-jerk slightly increased.



Cerebro-spinal fluid Wassermann, negative. Cells 30, lymphocytes. No increase of protein. Gold curve, 111001000000.

Blood.—Wassermann negative. Blood count: Red cells 4,900,000, white cells 6,600, hæmoglobin 80%; differential count—polymorphs 53%, lymphocytes 41%, large mononuclears 3%, eosinophiles 2%, mast-cells 1%. Film: Normal.

Urine: Trace of albumin; no casts.

June 5, 1930: Examined by Mr. McCay.—“Left ear normal. Right ear, foul-smelling purulent discharge (which gave a pure culture of the *B. proteus*). Bulging posterior meatal wall. Membrana tympani destroyed and replaced by granulations. Completely deaf in right ear when tested with Bárány's noise-box in good ear. Slight spontaneous nystagmus on looking to opposite side. No response to cold caloric test. X-ray showed marked sclerosis of right mastoid.”

June 9, 1930: “Radical mastoid operation performed.—Very dense sclerosis of cortex. Antrum enlarged and filled with cholesteatomatous material. Aditus very much enlarged. Tympanic cavity filled with granulations. Flap operation performed and post-auricular incision closed. No skin-flap.”

There was no abatement of the excitement and confusion up to the time of the operation. Within a few days improvement was noted. There was less clouding of consciousness and speech became more coherent. His general condition gradually improved. He was allowed to get up at the end of July. He was then free from hallucinations and his conduct was normal. He was discharged recovered on August 19, 1930. He then affirmed that he felt better, physically and mentally, than he had done for the last ten years. He is now at work and in excellent physical and mental health (November, 1930).

Seen by Mr. McCay, August 12, 1930: “Cavity completely lined with epithelium and dry. Patient looked a new man and said he never felt better. Very grateful and pleased.”

We claim that this was a case of acute confusional insanity, due to septic focus in right ear, and that the mental recovery was due in great part to the cleaning out of the septic focus and the establishment of good physical health.

We are indebted to Dr. G. Hamilton Grills, Medical Superintendent, for permission to publish the details of this case.

References.—(1) Graves, T. C., *Journ. Ment. Sci.*, 1923, lxi, p. 465.—(2) *Idem*, *ibid.*, 1925, lxxi, p. 658.—(3) *Idem*, *ibid.*, 1927, lxxiii, p. 563.—(4) Shaheen, H., *Journ. Laryngol. and Otol.*, 1928, xliii, p. 580.

Medico-Legal Notes.

REX v. GEORGE CLIFFORD WRAY.

This case comes to us from Western Australia, and was tried at Perth on September 8 and 9, 1930, before Mr. Justice Draper.

The accused, æt. 19, a clerk, was charged with the murder of Charles David Patterson, a taxi-driver, on August 11, by shooting him in the head. The accused hired the taxi. Later on the same evening he returned to his home, and told his father that he had killed a man. The taxi was found on the road, with its driver sitting dead at the wheel. In the accused's pocket there was found a curious document, apparently in his handwriting, in which he outlined a most fantastic scheme for a bank-robbery, to be carried out with the aid of a taxi-cab. The facts were not disputed, and the defence was that of insanity.

Evidence was given to the effect that there had been several cases of psychosis in the accused's family; that he had done well at school; that he was of a reserved and seclusive nature; and that he was addicted to the reading of sensational stories of crime. (The prosecution had suggested that these stories were the real cause of the offence.)

Dr. C. B. Kerr, medical officer of the prison, stated that he had kept the accused under observation, and considered that he was suffering from dementia præcox. Such a man would not have the power to control his actions. The accused had told the witness that he had seen the bullet making a red track through the brain of the murdered man. Another curious thing mentioned by the accused was that he had meant to place a rat, in a box the bottom of which was smeared with fat, upon the body of the bank manager named in his scheme; the rat would thus be induced to eat its way into the vitals of the victim. The accused claimed that he could learn to drive a motor car, an art of which he was entirely ignorant, in two hours, on a dark night, and from a hitherto unknown taxi-driver.

Dr. James Bentley, Inspector-General of the Insane, gave similar evidence. He considered that the accused was incapable of dissociating his dreams from his waking thoughts.

The published report of the summing-up suggests that the judge was strongly in favour of the insanity plea. He pointed out that the evidence of the two doctors, both of whom were Government officials, had not been rebutted. The criterion of criminal responsibility which he gave to the jury was whether the accused had, at the time of the act, the power to control his actions.

The jury found the accused "Guilty" of wilful murder, but added a recommendation to mercy, on account of his youth and weak mind. The accused was sentenced to death.

On September 24 the case was brought before the Court of Criminal Appeal at Perth. After hearing Counsel, the Court held that the verdict was against the weight of the evidence, and that it was an unreasonable verdict. The conviction was, accordingly, quashed, the accused was acquitted on the ground of insanity, and an order was made for his detention during His Majesty's pleasure. Power of control over his actions was laid down as the proper test of a man's criminal responsibility. The Court held that, in the absence of any contradictory evidence, the jury was bound to accept the opinion of the two official medical experts.

Assuming the newspaper report to be accurate, the case is of interest, as indicating that the criterion of "responsibility" under the law of Western Australia differs from the rules in force in this country. The power of a man to "control his actions" has been advocated as the correct test by various authorities, notably by the late Sir James Fitzjames Stephen. It will be remembered that, in 1923, the committee presided over by Lord Justice Atkin recommended that the present legal criteria of "irresponsibility" should be extended to cover the case of a man who committed an act under the influence of "an impulse which he was by mental disease deprived of any power to resist." There are obvious objections to this test; and it would, if adopted, be likely to occasion as many, and as acrimonious, disputes as occur under the existing criteria.

REX *v.* GEORGE AUGUSTUS PUGH.

This case was tried at Stafford Assizes on November 25, 1930, before Mr. Justice Hawke.

The facts were not disputed. The prisoner was accused of the murder of a girl named Bratch. He was a plumber, æt. 18. He had been courting the girl for some time, and she was pregnant by

him. He was making arrangements to marry her. She told him that her parents objected to the marriage. (It was not clear, from the evidence, whether they had so objected.) However this may have been, the couple were unhappy, and the girl asked the accused to kill her. He at first refused to do this. But on September 25, when she repeated her request, he strangled her with a scarf, on a waste piece of ground at Wolverhampton. He then went back to his house, wrote a statement as to the place where the body would be found, and turned on the gas. When discovered he was unconscious, but recovered later.

When the evidence for the prosecution was concluded, counsel for the defence intimated, for the first time, that the defence would be that of insanity. The accused gave evidence. He stated that he remembered what he had done on the day of the tragedy, but said that it was "all a haze," and that he had acted on "a mad impulse." He had thought a lot about the crime since his arrest, but did not "realize" what he was doing at the time, although he knew that he was killing the girl, and knew that it was wrong to do so. Evidence was also given to the effect that the accused had always appeared to be very fond of the girl, and that a cousin of his father had died in Stafford Mental Hospital.

Dr. M. Hamblin Smith, Medical Officer of Birmingham Prison, said that nothing had occurred, during the time the accused had been under observation, that was at all suggestive of insanity.

The jury found the accused "Guilty," but added a very strong recommendation to mercy. In the end the death sentence was commuted.

Occasional Notes.

THE PREVALENCE OF SONNE DYSENTERY IN ENGLISH MENTAL HOSPITALS.*

THE question of the prevalence of the Sonne bacillus as the causative organism in outbreaks of diarrhœa in mental hospitals in this country was referred to the Infectious Diseases Sub-Committee by the Research and Clinical Committee of the Royal Medico-Psychological Association. At a meeting of the Sub-Committee the subject was discussed, and it was decided to send out a form, asking for information, to those mental hospitals which are engaged in active bacteriological work. Each hospital was asked to state whether any case of diarrhœa due to the Sonne bacillus had occurred during the past five years. If they returned a positive answer to this query they were asked to reply to the following four questions :

(1) Have the cases been of a sporadic or of an epidemic nature ?

(2) In what months have the cases occurred ?

(3) From the clinical aspect, have the cases been of a mild or a severe type, and did they exhibit any characteristic symptoms ? Have there been fatal cases ?

(4) From your experience do you consider infection by the Sonne bacillus to be a serious cause of illness in mental hospitals, and do you take special steps to cope with its incidence ?

Thirty-five forms were sent out; twenty-nine were returned giving the information asked for. There were no replies from the remaining 6 hospitals. Out of the 29 forms returned, 21 stated that no cases of diarrhœa due to the Sonne bacillus had occurred in their hospitals.

Of the remaining 8 :

(1) One hospital reported that no cases had occurred among the patients, but that one member of the male nursing staff had suffered from Sonne dysentery. He was off duty on two occasions, *viz.*,

* Report by the Sub-Committee on Infectious Disease in Mental Hospitals, approved by the Research and Clinical Committee for publication.

in December, 1928, for 11 days, and in November, 1929, for 14 days. He was a non-resident member of the staff and was treated at home by his private doctor. The case was a mild one and he was not confined to bed.

(2) One hospital reported the occurrence of one case during an epidemic of Flexner (*WX*) dysentery in September, 1926. The case was a mild one and ended in recovery.

(3) One hospital reported the occurrence of a sporadic case amongst the male patients in February, 1928. The diagnosis was confirmed by the Lister Institute. The case was a mild one. In April, 1929, a carrier was discovered amongst the female patients. Later examinations showed that this patient was still excreting *Bacillus Sonne* in October, 1929, and in February, 1930. A second female patient was regarded as a carrier. The *Bacillus Sonne* was isolated from her fæces on one occasion. However, subsequent examinations failed to discover the *Bacillus Sonne* but showed the presence of a dulcitate-fermenting organism—not *alkalescens*.

The medical superintendent of this hospital considers the Sonne bacillus to be of serious import as a cause of illness in mental hospitals, but believes that its presence is not usually recognized owing to the fact that it is a late lactose-fermenter. He suggests that some information concerning the Sonne bacillus should be sent round to mental hospitals, as he believes that most medical officers do not know of its existence.

(4) One mental hospital reported that two cases of diarrhœa occurred in September, 1929. The fæces of one was negative for *Bacillus Sonne*, but the Widal gave 1:250 agglutination for *Bacillus Sonne* and was negative to the other dysentery organisms. The other case agglutinated the Oxford standard culture for *Sonne* up to 1:25 only. The two cases occurred in the same week and were of a mild type.

(5) One mental hospital reported five sporadic cases, *viz.*, two in 1927, two in 1928 and one in 1929. They were of a mild type, and the medical superintendent does not regard Sonne infection as a serious cause of illness in his mental hospital.

(6) One mental hospital which has been free from Flexner dysentery and diarrhœa since 1923 reported that an epidemic due to the Sonne bacillus occurred in January and February, 1930. The number of patients affected was nine. The onset in each case was sudden, with vomiting and a temperature varying between 101° and 104°, but mostly normal the following day. The cases were of a very mild type and most of the patients recovered in a day or two.

(7) One mental hospital reported the occurrence of 14 cases. They were of a sporadic nature, and occurred during the winter months between November and March. The cases were of a mild type, with fever of 100° – 103° for 24 hours and diarrhœa with blood and mucus lasting for two to three days. There were no fatal cases, and the medical superintendent does not consider Sonne bacillus infection to be a serious cause of illness.

(8) One mental hospital reported the occurrence of 38 cases since May, 1926: 26 males and 12 females were affected. The outbreaks have been both of an epidemic and of a sporadic nature. The first 5 cases were noted in May and June, 1926, and occurred amongst the males in an infants' ward attached to the female infirmary. Up to March, 1930, the only symptoms present were a few loose stools, but in March, 1930, two senile male patients in bed in an infirmary ward had a rise of temperature and diarrhœa with mucus in the stools. Blood never appeared. Four cases died from other causes within two months of diagnosis, and in two of these cases slight congestion was present in the intestine. The medical superintendent reported that at the time of filling up the form (March 24, 1930) there was an epidemic of 24 cases which had lasted eleven months, and that if the disease continued to be endemic in his hospital segregation would have to be attempted. The strain of the Sonne bacillus isolated in this hospital did not agglutinate to the Oxford standard serum but did to the Lister Institute Sonne serum of 1927.

The infection was supposed to have been introduced into this hospital by a Danish nurse, but it has not been possible to prove this.

Cultures of the Sonne bacillus were obtained from three of the mental hospitals which reported cases, and were compared, with the following results:

Morphology.—All the organisms were non-motile, Gram-negative bacilli.

Sugar reactions.—The sugar reactions for each organism were identical. There was sedimentation of the growth in broth with the two "rough" types in 24 hours.

Agglutination reactions.—Positive reactions in dilutions 1:6400 were obtained with all the "smooth" types.

Auto-agglutination took place in saline suspensions of the two "rough" types. All the "smooth" types gave a partial + 1:400 with a polyvalent *B. dysenteriæ* Flexner serum.

One may ask the question—Is the Sonne bacillus in this country

the cause of a serious intestinal infectious disease or not? Smith, Fraser and Kinloch of Aberdeen, and Clayton and Warren of Newcastle-on-Tyne have reported serious outbreaks amongst the civilian population—chiefly confined to children and attended by some fatal results. In Norway, where the disease first appeared, it has assumed the nature of an epidemic. Dr. Bojlen, in Denmark, reports hundreds of cases which he has investigated.

It is interesting to note that the two localities in Great Britain where the disease is most prevalent are seaport towns on the East Coast in frequent communication with Norway.

The one mental hospital in this country in which the disease is assuming serious proportions and causing anxiety has Danish nurses on the staff. Is this the source? It is of interest to note that this also is the only hospital which reports that children have been attacked. May this partly explain the hold the disease seems to have established in this hospital? The medical superintendents (with one exception) of the other mental hospitals in which cases have occurred do not consider the disease to be of serious import as a cause of illness in mental hospitals in this country. The one exception mentioned above regards Sonne dysentery as a serious illness, but it is not clear on what grounds, for he reports that the only case which occurred in his hospital was of a mild type.

M. J. McGRATH,

Hon. Sec.

LUNACY AND MENTAL DEFICIENCY IN 1929.*

LUNACY.

The Board of Control, in its Report for 1929, notes that the outstanding event of the year was the introduction in November, 1929, of the Mental Treatment Bill, which received the Royal Assent on July 10, 1930.

The Board expresses the "hope that local authorities will realize that, from the point of view both of humanity and of economy, treatment cannot begin too early, and will see that any charge made for the reception of voluntary patients shall not be such as to discourage admissions in the incipient stages of the disease."

* *Sixteenth Annual Report of the Board of Control.* His Majesty's Stationery Office. Part I, price 1s. 9d.; Part II, 6s. 6d.

Attention is drawn to the provision for temporary treatment of non-volitional patients, which the Board thinks marks a striking advance in the assimilation of the treatment of mental with that of physical illness.

The Board explains that it has power to approve institutions or hospitals other than public mental hospitals for the reception of voluntary and non-volitional patients; and that there are many cases which could, with advantage, be treated in teaching hospitals and in those non-teaching hospitals which are large enough to have wards for such patients. In the case of the teaching hospitals such an arrangement would be of special value in the interests of medical education and research.

Another change of great importance mentioned is the statutory recognition of the out-patient clinic. Authorities are now empowered to provide such clinics, or to make arrangements with voluntary hospitals for their provision. The Board expresses the hope "that local authorities will insist on the proper staffing of any out-patient centres to which they may contribute, and that they will make it possible for medical superintendents and their deputies to devote adequate time to this vitally important part of their work."

Other sections of the new Act discussed are those which empower local authorities (1) to make provision for the "after-care" of patients or to contribute to the funds of voluntary associations formed for that purpose, and (2) to undertake research or to contribute to the cost of research undertaken by others.

The number of persons of unsound mind under all forms of care increased during the year by 1,307, as compared with an average increase of 2,167 for the last five years, while the total number of notified cases in England and Wales on January 1, 1930, was 142,387, or nearly 3·6 per 1,000 of the population. The Board has no reason to suppose that the abnormally small increase for 1929 reflects any real diminution in the incidence of mental disease. It is mainly due to an increased death-rate during the year, but to some extent the explanation is to be found in a diminished admission-rate due to the increasing shortage of beds in public mental hospitals. The margin of accommodation is perilously small, and a position of the utmost gravity may easily arise.

Attention is called to the comparative failure of the registered hospitals, with a few exceptions, to fulfil what the Board believes to have been the intention of their founders—that they should provide accommodation for the classes who are reluctant to enter

public mental hospitals, but who cannot afford the fees charged elsewhere. It is recognized that the position is difficult, since the endowments are small and there is naturally a temptation for hospitals to seek to attract profitable patients in order to balance their budgets.

Infectious and Allied Diseases.

The following points are noteworthy :

Of the 36 patients who suffered from scarlet fever, 29 were women. There was a considerable increase in the incidence of erysipelas, 60 hospitals being affected; the sex ratio was 1 man to 2 women.

The incidence of tuberculosis rose during 1929 from 8.0 to 8.5 per 1,000 of patients resident, though at the end of the year the number remaining under treatment (1,209) was slightly less than at the beginning (1,216). During the first half of the year 532 fresh cases were notified, and during the second half 361. The high prevalence of influenza during the January-March period seemed to be followed by a rise in the tuberculosis incidence. The number of fresh notifications in the northern counties was approximately double that of the south-eastern group; this corresponds to the distribution of such notifications in the general population. The death-rates bear a similar ratio to this incidence. The incidence of tuberculosis in 1925 was 11.8 per 1,000 of patients resident. For the first time since 1921 more men than women were notified. The same applied to staff, 12 males and 8 females being notified during the year. "Examining the death-rates of the general population in a descending series, with Durham at the summit and Wilts at the bottom, we find that in 11 groups of areas standing above the average, there are 8 corresponding groups of mental hospitals with death-rates for tuberculosis above the average for those hospitals in England and Wales."

A recent report by the Medical Officer of Health for the County of London on the comparative incidence of tuberculosis in mental hospital patients and the general population goes to show that the higher death-rate from the disease among the former accounted to a large extent for the higher death-rate in mental hospitals from all causes.

Though this cannot be disputed, the point of real importance is: Are patients and staff in mental hospitals in a greater danger of being infected with tuberculosis than if they resided among the general population?—a point worthy of the consideration of our Sub-Committee on Infectious Diseases in Mental Hospitals. The

position in mental hospitals has certainly improved, for the annual death-rate for the quinquennium 1910-1914 was 16.5 per 1,000 for all forms of tuberculosis, while the latest figure in this regard is 6.2.

The enteric group of infectious diseases showed a reduction of about 45% in 1929. Dysentery also showed a slight decrease, while the cases of influenza notified (5,857) were seven times as numerous as in 1928.

Deaths from pneumonia and bronchitis formed 12.7% of the deaths from all causes, the corresponding percentage in the general population being 11.8. Having regard to the fact that the proportion of patients over 55 years of age in mental hospitals is two and a half times that in the general population, the small difference in the figures is really much to the credit of the hospitals.

MENTAL DEFICIENCY.

The Report discusses what effect the Local Government Act, 1929, is likely to have on the nation's provision for the care of the mentally defective. The Board expresses its belief that the Act gives valuable opportunities for development, improvement and economy.

Up to the present Local Authorities have provided only 7,697 beds. Eighty-six of the 124 Local Authorities have not yet made institutional provision, although it is pointed out that a considerable number of these are in process of making such provision.

At the end of 1929 the total number of mental defectives ascertained by Local Authorities was 71,439, or 1.81 per 1,000 of the estimated population.

Marriage of Mental Defectives.

The Board remains of opinion that an Act prohibiting the marriage of defectives while under statutory care would be a preventive measure of great social utility. Not only would it draw public attention to the unwisdom of allowing defectives to marry, but it would place Local Authorities in a far stronger position, by enabling them to insist on proper precautions being taken by the persons to whom defectives are licensed, and by their parents and guardians.

Eugenic Sterilization.

On the subject of sterilization the Board concludes that it "will not solve the many problems of the prevention of mental

defect; indeed, it is doubtful whether it will appreciably reduce its incidence. In any case it would be absurd to suggest that its adoption would obviate the need for the institutional care and training of those defectives whose social inadaptability makes it impossible to leave them at large. But there are cases in which it might be advantageous; and if the claims of its advocates are often exaggerated, the condemnation of its opponents rests on an equally unsubstantial foundation."

The Report declares that with the increase in the number of mental deficiency colonies it is becoming increasingly difficult to find medical superintendents with any specialized experience of mental deficiency work. It would, in its view, be a gain to mental deficiency colonies if arrangements could be made for short post-graduate courses at one or two colonies within easy reach of a teaching hospital.

SCIENTIFIC RESEARCH WORK IN MENTAL HOSPITALS.

The number of pages occupied by this section of Part II of the Report is 114 as against 72 in the previous year.

This is becoming a more and more valuable commentary on the progress of scientific psychiatry. Such a useful document, we think, should be made available as a separate publication, at a more moderate price than the 6s. 6d. which now has to be paid because of its inclusion in one volume with administrative tables and commissioners' reports.

J. R. LORD.

Part II.—Reviews.

Psychopathology ; A Survey of Modern Approaches. By J. ERNEST NICOLE, L.M.S.S.A., D.P.M. With a foreword by W. H. B. STODDART, M.D., B.S., F.R.C.P. London : Baillière, Tindall & Cox, 1930. Size 5½ in. by 8½ in. Pp. xii + 203. Price 10s. 6d. net.

We have here presented for the benefit of the student a concise view of modern psychopathology, sufficiently comprehensive to give him a good knowledge of basic facts and prepare him for reading and understanding standard works on the subject.

This is not the first time Dr. Nicole has done the student such a service. Some of us still keep handy as a useful work of reference an article by him, "Psycho-Analytical Schools, Old and New," published in the *Lancet*, August 12-19, 1922.

Members of the Psychopathology and Psychotherapy Subcommittee of the Royal Medico-Psychological Association, of which Dr. Nicole is the enthusiastic honorary secretary, are well aware of his remarkable capacity for expounding subtle points, and a wider circle of students will now have an opportunity of benefiting from this.

The book is not, however, a mere summary of the various schools of psychopathology. After stating the facts of each approach, the author sounds a note of warning or makes some brief criticisms, which should save the reader from the many pitfalls which lie in the path of those who would arrive at a true understanding of a really difficult subject.

In the first chapter is presented an interesting historical survey commencing from the Middle Ages. Succeeding chapters deal with the teachings of Morton Prince, Freud, Adler, Jung, Rivers, Watson, Kempf, Berman. Then comes a chapter on biochemical and physiological contributions, in which we are glad to see included an account of Burrige's interesting excitation theories. Kretschmer's constitutional approach is next treated; the student would be well advised to supplement it by reading Crookshank's *The Mongol in our Midst** (one of the most interesting and seductive books it has been our pleasure to read for many a day), the third edition of which has just been published.

We would draw particular attention to the approach made by Kempf, of whose teachings we hear too little. His theory of segmental tensions has surely much truth in it.

The last chapter is devoted to a dissertation on the "Combined Schools." Dr. Nicole explains the confusion which prevails in present-day psychiatry as being chiefly due—and in this we agree—to misunderstanding of what the various schools actually teach and

* London: Kegan Paul, Trench, Trübner & Co., Ltd., 1931; price 21s. net.

to the use of the same word to express a number of things. We should "devote more time to showing how different authors use different words to mean nearly the same thing."

One hundred pages are devoted to the main subject of the book, and in three appendices, which fill the next 80 pages, the author reproduces his three articles, which have all appeared in this Journal, on "The Concept of the Ego in Psychiatry, with Special Reference to Psycho-analysis" (July, 1929), "Type Psychology: Its Importance in Mental Hospital Practice" (April, 1928), and "Psychopathology and the Herd Instinct" (July, 1930). All are illuminating and stimulate interest, the last being a critical study of great merit.

As would be expected from Dr. Nicole, the book contains a useful bibliography and indexes of names and subjects.

We are sure of our ground in speaking well of this book and in commending it to all students of psychopathology.

J. R. LORD.

Chronic Nasal Sinusitis and Its Relation to General Medicine. By PATRICK WATSON-WILLIAMS. Bristol: John Wright & Sons, Ltd. London: Simpkin Marshall, Ltd., 1930. Pp. xvi + 221. Illustrations, 109. Price 15s. net.

This monograph is based on the author's Semon Memorial Lecture in 1925, "The Toll of Nasal Focal Sepsis on Body and Mind," and records the fresh advances made since that time in our knowledge of the pathogenesis and clinical manifestations of chronic nasal sinusitis, its toxæmias and secondary infections. Some of the clinical cases and illustrations are taken from the author's well-known text-book, *Rhinology*, and other publications.

The book is remarkable for its fine and profuse illustrations. These include several of the Onodi collection, which, through the author's intervention, were acquired for this country on Prof. Onodi's death, and are now in the Royal College of Surgeons Museum. It is meant to supplement, not replace, the usual text-books. Hence only the more modern methods of nasal endoscopy are fully described and illustrated.

Only one chapter, which will be mentioned later, is devoted entirely to mental and nervous complications, this field being largely left to the *Journal of Mental Science* monograph on *Chronic Sinusitis and Mental Disorder*, work upon which is now proceeding, and to which our author is contributing.

For over thirty-five years, with William Hunter, Dr. Watson-Williams has been preaching to the medical profession on the importance of focal sepsis in disease. A measure of success has met their efforts, but in regard to the mental and nervous complications of chronic nasal sinusitis our author's pioneer work has not yet received that recognition which its importance merits.

We trust that the publication of the special monograph we have just mentioned will help to dispel these doubts.

Despite the many criticisms of the author's diagnostic exploratory suction technique, special instruments and pernasal operations, these are all extensively used—a practical tribute to their undoubted value.

The work is divided into two parts: Part I is devoted to "Pathology, Symptoms and Systemic Effects," and Part II to "Diagnostic Methods and Treatment."

Psychiatrists will be especially interested in Chapters V and VII, the former of which deals with symptoms and signs of focal sepsis, and the latter with the influence of chronic nasal sinusitis on neuritis and neuralgia, headaches, character, psychosis, suicide and crime. It is not claimed that these are always complications of nasal sinusitis. They may also be the legacy of focal infection elsewhere. The dominating symptoms are often found in one region, but are seldom entirely restricted to it. Mild mental symptoms, according to the author, are far and away the most common manifestation of focal sepsis, more pronounced mental disease being relatively infrequent.

Dr. Watson-Williams does not suggest that in any patient a psychosis is entirely due to sepsis; there is usually a complex of inter-related factors. The importance of the work which is being done in this country by Graves and Pickworth of Birmingham, and in America by Cotton, is emphasized, but the author regrets that owing to the restrictions of space it has been impossible to do justice to it.

We have no hesitation in saying that the library of every mental hospital should contain a copy of this illuminating work.

J. R. LORD.

Medizinische Psychologie. By E. KRETSCHMER. Leipzig: Georg Thieme., 1930. Medium 8vo. Vierte Auflage. Pp. 266. 24 illustrations. Price RM. 16.

The fourth edition of Kretschmer's *Medical Psychology* has undergone a thorough revision and also a slight enlargement. Prof. Kretschmer has succeeded in forming an ideal combination of psychology and psycho-pathology in a single volume. This he has performed with impartiality and without making the book merely an exposition of modern (continental) views. The author's stimulating originality, together with a critical sifting of the teachings of the various modern schools, can be noticed throughout. As a book primarily intended for medical practitioners its keynotes are conciseness and lucidity, and the solutions of moot problems are rather indicated than discussed.

The book is divided into five parts. Part I deals with the following: The nature of the mind, the ego and the outer world, the mind-matter problem, including cellular, humoral and endocrine factors.

There is an excellent chapter on sensation and the development of perception, in which Jaensch's theory of eidetic imagery receives adequate consideration. The cerebral cortex and its mnestic-associative functions, including an account of the "Gestalt" function and of the frontal lobe syndrome. The development of the psycho-motor functions and the subcortical centres. The central psychic functions—cognition, conation and affectivity. The relation of the latter to the endocrine and vegetative nervous systems.

Part II: Evolution of the mind. References are made to picture agglutination and projection, development of centripetal functions, of language, of centrifugal functions and of affectivity. Two chapters deal with Kretschmer's own theory of the hyponoic and the hypoboulic mechanisms.

Part III: The instincts and their transformations. Three instincts are recognized—food-seeking, the danger and the sexual instincts. No mention is made of the herd instinct. A full critical discussion of the Freudian theory follows. The temperaments. Types of body build (Kretschmer's types). This chapter is very original and illuminating; the two temperament groups are the cyclothymes and schizothymes, which again are classified as hypomanic, syntonio and melancholic, and hyperæsthetic, medium schizothyme and anæsthetic respectively.

Part IV: Intelligence and character. Ethics and environment. Constellations and complexes and their relation to symptom formation. Abreaction. Rationalization. The primitive reactions, with an exposition of the author's theory of hysteria. The personality reactions, the psycho-pathology of cycloid and schizoid border-line cases. Katathymia. The artistic wish-fulfilments. This part of the book should prove particularly valuable to psychiatrists, especially to those who work in out-patient clinics.

Part V: Methods of examination, including a detailed description of Kretschmer's "psychobiogram"—a scheme for criminological, differential psychological and psychiatric diagnosis. The last chapter deals with psychotherapy, and though of necessity brief, is of some practical value. The methods described are the suggestive, the psychagogic and the psycho-analytic. The supplement contains a useful bibliography.

The book can be thoroughly recommended. It is readable, lucid and up-to-date, and easily merits an early translation into English.

R. STRÖM-OLSEN.

Insomnia: An Outline for the Practitioner. By H. CRICHTON-MILLER, M.A., M.D. Edin. and Pavia. Arnold & Co., 1930. Pp. xi + 172. Price 10s. 6d. net.

Sleeplessness is so dangerously easy to treat, and so difficult to cure by the ordinary methods of medicine, that the general

practitioner will turn hopefully to this monograph on a symptom for which he is called upon to prescribe almost daily. He will find in it an extremely interesting account, vividly written, of all that is at present known and conjectured of the nature of sleep and the causes of insomnia, together with a clear summary of Pavlov's work on the conditioned reflex in its relation to the mechanism of sleep. The treatment of insomnia, on the lines with which he is already familiar, is discussed with shrewd and illuminating common sense, and the hypnotic drugs are evaluated according to their different merits and shortcomings.

It is only when the general practitioner looks to find what the modern methods of psychotherapy have to offer in the treatment of insomnia that he may be a little disappointed. Psycho-analysis and Jung's system of psychology are expounded clearly, but with more emphasis upon their philosophic aspect than upon their practical application; the unconscious motives which may give rise to anxiety and hysteria are indicated more clearly than the means of dealing with them when they have been brought to light. Cases of compulsive neurosis are regarded as beyond the reach of psychotherapy.

In the last chapter, which contains nine illustrative cases, prominence is given to endocrine disturbance and its correction by means of glandular extracts. The psychological situation of the patients is presented from several points of view, but here, as elsewhere in the book, the author does not succeed in making clear the factors which bring about repression, and seems to underestimate the helplessness which the barriers of the unconscious impose upon the neurotic.

Those who are already familiar with psychopathology will appreciate the reminder that insomnia may sometimes be a positive, though inapposite, watchfulness—"when the wolves came down from the mountains primitive man lay awake, and when there is a lock-out in the cotton trade the Lancashire operative may do the same"; and many will profit by the experience which is embodied in the chapter on general treatment.

F. A. HAMILTON.

A Point Scale of Performance Tests. Vol. I: Clinical Manual.

By GRACE ARTHUR, Ph.D. New York: Commonwealth Fund, Division of Publications, 1930. Medium 8vo. Pp. 82. Illustr.

Without question there is a great need for some simple scale of tests to allow of an assessment of mentality which does not unduly favour the verbalist, or handicap those imperfectly acquainted with the language in which the examination must in the main be perforce conducted. The present work is by one well qualified to meet these difficulties. Dr. Arthur, at St. Paul,

Minnesota, has been psychologist to a clinic attended by persons of the most diverse mental levels, seeking advice on a multitude of problems, from bad school reports, through vocational guidance to actual more or less criminal offences. Her *clientèle* have included both the 100% American and the newly-caught stranger from an alien civilization, as yet mazed by the utter difference between the requirements of twentieth century industry and schooling and a nineteenth century, if not older, home life. Moreover, her chief was a most careful and conservative psychiatrist.

Dr. Arthur has standardized a scale for a series of well-known tests, and her results should be given careful consideration by all. They are most applicable to the relatively leisured conditions of child guidance, or vocational guidance, clinics. Even those who have to conduct examinations at a much more rapid rate will learn from the details of the scale of points, though it is unlikely that they can work their cases out in detail on the lines suggested, simply because the examination would take from thirty to ninety minutes a case, and then only cover part of the ground needed for a full mental diagnosis. As a starting-point for simplification this is an excellent work, and unless this type of investigation is followed up, non-verbal tests will remain in the state of uncertainty that enveloped the ordinary tests of the serial type before the days of Binet.

While, however, the results of Dr. Arthur's work should be carefully considered by all English psychologists and "certifying officers," her scale would require verification before it could be applied in a mechanical manner. Some of the points of scoring, notably those for the Healy picture completion tests, would weight the scales against the ordinary child in this country because of the comparative unfamiliarity of some of the objects. For example, in the Healy completion A on the American scale a pumpkin scores very low as an object which is being kicked, yet it is not unlike a "soccer" ball, while the American football and baseball, which count most on the Western scales, are quite unusual objects to our elementary-school children. These difficulties could soon be adjusted by a little research, and, indeed, may be explained in the as yet unissued second volume, which gives details as to the construction of the scale of points suggested. At any rate, an application of the scale to two unselected cases showed that it gave quantitative results quite in line with those determined by mere observation, and the extra assurance might well be of value in the event of a legal dispute. On the whole, however, the work is likely to be of greater value in vocational guidance or the investigation of maladjustment in those of good intelligence than in the ascertainment of the defective. As yet its place is the laboratory rather than the consulting-room.

The Commonwealth Fund should be congratulated on the publication of records of detailed work on which the shorter methods of public practice must ultimately be based.

F. C. SHRUBSALL.

The Subjective Character of Cognition and the Presensational Development of Perception. By R. B. CATTELL, B.Sc., Ph.D. *Brit. Journ. of Psych. Monogr., Supplements XIV.* Cambridge University Press, 1930. Royal 8vo. Pp. viii + 166. Price 12s. 6d.

This is a thesis presented to the University of London for the degree of Doctor of Philosophy. The author set himself the following three problems for investigation: (1) The problem of primary sentience: Is our first experience of sensory stimulation truly one of sensation, or is it merely and essentially a subjective mental state? (2) the problem of clearness variation of cognitive items; (3) the question of the objective and subjective experiencing of a stimulus. The term "subjective" is not used in the usual sense of a subjective experience in general, *i.e.*, in its totality, but applies to "the subjective experiencing of that class of processes or events which are normally objectively cognized—namely, percepts." However, although the author defines many of his terms, he appears often to forget his definitions, and uses terms like "sensation," "percept," "feeling," "affect," etc., with varying connotations, so that it is often difficult to follow his arguments. After discussing the work of Spearman, Phelan and Wohlgemuth, the author describes his method of investigation, which was mainly introspective. The observers were all highly trained introspectors, which may excuse the fact that the instructions given to them were not always entirely free from suggestion; in the circumstances suggestion would possibly not be effective. The protocols were taken down immediately, and the psychogalvanic reflex was also used. A number of stimuli were devised affecting the various senses and were presented during various attitudes on the part of the observers, and under varying conditions. In order to obtain quantitative results, the author, in the examination of the protocols, distinguishes besides a primary and a pseudo-primary subjectivity four degrees of secondary subjectivity, and also a variety of the second degree which he calls "background subjectivity." Numerous extracts from the protocols are quoted throughout the thesis to illustrate the conclusions arrived at.

In the third chapter the psychical correlate of the psychogalvanic reflex is shortly discussed, and the author adopts Aveling's view that it is more nearly proportional to the conative elements in any experience than to the affective or cognitive elements.

The fourth chapter is concerned with the study of the uncontrolled factors in the development of subjective experiences. The summary of the results is somewhat inadequate. It is stated that "it is interesting to notice how readily these results are explicable by Prof. Spearman's hypothesis of general mental energy."

The fifth chapter describes "the first specific inquiry: the nature of subjective or pathemic experience." The term "*pathemic*" (from Plato's *πάθημα*) is introduced here for subjectively experienced perception as distinguished from "*contemplated*"

for objectively experienced perception, without adding much to the clearness of the exposition. Various modes of producing subjective and objective experiences are then described, and the characteristics of these experiences are illustrated by quotations from the protocols.

We next come to "the second specific inquiry: the description of the primary subjective state," supported by copious quotations from the protocols. The author then indulges in some interesting speculation as to the various stages of consciousness from the moment preceding stimulation to perception, which he illustrates by diagrams. He distinguishes six of these stages, *viz.*, (1) the pre-stimulus dual consciousness with a subjective side (self) and an objective side; (2) the subjective discord in which there is subjective change and unrest; (3) the stage of the transitional subjective nucleus, in which the objective side disappears and withdraws itself upon the changing subjective background; (4) the flux and sub-subjective intrusion; (5) the sub-subjective intrusion absorbs the flux, forming a new centre of consciousness—the subjective nucleus; (6) the final result is the stimulus-perception dual consciousness. A pretty pictorial metaphysical speculation.

"An attempt to obtain objective evidence as to the existence and character of primary subjective experience" is the subject-matter of the seventh chapter. It was assumed that motor or muscular reactions were motivated by the subjective change in consciousness which is alleged to be the primary effect of sensory stimulation, whilst in sensory reactions the response is to a more or less clear sensory perception. From these premises it is quite logically argued: "Now if, in motor reactions, the subject responds to this first state, which is said to have no modality character, we should expect that he would respond equally well (by mistake) to stimuli of different modality from those to which he was set to react, if these 'false stimuli' were interspersed among them. Further, we should expect that the actual time of reaction for these 'false stimuli' would be that of the motor reaction for that particular modality for that subject, since, if it were longer, the subject would presumably have perceived its modality and, realizing its modality to be other than that to which he was supposed to react, he would not have reacted." The latter part of this inference, as the author admits, is presumptive. There were five observers, who took part in two series each of 600 experiments.

The eighth and last chapter contains a "Consideration of Relevant Researches, a Discussion of Nomenclature and a Statement of Final Conclusions." Investigations by Spearman, Bichowsky, Dickinson, Martin and G. Bose are discussed. As to the "suggestions for a clearer nomenclature," it is pleasant to see that the author has definitely accepted "affect" as the generic term and "feeling" as the specific term for the elements "pleasure" and "unpleasure." He is, however, mistaken when he says that the tendency to restrict the term "feeling" to pleasure—unpleasure was shown, *perhaps unconsciously*, by Wohlgemuth and Phelan.

Wohlgemuth is most emphatic and explicit upon this point and discussed it at length in several papers,* where he coined the term "unpleasure" to correspond to the German *Unlust* to take the place of the older English term *pain*, the use of which has caused the greatest confusion in English psychological literature. Phelan deliberately adopts this nomenclature. It is quite natural to find a tendency in an author to apply the results of his investigation in the elucidation of other phenomena, but our author is not very fortunate in his suggestions. The whistling incident described on p. 155 can easily be explained by a want of attention. Hypnosis and paramnesia † have found more acceptable interpretations.

In a final summary, over forty conclusions are given, of which only a few can be quoted :

"The normal perception of stimuli as objective is liable, under certain conditions, to undergo modification, whereby the stimulus sensations are no longer experienced as over against the self, localized, contemplated and meaningful, but come to fuse with the subjective side of consciousness and constitute the self, so that duality disappears and the whole of consciousness is filled by the 'sensation.'

"In moderate pathema other sensations (than those in process of subjectivation) may still be cognized perceptually in the field of consciousness."

"With the onset of complete pathema, sensation and affect fuse and become indistinguishable."

"If affect of any kind accompanies the experience in the percept stage it almost invariably undergoes a marked change of intensity on pathemization."

"There is difficulty in recalling and describing pathemic experience, which is greater the more complete the experience has been, and which renders profound pathemic experience almost unretrospectable."

"The most powerful factor in the causation of pathemic experience is passivity."

"Pleasant sensations are more readily pathemized than unpleasant ones."

"In the moment preceding the (objective) perception of any stimulus there occurs a purely subjective, pathemic experience, which varies somewhat in character and duration according to the nature and intensity of the stimulus and the mental condition of the subject in the moment before stimulation."

"Pre-sensation is more often unpleasant than pleasant."

"Pre-sensation is more frequently found in those cases in which there is a rapid or almost instantaneous development of affect."

This is a very carefully planned and executed investigation.

* A. Wohlgemuth: "On the Feelings and their Neural Correlate, with an Examination of the Nature of Pain," *Brit. Journ. of Psych.*, 1917, viii, p. 437. "Pleasure—Unpleasure," *Brit. Journ. of Psych.*, Monogr. Supplements, 1919, xiv.

† A. Wohlgemuth: "On Paramnesia," *Mind*, 1924, n.s., No. 131.

The results are as interesting as they are important, but, of course, all depends upon the observers (their task here has been one of unusual difficulty) and their complete freedom from any bias

A. WOHLGEMUTH.

The Science of Living. By ALFRED ADLER. George Allen & Unwin, Ltd., 1930. Large crown 8vo. Pp. 264. Price 8s. 6d. net.

In this book, as in many of his recent writings and speeches, Adler has placed special emphasis on the social aspects of psychology. He claims to have laid down the first principles of a formative and scientific psychology, which will eventually lead to the complete reformation of culture and society. Thus the study of psychopathology has been replaced by a much more ambitious and far-reaching quest.

Adler believes that every personal "movement of life" is an articulated part of the individual attitude to life; that "nothing moves with aimless feet"; but that the "early personality," or prototype, is developed by the age of four or five, and that the subsequent career of the individual is conditioned by it. Hence it is possible to predict what response will be made to the demands of society, and to such problems as marriage or occupation. An ill-begotten prototype is the cause of anti-social reactions. It is this that produces the egotistic instead of the communal character.

There seems to be no limit to the application of individual psychology. Adler holds that most mistakes in life can be remedied once the prototype traits have been illuminated. He even conceives of an advisory council "which would untangle the mistakes of matrimony by the methods of individual psychology." The task of the parent, educator or psychologist is to make social needs plain to the person with an asocial prototype.

A sense of inferiority is natural to the race, he believes, and where it is not exaggerated by early circumstances it may stimulate a man to useful and successful participation in the struggle of life; but where it is over-developed it leads to cowardice, a sense of false values and a retreat to the "useless side of life." This is at the root of all crime and mental enfeeblement.

The clue to character is to be found in early memories. Whether forgotten or merely inexplicable to their possessor (Adler lays no special stress on repressed memories and their significance to other psychologists), they are of primary importance.

It is legitimate to expect some reasoned advice on treatment in such a book as this, but we do not find it. The neurotic is, as everyone admits, asocial; but how can he be most usefully assisted? Adler says only that we must penetrate into the personality of the neurotic "in a manner which will disarm his preconceptions" by the aid of "a certain art and a certain tact."

What, again, is the process by which we can rebuild the courage

of the dementia præcox patient whom Adler thus believes capable of cure? How, too, can we inculcate that "psychological insight" which he says all teachers should possess, so that the schools may fulfil their purpose of building character?

We may likewise criticize the apparent confusion between the metaphysical and the psychological concepts of unity. Adler's tenet that the individual always acts as a unit carries him over many such obstacles as conflict and dissociation. He does not admit that psychological maladjustment and the metaphysical concept of unity are on different levels.

Despite the superficiality of the book there are many wise and acute observations. Philippe Mairet contributes in his usual clear style a note more than twenty pages long on the author and his work.

EDWARD A. BENNET.

The Mental Development of the Child: A Summary of Modern Psychological Theory. By KARL BÜHLER, Professor in the University of Vienna. London: Kegan Paul, Trench, Trübner & Co., Ltd. New York: Harcourt, Brace & Company, 1930. The International Library of Psychology. Demy 8vo. Pp. 170. Price 8s. 6d. net.

In the preface of this book we learn that it "first appeared in the year 1919, since when it has gone through five editions." The author also states that "the study of childhood is to-day a rapidly and intensely cultivated science, whose results can be presented from widely different points of view." To both of these opinions we most heartily agree, but when the book is read—not without considerable interest, aroused by the enormous task of the author in bringing together, in the compass of some 166 pages, a summary of the vast amount of work that has been done in this field—we confess to feeling great disappointment. It does not fulfil the expectations which a volume of this celebrated series of representative books on psychology awakens.

Let us take first the question of the age of the work. It was first written in 1919. It appears before us in 1930. The Preface was added, it is true, in the year 1929, and the references at the end of each chapter have been increased in some cases by the addition of some volumes published later, especially those forming part of the same series. But in the text all the valuable works containing the results of research that have appeared between 1919 and 1930 are entirely ignored. And in this interval a very great deal of work has been done, and much has been added to the existing literature on the subject by psychologists in many countries. Whether it is honest to represent a work which is ten years behind the times as *a summary of modern psychological theory* seems doubtful. The author confesses that the subject is advancing rapidly, yet he and the publishers are content to stop short ten years ago.

Again, Prof. Bühler admits that the results of psychological investigation can be presented from widely different points of view; yet, when one comes to examine the book with care, one discovers that a great many of these have been entirely omitted, such as the outstanding work of the author's illustrious townsman and fellow professor, Sigmund Freud. Whether one agrees with his discoveries about the mental development of the child or not, it seems impossible, in a book of this kind, to make no mention at all of any of the books which he has written on the subject, and which have revolutionized our knowledge about child psychology from the emotional as well as other essential points of view. The contributions of Freud and those working upon his theories have formed a large and increasing proportion of the literature of the subject during the past fifteen or twenty years, so that it will be misleading to readers of this book to find a complete silence regarding this extensive research.

Concerning the beginnings of the study of modern psychology, the book is excellent. Preference is given perhaps to German writers and those of the old school, which one might call the observation type, who write about their own family, and study the child exclusively from without, making interpretations of his actions from an adult standpoint, without having obtained any first-hand information from the child itself, or from memory of personal childhood, of what a child really thinks about the persons and things around him.

Another point upon which we should like to raise a question is that of fairy-tales. It would appear that Prof. Bühler, in discussing this section of child literature, suggests that they have not been written by children for children, but by adults who think they are catering for the needs of children. In this case should we not consider them as manifestations of adult rather than child psychology? We read later, "The fairy-tale avoids all thinking which is at all complicated. . . . That is why poetic allusions, metaphors, etc., are completely absent in fairy-tales." It would, perhaps, be well if the author extended his knowledge, and included in his reading the fairy-tales of other races and lands, where he will find quite a different type of imagination and poetic development than in the collection of the Brothers Grimm, which it appears are those referred to in these remarks.

It is for reasons such as these that we feel disappointed in the book. A good summary should be catholic in its representation of schools of thought, and cannot be satisfactory when it excludes a large section of research done upon the subject. In preparing a series of *introductory lectures* for his students, the professor might feel that he was giving them an adequate insight into the subject of the mental development of the child, but readers who want what the sub-title promises—a summary of modern psychological theory—will turn away feeling that another volume is needed, to begin where this leaves off.

MARY CHADWICK.

Infinity and Ego. By I. C. ISBYHAM. London: The C. W. Daniel Company, 1930. Crown 8vo. Pp. 26. Price 1s. net.

The universe is part of my mind ; my mind is part of the universe ; yet the universe is, in either case, the same. Thus all distinction between mind and universe is abolished. The universe or mind cannot be increased or diminished by anything ; and this leads to the conclusion that the ego, as an object in consciousness, is infinity. Time and space are illusions inseparable from consciousness ; but there are egos of a higher order than ours, able to transcend the conditions of time and space imposed upon us.

Put briefly, such is the author's thesis, and he handles it in a stimulating manner ; but the treatment is far too condensed. We feel that we might enjoy a longer voyage with Mr. Isbyham. But this little book is too like a channel crossing ; no sooner have we settled down after the turmoil of the start than we are faced with the custom-house on the other side. M. HAMBLIN SMITH.

Critique of Love. By FRITZ WITTELS. London: George Allen & Unwin, Ltd., 1930. Demy 8vo. Pp. 317. Price 12s. 6d. net.

This book is intended for the general reader, and sets out to prove " that the new truths about our sexual life which Freud has discovered are not so loathsome as many people imagine." After a brief account of the original discoveries of Freud and Breuer, the author indicates the wide scope of the terms " sex " and " love " in psycho-analytic writings. He then discusses certain sex deviations, showing why it is that these are viewed with such great disfavour ; but he also indicates that masked sadism plays no small part in the production of activities of the highest social utility. The universal character of bisexuality is expounded, some results being discussed, and the influence of the equally universal narcissism is considered. A chapter on " Parents and Children " gives an opportunity for a description of the Œdipus complex and the formation of the super-ego. Chapters on " Le Grand Amour " and " Great Haters " are illustrated by instances drawn from history and literature, the Wagnerian examples being of special interest. Under the heading of " Love and Marriage," the author points out how seriously an excessive mother-fixation may interfere with the marital relation. The importance of bisexuality in marriage is considered ; and the book ends with a chapter on the " Child Woman "—the woman who does not want to grow up.

The book is not meant for the scientific reader, who will find therein little that is new. Whether the production of popular expositions of this kind is useful must be a matter of opinion. Such books appear to supply a demand, for their number is legion, especially in America. The general reader who is interested in

psycho-analysis will find no complications in the book, which is written in simple language. It is pointed out that psycho-analysis can be helpful only to those who desire to be helped. This is of practical importance, as the author illustrates by remarks upon kleptomaniacs. Many neurotics do not wish to be free from their neurosis; they may wish to escape from certain inconveniences of their neurosis, but that is quite another matter.

M. HAMBLIN SMITH.

Das Genie-Problem: Eine Einführung. (The Problem of Genius: An Introduction). By W. LANGE-EICHENBAUM. München: Verlag Ernst Reinhardt, 1931. Demy 8vo. Pp. 125. Paper, RM. 2.80; bound, RM. 4.50.

In 1928 Dr. W. Lange published his great work, *Genie, Irrsinn und Ruhm*, which was reviewed in this Journal in the July number of the same year, pp. 522 *et seq.* The great reception of Lange's work was well merited. The present smaller book, at a very moderate price, is intended as an introduction to its larger predecessor, but it also serves as a synopsis of Lange's views and, in parts, as an elaboration.

The problem of genius has for a long time been regarded as almost unsolvable, and Lange contends that it has not been properly put. What really is genius? Are we to regard it as a special form of talent, or is it a biological variety of the genus Man? The question is examined in five chapters under different aspects, namely, (1) Genius and Value, (2) Genius and Fame, (3) Genius and Talent, (4) Genius and Insanity, (5) Genius and Civilization ("Kultur").

It was not until the Italian Renaissance that the creative power of man became personified as "Genio." But "creative" had only reference to the imitation of Nature. The connotation of "creation of something new" dates from Leonardo, Vasari, Telesio about 1550. Only during the baroque period, about 1650, did the term "genius" assume the present meaning of an incomprehensible mystic creative power of a man. The person himself was not designated by that term until 1700. Lange deprecates the use of the term in this sense. There are no geniuses, but only highly-talented persons. Genius from the psychological point of view does not exist at all. Genius means the bringer of value—value understood as gift, as production, as personality-ideal. Genius is a very special effect, value-effect, on a large community. It is a relation to the community. Fame is a prerequisite to genius. This is discussed in the second chapter, with interesting side references to mass-psychology and suggestion. There is also a diagram giving some "fame-curves" of Goethe, Shakespeare and others.

The third chapter deals with "Genius and Mental Endowment (*Begabung*)." Talent is always something organic, biological,

constitutional, for it is unquestionably hereditary. Talents for form and for expression are distinguished. Creative talent is something composite; talent for form and for expression, general intelligence and much else enter into the combination. In considering ability (*Leistungsfähigkeit*), development and experience have to be taken into account. According to the biological condition of the body certain thought-types are found, either cyclothymic or schizothymic. It would be a naïve and disastrous mistake to see in an occasional predominance of the "unconscious" (by this Lange means inherited tendencies, the "racial memory") the principal sign of genius, and a still graver mistake to assume a "subconscious" as a second ego and creative genius. A condensed but masterly description of the mechanism of problem-solving is given, as well as a discussion on "inspiration" and "intuition."

The fourth chapter, "Genius and Insanity," is most interesting. Lange states that among the population of any country about 2-3 per thousand are confined in institutions as insane; and together with those not so confined there are about 5 per thousand of the population insane. Now compared with this he finds, taking between 3-400 persons reputed as "geniuses," that 12-13% have been psychotic once in their life. Selecting 78 of the "greatest" names, there have been psychotic once 37%, pronounced psychopathic 83%, slightly psychopathic 10% and healthy 6.5%. These percentages mount still higher if 35 of the "very greatest" geniuses are selected, namely, psychotic 40%, psychopathic 90%, healthy 8.5%. The psychopathic is an excellent pace-maker for talent. Genius is not insanity, but insanity becomes more quickly famous and fame leads earlier to genius.

The fifth and last chapter deals with "Genius and Civilization (*Kultur*)." Various genius-groups are examined. There is a tendency to deify genius, to create a "substance" genius; this is the most grievous mistake possible, and utterly unscientific. The "genius-farming," the philosophy of value of the bio-negative, the healthy talent as genius, and genius and the tragic hero are shortly and effectively discussed.

This closes a small but very interesting and instructive volume. Those who have already read the author's larger work will not miss reading the smaller one, and whoever reads this one will be led to read the larger work.

A. WOHLGEMUTH.

Philosophy Without Metaphysics. By EDMUND HOLMES. London: George Allen & Unwin, Ltd., 1930. Large crown 8vo. Pp. 176. Price 7s. 6d. net.

Mr. Holmes dislikes metaphysics, which has, in his judgment, adversely affected every branch of human knowledge with which it has been connected. Its evil influence is waning, but it still strangles philosophy, even the sceptic and the agnostic being held in its baneful grip.

How, then, are we to deal with the monster? The answer is, by keeping the door of philosophy firmly closed against it, for once it has entered it is most difficult to expel. The essential character of metaphysics is a reliance upon intellect to solve the master problems of philosophy, and a denial of the right of intuition to criticize, and of experience to test its conclusions. Here we are at once confronted with a difficulty, for we must ask to what it is that the dread term "metaphysics" is applied. Mr. Holmes sees this difficulty; and he deals, in turn, with several divisions of the metaphysical army.

Firstly, there is the "logical" metaphysics, which we have inherited from the thought of ancient Greece, and of which Bradley's system is taken as the typical modern example. Bradley would assume that philosophy and metaphysics are interchangeable terms. This assumption Mr. Holmes denies. To him, philosophy is the genus of which metaphysics is a species; and the distinguishing mark of metaphysics is that it is a purely intellectual effort to understand the universe. He agrees with Bradley that metaphysics is a game, the rules of which must be observed by those who would play; but he contends that these rules are arbitrary and possess no universal validity. The so-called "laws of thought" are supposed to govern all intellectual processes, and they centre in what is known as the "law of contradiction." Mr. Holmes contends, and he gives good reasons for so doing, that this law applies only to a static world, a world of being, whereas the world of experience is a world of becoming. The dualism of the phenomenal world and the absolute is, in his view, the most false and futile that the mind of man has ever invented. But Bradley's followers would probably contend that Mr. Holmes has not dealt fairly with their master. For example, in criticizing the perfection of the absolute, Mr. Holmes accuses Bradley of inconsistency, while maintaining elsewhere that inconsistency is inseparable from Bradley's system.

The battle passes into another field, that of "empirical" metaphysics. The new realism is the modern representative of this, and Prof. Alexander's system is taken as the typical example. In this system, the primary qualities, substance, causality, identity and the like are inherent in space-time. They are ideas of the human mind, but the ideas are in the mind because the things for which they stand are outside the mind. The secondary qualities are equally objective, as are also the tertiary qualities (or "values"); but the latter imply the amalgamation of the object with the human appreciation thereof. Mr. Holmes contends that in this last admission Prof. Alexander has undermined the foundations of his system; and the conception of space-time is vigorously criticized.

But there remains a "popular" metaphysics; there is a metaphysics of the people as well as of the schools. The ordinary man makes, and is indeed obliged to make certain assumptions about reality. These are considered under the heads of supernaturalism, materialism and agnosticism. As for the last of these, agnosticism,

strictly so-called, is an abandonment of the whole field of philosophical speculation. The two others, although violently opposed in many ways, have this in common—that they are dualistic. All dualism is anathema to Mr. Holmes, whether it be that of matter and spirit, of nature and the supernatural, or of any other pair of opposites. We agree that popular dualism has been the cause of much practical evil. But here again Mr. Holmes's opponents may say that he has not treated them quite fairly. Theologians, for example, might decline to admit the accuracy of some of his statements on dogma.

Having dealt faithfully with his adversaries, Mr. Holmes gives us his own philosophy, which is idealistic, and which he terms "intuitional." Feeling insists on intermingling itself with thought, and becoming the senior partner in the business of thinking. Our aim is to know reality, but we can do this only by living our way into the heart of reality. The necessary fusion of thought and feeling is what we call intuition, and this is trained in the school of experience. The true philosopher must be both prophet and mystic. Mysticism is by no means incompatible with the ordinary affairs of life; many a great mystic has been famous for his practicality, and Mr. Holmes illustrates this by references to the teaching of Gautama. Finally, he expounds his creed, in the form of five suggestive paradoxes.

The book will provoke controversy. Mr. Holmes is prepared for this: the lions in the path have no terror for him. But whatever may be the verdict on his philosophy, we feel that much of his teaching fits in well with modern psychology. Materialistic science has validity within its sphere, but it has lost its position as autocratic ruler of thought. In the past we laid too much stress upon reason, and too little upon emotion. This reproach is now being taken from us. It has been said, "He is a poor physician who knows all things except the human heart." We believe that Mr. Holmes would accept this saying as a not unfair summary of his views.

M. HAMBLIN SMITH.

The Vedic Gods. By V. G. RELE, L.M.& S., F.C.P.S. Bombay: D. B. Taraporevala Sons & Co., 1931. Pp. xvi + 134. Price Rs. 6.8.

The origin of the Vedas has long been a subject of controversy among scholars. It has been generally supposed that these legends were symbolic representations of the phenomena of the external universe. On account of certain peculiarities in the description of the dawn, and of the sun's diurnal journey, it has been held that ancient Aryan civilization originated in a region of the Arctic zone, an area which was habitable in the inter-glacial epoch.

While he does not desire to controvert this Arctic hypothesis, Dr. Rele takes an entirely novel view of the Vedas. His theory is based

on the ancient philosophical idea that the individual is a miniature copy of the cosmos ; and that by self-identification with the cosmos the individual becomes one with the Absolute. Dr. Rele contends that the Vedas are books on the physiology of the nervous system, written in symbolic language, by authors who were well acquainted with the normal working of that system. For various reasons, anatomical knowledge had to be obtained with great secrecy, and the seers let it be understood that their information was derived through Divine inspiration. Dr. Rele elaborates his theory in detail, identifying the various Vedic gods with different parts of the nervous system.

In the absence of an extensive acquaintance with Vedic literature, any criticism of this book would be impertinent. But no reader can fail to be impressed by the ingenuity with which Dr. Rele has worked out his hypothesis. A perusal of the book gives us some insight into a highly interesting mythology, which is too little known in this country. Those whose recollection of cerebral anatomy is becoming a little hazy will find that Dr. Rele's diagrams recall information laboriously acquired in student days. Much striking symbolism is referred to, which might be elaborated in the light of the psycho-analytic theory. In this connection we would note the legend of Indra, who slew his father, and that of Aditi, the mother of the gods. Students of Swedenborg also will find much that is suggestive in the Vedic philosophy.

M. HAMBLIN SMITH.

Proceedings at the First Latin-American Conference of Neurology, Psychiatry and Forensic Medicine. Buenos Aires: The University Press, 1929. Two volumes. Pp. 708 and 966. Price not stated.

This conference was held at Buenos Aires from November 14 to 17, 1928, under the Presidency of Dr. Arturo Ameghino. The list of delegates shows that there was a good attendance. The social side of such a conference was not neglected, for a banquet and excursions are mentioned. But the scientific proceedings fill two mighty volumes, although the size is increased by the fact that a number of the contributions are reproduced both in Spanish and Portuguese. Considerably more than a hundred papers were presented ; the majority of these deal with topics connected with clinical psychiatry, although neurology is a good second. We are pleased to see several contributions relating to the connection between psychiatry and criminology. The papers vary in length, from elaborate monographs to the briefest of communications. The discussions which took place are reported. A large number of illustrations are reproduced, some of the micro-photographs being most beautiful.

It is impossible to give any detailed criticism of so vast a mass of work. As might be expected, the papers vary widely in their

importance. We hope to epitomize some of them. We heartily congratulate our South American colleagues upon their industry and energy. We gather that the conference will be held periodically, and trust that a British delegate will be present when it is next convened.

M. HAMBLIN SMITH.

Children at the Cross-roads. By AGNES E. BENEDICT. New York : The Commonwealth Fund Division of Publication, 1930. Demy 8vo. Pp. 238. Illustr. 7. Price \$1.50 post-paid.

This work consists of the life-histories of nine children with school or home difficulties, followed by illuminating comments on possible ætiological factors. The work is based on a study of the carefully kept records of visiting teachers in the rural communities of Monmouth county, New Jersey, Huron county, Ohio, and Boone county, Missouri, these being three out of thirty communities selected by the National Committee on Visiting Teachers, sponsored by the Commonwealth Fund, for a three-year demonstration of visiting teacher work.

It presents a point of view and an interpretation of method that should be particularly useful at the present time to all interested in children and their problems, having regard to the efforts now being made to educate the nation on a subject of the greatest importance not only to the individual child but to the adult community of the future.

J. R. LORD.

Report from the Select Committee on Capital Punishment. H.M. Stationery Office, 1930. Pp. 98. Price 1s. 6d. net.

In the autumn of 1929 the House of Commons appointed a Select Committee to examine the question of capital punishment and the possible substitutes for that penalty. The reference was confined to capital punishment in cases tried by civil courts in time of peace. For practical purposes, the Committee had to consider the advantages and disadvantages of the capital penalty for the crime of wilful murder.

The Committee held thirty-one meetings, and examined a large number of witnesses, who may be roughly divided into three classes : (1) Officials from the Home Office, from other public departments, and from the prisons. With a few exceptions these were in favour of retention of the capital penalty, although some suggested certain modifications in practice. (2) Some well-known advocates of the abolition of capital punishment. (3) Witnesses who gave evidence as to the experience of foreign countries, particularly those which have abolished, or suspended, the infliction of capital punishment.

We are informed that the complete evidence will shortly be published. Meanwhile, a report has been presented which, however, does not emanate from the Committee as a whole. This consisted of fifteen members, representing diverse views

on the subject with which they had to deal and, no doubt, selected for that reason. But six members, who would appear to have been opposed to abolition, found themselves quite unable to agree with the conclusions of their colleagues, and withdrew from the proceedings prior to the presentation of the report. They have given no official expression of their views, and we are unaware whether the procedure of a Parliamentary Committee would have allowed them to do so. But the omission is unfortunate, as we do not know what were the special reasons which weighed with the dissentient members.

The report begins with a short survey of the history of capital punishment in this country, tracing it from the period when executions were very common, and followed upon what are now regarded as minor offences, and describing the various attempts which have been made to alter the present practice.

The various arguments for and against the capital penalty are then taken up, and this involved some consideration of the theories of punishment. From the point of view of "natural justice" and that of appropriate retribution it is urged that murder deserves the punishment of death, that it is an offence which stands in a class by itself, and so merits a special form of penalty. On the other side, it is maintained that the inviolability of human life is as binding upon the State as upon the individual; that while murder may be the worst crime from the individual point of view, there are other crimes which have more anti-social results; and that there are grave objections to legal retribution taking a form which is strongly disapproved of by a large section of the community.

The main issue, however, is the efficacy of capital punishment as deterring from murder. It is advanced, on the one side, that the fear of death is the greatest of all deterrents; and that, although the threat of capital punishment is not a universal preventative of murder, it is, at least, effective in many cases. The other side holds that the deterrent effect of capital punishment has been greatly exaggerated; that many murders are committed under the influence of sudden passion, where the deterrent effect of prospective punishment does not operate; that it is the certainty rather than the severity of punishment which deters, and that many of those who commit deliberate murder probably think that their crime will escape detection; and that the abolition of capital punishment for minor offences did not result in any increase of such offences, although the most gloomy prognostications were made at the time of that alteration in the law.

It is clear that the deterrent effect of any penalty for any crime is a matter upon which we can never have definite proof; it remains, in the words of the Report, a question of "psychological conjecture." All that can be done is to consider the experience of other countries. The Report admits that deduction from the statistics of other nations is a matter of great difficulty, since the crime rate in any country depends upon a number of complex considerations. Very interesting information has, however,

been collected from various parts of the world. Holland abolished capital punishment in 1870; Belgium still retains the capital penalty on its statute-book, but there has been, in peace-time, no execution since 1863: all capital sentences are automatically reprieved. The report considers that in neither country has any evil effect been produced by the absence of the capital penalty. On the other hand, nine States of the American Union have re-introduced capital punishment after it had been abrogated. There is a considerable degree of controversy as to the correct interpretation of the facts; the arguments on either side must be duly weighed.

Some point is made of the obvious irreparability of the death penalty when a miscarriage of justice is discovered, and of the possible reluctance of a jury to convict in a case in which the death sentence must follow. On the other side of the controversy, it is urged that abolition of the death penalty might lead to the adoption of "lynch law."

Some have suggested that murders should be "graded," *i.e.*, that there should be defined "degrees" of murder, only the highest of these carrying the death penalty. This is the law in some of the American States, and it was recommended for adoption in this country as long ago as 1866, by a Royal Commission. There are serious difficulties in this practice. The Committee does not think that these difficulties are insuperable, but considers them to be of sufficient moment to render any present attempt at "grading" inadvisable.

Finally, the Committee makes certain recommendations: (1) That the death penalty should be abolished for an experimental period of five years. (2) That meantime a resolution should be passed by the House of Commons declaring that the Secretary of State should recommend the commutation of the death sentence in every case. (3) That the penalty attached to reprieved murderers should be interpreted and administered as at present. (The death sentence is commuted to one of penal servitude for life. This sentence is reviewed after a period which, the Report informs us, is usually about fifteen years.)

The Committee recognizes that Parliament may decide to retain the death penalty, and it, therefore, makes certain other recommendations. (1) That the "McNaughten rules" should be revised, "so as to give fuller scope to general medical considerations, and to extend the area of criminal irresponsibility." It is recognized that the great majority of disputes as regards "irresponsibility" occur in capital cases. (2) That the death penalty should still, in law, apply to women on the same terms on which it applies to men. (3) That, as 21 is the age when full civil responsibility is assumed, it should also be the age below which no one should be sentenced to death. (The present minimum age for this purpose is 16 years; but during the last forty years no one has been executed under the age of 18 years.) (4) That there might be a still larger exercise of the Royal prerogative.

The whole subject is extremely controversial, for it is conducted, however much we may rationalize, on the emotional plane. It is probable that there is as acute a difference of opinion among our readers as among the members of the Committee, or among the general public. All, however, should study this report, even if it is regarded as no more than an exposition (albeit a very able exposition) of the case for the abolition of capital punishment.

Western Australia ; State Psychological Clinic : Annual Report to June 30, 1930. Perth.

The Report reaches us this year in type-script, Australian finances not warranting the expense of printing. We learn, with great regret, that this shortness of money will necessitate the closing of the Clinic.

The excellent work upon which we have commented in previous years has been continued. The number of private cases (not referred by a school or court) shows a large increase. A start has been made in the examination of prospective apprentices for various trades, and some interesting differences are shown in the results obtained by psychological tests. It is pointed out that it is highly desirable for a psychologist to deal with a fair number of "normal" individuals; if none but "problem" cases are seen, there is no proper standard of comparison. A useful warning is given against the use of "intelligence tests" by untrained workers; the dangers of this practice are often overlooked. The percentage of mental defectives is much higher in rural than in urban schools, which agrees with the findings in this country.

Group tests of intelligence were applied to 205 delinquents in the prison. The results are tabulated, and are of considerable interest; but it must be remembered that the number of cases dealt with is far too small to warrant any deductions as to the incidence of mental abnormality in delinquents. The Report, indeed, insists that mental defect, where it exists, is only one contributing factor in the production of delinquency. The Pressey "X-O" tests were also applied to the delinquents. More might be done in this country with these tests, suitably modified to suit British conditions.

There are some useful notes on the re-education of neurotic patients, Janet's view being adopted. In the case of a child patient the re-education of the parent is a necessary preliminary step.

A Mental Deficiency Bill was introduced into the Legislature but was dropped. The objections appear to have been the possible cost to the State, and the inclusion of a clause authorizing sterilization.

We congratulate Miss Ethel T. Stoneman upon a most interesting report; we sympathize with the disappointment which she must feel at the unfortunate suspension of her labours; and we trust that improved economic conditions will soon allow a resumption of her excellent work.

M. HAMBLIN SMITH.

The Medical Museum, Based on a New System of Visual Teaching.
By S. H. DAUKES, Director, The Wellcome Museum of Medical
Science. The Wellcome Foundation, Ltd., 1930. Size, 10 in.
by 7 in. Pp. 172.

This book is a practical contribution to the improvement of
medical museums.

The author has devoted much time to the subject, on which he
is obviously an expert. Dr. Daukes discusses the functions of a
medical museum. In his opinion the methods of visual teaching
call for reform and a wider outlook, and in subsequent chapters he
describes in detail a new system which supplies these needs.

Appendices deal with the application of the system in regard to
types of buildings, walls, screens, cases, labels, illustrations and
technical details of preserving and mounting specimens. In con-
clusion there is a complete bibliography of technical museum publi-
cations and 45 whole-page illustrations of screens, sections and
specimens, which provide practical evidence of the soundness and
practicability of the author's contentions.

All interested in museums are invited to visit The Wellcome
Museum of Medical Science, 33, Gordon Street, London, of which
Dr. Daukes is Director, to see the new system in practice.

J. R. LORD.

Some New Editions.

*Diseases of the Nervous System: A Text-book of Neurology and
Psychiatry.* By SMITH ELY JELLIFFE, M.D., Ph.D., and
WILLIAM A. WHITE, M.D. Fifth Edition. London: H. K.
Lewis & Co., Ltd., 1929. Royal 8vo. Pp. xx + 1174.
Engravings 476. Plates 13. 42s. net.

Mental Deficiency (Amentia). By A. F. TREDGOLD, M.D. Durh.,
F.R.C.P. Lond., F.R.S. Edin. Fifth Edition. London: Baillière,
Tindall & Cox, 1929. Demy 8vo. Pp. xvi + 555. Illustr. 35.
25s. net.

Psychopathology: Its Development and its Place in Medicine. By
BERNARD HART, M.D. Lond., F.R.C.P. Lond. Cambridge:
University Press, 1929. Demy 8vo. Pp. 178. Price 8s. 6d. net.

The Psychology of Insanity. By the same Author. 4th Edition.
Published as above, 1930. Foolscap 8vo. Pp. xxxiv + 176.
Price 3s. net.

A Text-book of Psychiatry. By D. K. HENDERSON, M.D. Edin.,
F.R.C.P.S. Glasg., and R. D. GILLESPIE, M.D., M.R.C.P.,
D.P.M. Lond. Second Edition. London: Humphrey Milford,
Oxford University Press, 1930. Demy 8vo. Pp. x + 526.
Price 18s. net.

In a review of an earlier edition of Jelliffe and White's famous American *Text-book of Disorders of the Nervous System*, we expressed in generous terms our approval of the aim and object of the authors to present in one work the evolutionary concept of the individual reacting as a biological unit to environment. It was a great ideal, uniting the view-points of bio-chemist, neurologist, psychologist and sociologist in the study of abnormal conduct and its treatment—in other words, a sound basis upon which to build that dynamic science we know as psychiatry, and keeping it within the stream of general medicine.

The *a priori* objection to a text-book planned on these lines is of course its cumbersome size if the various view-points are to be adequately expressed, and the limit in this respect has been reached in this edition. Originally there were two separate volumes, but in 1915 the contents of these were rearranged and supplemented and appeared as one volume of not unreasonable size. This has now for the fifth time been revised and in parts re-written and enlarged; should this continue a return to two volumes seems inevitable—a retrograde step which would be regrettable. As it is, the book has come to be used in this country as a standard work of reference. Its intrinsic value has increased with every edition, and undoubtedly it would be in the possession of every psychiatrist did the price, 42s. net, permit of it; though it must be remembered that the ground covered is at least that of two ordinary works, *viz.*, a text-book on neurology and one on psychiatry.

The revision undertaken chiefly relates to the bringing up to date of the sections on the vegetative nervous system and endocrines and the addition of the newer researches in both neurological and psychiatric fields. It is undoubtedly the best illustrated text-book on the subjects of which it treats to be found in the English language.

The history of the modern medico-psychological science of *Mental Deficiency* has been written in the successive editions of Tredgold's standard text-book on the subject.

Mental deficiency has perhaps a more important bearing than acquired mental disorder on eugenics, criminology, alcoholism, prostitution, vagrancy and other pressing social problems. This is the reason why it has developed a literature and a position of its own. It is still, however, still within the sphere of psychiatry, and the researches of Tredgold and Shaw Bolton have forged an indissoluble morphological link between mental deficiency and mental disorders, though as regards administration and treatment they have largely to be dealt with as separate subjects. Again, Tredgold's sociological outlook on his subject has been the principal means by which mental deficiency has obtained the important position it now occupies in all sociological problems, and this is still further emphasized in the fifth edition of his work. He strongly advocates the intensive investigation of the differential causes of primary and secondary

amentia, which will also illuminate the causation of the so-called acquired mental disorders, for according to his teaching the same basic conditions lie at the roots, in varying intensity, of a graded scale of mental inefficiency, from idiocy to paranoia and, maybe, senile decay. Thus no book on mental deficiency stands in the same relationship to those devoted to mental disorders as does this work of Tredgold's, and no psychiatrist can afford not to be well acquainted with its contents.

The first edition was published in September, 1908, and was reviewed in this Journal in July, 1909. The Reports of the Royal Commission on the Care and Control of the Feeble-minded were then being discussed. A great feature of the first edition was its drawings, photographs and charts, and included in it were the author's fundamental researches. It impressed us most favourably, and we said so.

The second edition appeared in January, 1914, and the reason for our failure to review it seems obvious from the date.

The third edition (January, 1920), however, was the subject of a four-and-a-half page review, in which it was characterized as a well-known and standard work which had received the seal of universal approval. It had, in fact, been reprinted in October, 1915, and September, 1916.

The fourth edition (August, 1922) exemplified the growth of the subject and of the recognition of its sociological importance. The literature had become extensive, and it was becoming difficult to keep up with it. It had been necessary to rewrite the chapters dealing with moral deficiency, criminal assaults, clinical examination, mental tests and diagnosis.

The fifth edition, which we now have before us, has been largely rewritten, though the general plan of the work remains the same. The revision became necessary in order to present to the reader the most recent advances on the subject, as much has happened since the last edition, including important variations in legal definitions, the result of the Act of 1927, and the publication of the report of Dr. E. O. Lewis on the number and condition of defectives in this country. These are all assimilated in this new edition, together with other new matter.

All readers of Tredgold are advised to replace any previous edition by this modern and practically new work.

Bernard Hart has for long now had an assured place in the history of psychopathology, and it is a matter of no surprise that there has been a call for a second edition of his *Psychopathology: Its Development and its Place in Medicine*. His erudite criticism of the teachings of the various schools of modern psychopathology conveyed in the Goulstonian Lectures for 1926 did more to steady British psychiatry in regard to this subject than any utterance either before or since, and we hold strongly that the study of these lectures, which occupy just over the first half of this book, and of the

author's great classic, *The Psychology of Insanity*, should be enjoined on all psychiatric students ambitious of obtaining a diploma in psychological medicine. Nor should the ancillary papers on "The Psychology of Rumour," and "The Methods of Psychotherapy," which are also to be found in the former work, be omitted from this category. Perhaps even of more importance in this relation is the author's paper on "The Conception of Dissociation," the addition of which to this edition greatly enhances its value in that it provides the student with a really useful hypothesis on the basic machinery of recollecting and thinking. Sir John Macpherson in his Ninth Maudsley Lecture comments on its helpfulness in no uncertain terms (*vide Journ. Ment. Sci.*, July, 1928). We also commend the study of "The Psychology of Rumour" to all those interested in the cause of International Peace.

The Psychology of Insanity, by Bernard Hart, which we have just mentioned, first appeared in 1912. A second edition appeared in 1914 and a third in 1916. It has been reprinted every year since that date with the exception of the years 1917, 1924, 1926 and 1927—a testimony to the permanency of its position in psychiatric literature. It is also to its credit as a fundamental work that from its first appearance it has not needed any material alteration. The same applies to the new edition (the fourth), excepting that the author has added an introduction giving a summary of the history and present position of psychopathology and the developments since the book was first written in 1912, and in the text of the book more footnotes are added illuminating *pari passu* the progress made during that time.

The new edition of Henderson and Gillespie's popular text-book will be reviewed in our next number.

J. R. LORD.

Part III.—Epitome of Current Literature.

I. Neurology.

The Influence of Efferent Cerebral Pathways upon the Sympathetic Nervous System. (Brain, July, 1930.) Langworthy, O. R., and Richter, C. P.

Using the galvanic skin response as a measure of sweat-gland activity, the controlling influences from the cortex, brain-stem and spinal cord have been investigated by the authors. Definite galvanic skin responses were obtained by faradic stimulation of two areas adjacent to the motor cortex, of the floor of the third ventricle, the cortico-spinal and rubro-spinal tracts, the vestibular nuclei, the posterior column nuclei and the posterior columns of the cervical cord.

They conclude that the same cerebro-efferent pathways which influence somatic motor cells also control preganglionic sympathetic cells, and that this cerebral control is predominantly an inhibitory one. In general, cerebral centres seem to exert final control upon lower centres through well-known cerebro-efferent pathways.

WM. McWILLIAM.

Experimental Lesions in the Tuber Cinereum of the Dog followed by Epileptiform Convulsions and Changes in Blood Chemistry. (Arch. of Neur. and Psychiat., October, 1930.) Morgan, L. O., and Johnson, C. A.

The authors operated on 16 dogs, and produced lesions in the tuber cinereum by injecting .1 c.c. of a weak solution of mercuric chloride. The animals, who remained otherwise normal in appearance, developed periodic convulsions. The first convulsion began from 2 to 6 hours after the operation, was usually mild, and was accompanied by various symptoms of vasomotor and sympathetic upset. The convulsions gradually become more frequent and more severe. After the convulsion the dogs remained unconscious for several minutes, following which they were confused and disoriented. The convulsions lasted from 1.5 to 3 minutes. The constant phenomena were clonic and tonic spasms, dilatation of the pupils, salivation, marked increase in the rate of the heart-beat, a rise of 1° F. or more in body temperature, unconsciousness, frequent urination and occasional defæcation. Finally the animal passed into status, which lasted for two hours or more and ended in death. There was a continuous state of coma, greatly increased rate of heart-beat, dilatation of the pupils, salivation, an inactive state of the

stomach and intestines, and a temperature of 108°-111° F. A few dogs had periodic convulsions over a period of two or three days and made a complete recovery.

The blood chemistry showed no appreciable alteration in the calcium or potassium contents of the serum, or in the K : Ca ratio. Non-protein nitrogen appeared to increase with the increase in frequency and severity of the convulsions. Urea nitrogen followed the trend of the non-protein nitrogen. CO₂-combining power of the plasma decreased as the frequency and severity of the spasms increased; the blood-sugar decreased until the animal died. Examination of the liver in three cases showed a total absence of glycogen. The authors consider that the lesion produced in the tuber is irritative, and causes a discharge of impulses from the nuclei in this region.

G. W. T. H. FLEMING.

Influence of Intercurrent Febrile Disorders on Pre-existing Epilepsy. (Arch. of Neur. and Psychiat., October, 1930.) Guthrie, R. H.

The author reviewed 200 cases of epilepsy afflicted with febrile disorders. In the group with non-respiratory disease there was a decrease during the month of illness of 33.3% in the number of seizures. In those with respiratory disease there was no change.

G. W. T. H. FLEMING.

Lesions of the Frontal Lobe. (Arch. of Neur. and Psychiat., October, 1930.) Sachs, E.

The author, from a study of his series of 45 cases with lesions of the frontal lobe, concludes that the most dependable signs are :

1. The mental change, which is characterized by a loss of memory for recent events and indifference to the illness and the surroundings. At times there is a euphoric state, at other times there may be marked depression.

2. A facial weakness on the side opposite the lesion, sometimes associated with involvement of the pyramidal tract of the opposite side.

In addition there may be disturbances of speech, and occasional defects in the visual field when the temporal lobe has been encroached on.

G. W. T. H. FLEMING.

A Post-Encephalitic Syndrome—Torsion Spasm of the Foot. (Rivista di Neurologia, February, 1930.) Vercelli, G.

The author describes a post-encephalitic syndrome in which there is a torsion spasm of the foot and lower leg when the patient walks. In the dorsal decubitus the spasm vanishes and all voluntary movements of the affected limb are possible. When the limb is put into the vertical position, however, the maintenance of equilibrium provokes a hypertonic spasm of the muscles, with contraction of the flexors and adductors on walking. The condition might be described as a " *pied de charleston*."

J. R. BEITH ROBB.

A Case of Arterio-venous Aneurysm within the Brain. (Brain, April, 1930.) *Yates, A. G., and Paine, C. G.*

This case, which falls within a group of intracranial vascular abnormalities to which Dandy has called attention recently, is fully reported by the authors, and is discussed with particular reference to the embryological considerations involved.

WM. McWILLIAM.

2. Psychology and Psycho-Pathology.

Arbeiten aus der Deutschen Forschungsanstalt für Psychiatrie in München, vol. xv, November, 1928.

This number contains the following articles:

On the Effect of Several Pauses on Mental Work [Ueber die Wirkung mehrfacher Arbeitspausen bei geistiger Arbeit]. *Graf, Otto.*

Two pauses are allowed in two-hour periods of mental work (additions). The author finds the maximum efficiency when the first pause occurs after 40 minutes and lasts 2 minutes, the second after 80 minutes, lasting 4 minutes. The length of the optimum pauses are directly proportional to the duration of the preceding period of work.

Investigations into the Learning of Typewriting under Normal and Pathological Conditions [Untersuchungen über die Vorgänge beim Erlernen des Maschinenschreibens unter normalen und krankhaften Bedingungen]. *Langelüddeke, Albrecht.*

An investigation into the psychic processes associated with the learning of typewriting, the work curves obtained, effect of practice and sources of error, under normal conditions and in psychoses (manic-depressive insanity, schizophrenia and general paralysis) and alcoholic intoxication.

On Readiness for Work [Ueber Arbeitsbereitschaft]. *Zimmermann, W.*

An interruption of unknown duration (within limits of 10 minutes) in a given period of work causes a marked diminution in readiness as compared with that occurring after intervals of known duration. The influence of practice is increased after pauses of known duration, but lessened when the latter is unknown to the subject.

On Handwriting in Manic-Depressive Insanity [Ueber das Schreiben manisch depressiver Kranker]. *Hirt, E.*

An exhaustive treatise, covering some 110 pages, on the peculiarities of handwriting in manic-depressive insanity. The pressure curves are, on the whole, rigid and inflexible. Volitional tension varies more often and to a greater degree than in the normal.

Psychomotor excitement has a marked effect, whilst the influence of inhibition is more rarely noticeable. Often peculiarities which usually signify a manic condition occur in depressed patients and, conversely, in manic patients features are frequently detected which one would rather expect in inhibition states.

Psychological Investigations in Post-encephalitic Parkinsonianism
[*Psychologische Untersuchungen an Kranken mit Parkinsonismus nach Encephalitis epidemica*]. Schaltenbrand, G.

The author finds a noticeable lack of susceptibility to the influence of practice and increased fatiguability during 10-minute periods of mental work (additions). The output of work was greatest in the first minute. Reaction times were prolonged and showed increased dependence on rhythm. After administration of hyoscine the results approximated to the average for normal persons.

Investigations on the Psychology of Work [*Arbeitspsychologische Untersuchungen*]. Graf, Otto.

An inquiry into the relationship between fatigue, pauses, incitement and interest in the production of an ideal work-curve capable of practical application in manual work.

On Time Estimations [*Ueber fortlaufende Zeitschätzungen*]. Schulz, B.

An investigation of the faculty of time estimation with a view to elucidating variations in conation and incitement occurring in the work-curve.

The Influence of Different Concentrations of Alcohol in Mental Work [*Die Beeinflussung der geistigen Arbeit durch verschiedene Konzentrationen von Alkohol*]. Gylys, A.

The author concludes that the intellectual faculties (e.g., arithmetical additions, comprehension, learning and quality of associations) suffer more after administration of strong solutions, while the more markedly motor phenomena (reaction times, association times, etc.) are especially affected after weak solutions. The reason is to be sought in the pronounced motor excitement caused by strong solutions, which to some extent compensates for the intellectual defect.

On the Influence of Small Quantities of Food on Intellectual Efficiency [*Ueber den Einfluss kleiner Nahrungsmengen auf die geistige Leistungsfähigkeit*]. Zech, J.

The effect on the output of work of small amounts of carbohydrates and proteins taken during a pause in a work period was studied. The author found protein to have a very favourable influence which became noticeable twenty minutes after ingestion. Carbohydrate (sugar) had only a slight effect and took longer to act.

On Incitement during Mental Work [Ueber Willensantriebe bei geistiger Arbeit]. Aurin, H.

An investigation into the factors which determine the variations in incitement during mental work.

On the Influence of Pauses in Work under Varying Degrees of Volitional Strain [Ueber Pausenwirkung bei Arbeit mit verschiedener Willensspannung]. Graf, Otto.

A study of the effect on efficiency of pauses during periods of mental work under high, medium and low degrees of volitional tension.

The Effect of Cocaine and Psicaine on Elementary Psychic Processes [Ueber die Beeinflussung einfacher psychischer Vorgänge durch Cocain und Psicain]. Graf, O.

The author studied the effect of these two drugs on mental work (arithmetical additions), type-writing, judgment and reaction time. In general the results showed decreased efficiency and prolonged reaction times, as compared with the normal average. No essential difference existed between the action of the two drugs.

On the Effects of a Single and of Divided Doses of Alcohol on Elementary Psychic Processes [Ueber die Wirkungen einmaliger und geteilter Alkoholgaben auf einfache psychische Leistungen]. Enkling, J.

On the Action of Alcohol in School-Children [Ueber Alkoholwirkung bei Schulkindern]. Erlacher, K.

Even very small amounts (10 grm.) have a conspicuous effect on the general behaviour and reduce efficiency of work about 30%. The effect is more pronounced in the younger children.

On Impressionability and Alcohol [Ueber Merkfähigkeit und Alkohol]. Hahn, G.

An inquiry into the effect of alcohol on impressionability in memory experiments.

Kraepelin as Psychological Research Worker [Kraepelins psychologische Forschertätigkeit]. Weygandt, Prof. W.

Prof. Weygandt here gives an admirable survey and appreciation of Kraepelin's research activities in the field of experimental psychology. During thirty-three years Kraepelin published over one hundred scientific papers, almost exclusively of an experimental nature.

Recent Experiments on the Comparative Measurement of the Action of Alcohol [Neue Versuche zur vergleichenden Messung der Alkoholwirkung]. Haas, J., and Lange, J.

This paper deals with the medico-legal aspects of alcohol. The author carried out investigations in chronic alcoholism, cerebral

trauma, psychopathic types and experimental intoxication. The method of Göring was adopted. Pending further investigations no conclusions could be reached.

The Alteration in Action of Alcohol during Simultaneous Ingestion of Fats or Proteins [Die Veränderung der Alkoholwirkung bei gleichzeitiger Aufnahme von Fett- oder Eiweissnahrung]. Schottky, F.

The administration of food lessens the action of alcohol. Proteins have a more pronounced effect than fats.

On the Effect on the Mind of Dicodid and Dilaudid [Ueber die Beeinflussung des Seelenlebens durch Dicodid und Dilaudid]. Römmelt, W.

These drugs are derivatives of codeine and morphine respectively. Under their influence, the power of imagination is heightened, but the intellectual faculties suffer thereby. Self-control is diminished and the lower motor centres are rendered more excitable. The tendency to habit-formation is slight.

Psychological Experiments on 20-year-old Subjects [Psychologische Untersuchungen an Zwanzigjährigen]. Graf, O.

An exhaustive inquiry into the practical value of experimental methods in determining the general intelligence of young persons.

The Rest Pause in Theory and Practice [Die Arbeitspause in Theorie und Praxis]. Graf, O.

A detailed consideration of the theory of the rest pause, its psychological significance and applicability to practical life. A lengthy review on the literature of the subject is appended.

R. STRÖM-OLSEN.

The Principal Sinistral Types. (Arch. of Neur. and Psychiat., July, 1930.) Quinan, C.

The author in the first instance studied 1,000 university students and found 26% to be sinistrals, *i.e.*, individuals using either the left hand or the left eye, or both. In a group of 315 Chinese school-children the author found approximately the same percentage. There appeared to be a marked tendency for sinistrals to concentrate on certain of the æsthetic vocations. From the examination of 815 students it was found that sinistrals are definitely more musical than dextrals. 693 patients with nervous and mental disorders were examined, and it was found that in dementia præcox and most other forms of mental disorder the percentage of sinistrals was 30. In a mixed group with constitutional psychopathic states the average percentage was 54. The author thinks that sinistrals, especially those who are left-eyed, tend to show signs of constitutional instability.

G. W. T. H. FLEMING.

The Application of the Pressey X-O Tests to Delinquents. (*Med.-Legal Journ.*, May-August, 1930.) Erickson, M. H., and Pescor, M. J.

The B form of these tests was given to male and female groups, normal and delinquent. The crossed-out words were analysed by determining total affectivity scores. The circled words were studied by determining total idiosyncrasy scores, and establishing key-words bringing out specific complexes and worries. Delinquents tend to have a higher total affectivity score than normals. There is little difference in respect to total idiosyncrasy scores, and the median scores for specific complexes and worries are almost identical. It is best, in practice, to score the total affectivity first; if abnormal tendencies are shown, the key-words should be used.

M. HAMBLIN SMITH.

Variability of Mental Ratings in Re-tests of Neuro-psychiatric Cases. (*Amer. Journ. Psychiat.*, September, 1930.) Schott, E. L.

The variability of mental ratings in adult neuro-psychiatric cases is much greater than that found in normal school-children. This was most marked in subjects with mental disturbance of psychotic degree. Age and level of I.Q. were not found to be important factors. Among the adult cases the women varied more than did the men; this observation was reversed for the children tested. The extent of variability is of value in determining the progress toward normality or increasing abnormality, and indicates the upward or downward trend of mental functioning.

M. HAMBLIN SMITH.

The Metabolic Rate in Emotional Moods Induced by Suggestion in Hypnosis. (*Amer. Journ. Psychiat.*, January, 1930.) Whitehorn, J. C., Lundholm, H., and Gardner, G. E.

The authors' report some observations concerning the relation between emotion and metabolism. They have made records of the metabolic rate, pulse-rate, and respiration-rate in the post-hypnotic state in various subjects, tabulating their results.

They conclude that the mood of anxiety or apprehension hypnotically produced, can increase the metabolic rate, and that moods of depression, elation and irritability do not produce any certain increase.

WM. MCWILLIAM.

Psychology and Hysteria. (*Arch. of Neur. and Psychiat.*, August, 1930.) Van der Hoop, J. H.

The author endeavours to divide hysterical conditions into groups, depending on the reaction between the psychism and the character type. He distinguishes five groups: (1) Those cases in which the psychism is of chief importance; (2) those in which hysterical reactions spring from a primitive form of mind; (3) those in which there is an interaction between psychism and extrovert adaptation; (4) those in which there is an interaction

between psychism and introverted feeling; and (5) those in which there is an expansion of the hysterical psychism by the influence of extroverted feeling. The author points out the importance of these aspects to the psycho-therapeutic approach.

G. W. T. H. FLEMING.

Progress in Psychiatry. V: Eidetic Phenomena and Psycho-pathology.
(*Arch. of Neur. and Psychiat.*, October, 1930.) Wertham, F.

An eidetic image is midway between an after-image and a representation image. It was formerly believed that eidetic images only occurred in exceptional and distinctly pathological persons. The Jaensch school have shown that they are much more common. Kroh has shown that eidetic images occur more frequently in children than in adults. The eidetic disposition or the faculty of experiencing eidetic images may exist in childhood and disappear later, or may persist throughout life. In an eidetic person the after-images (1) last longer, (2) tend to be continuous and not fluctuating, (3) may have the original colour, and (4) may show variations in size. Two types of eidetic disposition are recognized. In the first type the images appear soon after fixation, tend to be rigid, and have the complementary colour, *i.e.*, they are nearer the form of an after-image. This is the T-type of Jaensch. In the second, or B-type, the images fluctuate, are easily influenced by associations, and are in the original colour, *i.e.*, they more nearly approach a representation image. Phenomena similar to eidetic images can occur during fatigue, fasting, emotional states, religious ecstasies and pregnancy. A latent eidetic disposition is also assumed when there are any deviations from the so-called Emmert's Law, according to which the size of the after-image grows proportionately to the distance of the eye of the observer from the projection screen. Several observers have found the greatest incidence of the eidetic disposition to be at the age of six, and more so in girls than in boys. W. Jaensch, brother of E. R. Jaensch, has developed a theory of the two types of eidetic imagery. The T-type he assumes is related to tetany. The individual with the T-type is over-excitabile to mechanical and galvanic stimuli; he is vagotonic, and his eidetic images can be made to disappear by giving him calcium, which has no influence in the B-type. His vegetative nervous system is more sensitive to somatic stimuli. Subjects with the B-type, or Basedow type, show mild hyperthyroid symptoms. The whole vegetative system is more susceptible to psychic stimulation. Eidetic phenomena occur in all the special senses, not only vision. Quercy thinks that hallucinations may originate from preoccupation with after-images. Jarkowska thinks that there is an inner relationship between thought-echo and eidetic images. The thought-echo is a phenomenon in which there is no clear distinction between a representation and a perception. In a study of 50 schizophrenic patients, Miskolczy and Schultz found the eidetic disposition more frequently among those who were hallucinated. The eidetic disposition

occasionally gives rise to extraordinary feats of memory. There is said to be a strong correlation between the eidetic B-type disposition and susceptibility to suggestion. Jaensch points out that primitive races tend more towards eidetic experiences, and Storch has pointed out the significance of eidetic phenomena for the understanding of schizophrenic thinking. Schilder considers that what Jaensch calls the kalotropic tendency—that is, the tendency to visualize pleasant objects more clearly and completely, while unpleasant ones are modified or do not appear at all—is the same as Freud's repression of disagreeable contents. The B-type furnishes the soil for dream-like delirious states, the T-type for stuporose states and emotional outbursts.

G. W. T. H. FLEMING.

3. Psychiatry.

Sidelights. (*Caled. Med. Journ.*, July, 1930.) Mackenzie, T. C.

Dr. Mackenzie has given in this paper, the Presidential Address to the Caledonian Medical Society for the year 1930, an interesting account of life and work in one of the most northern of Scottish mental hospitals. The history of the hospital is given at some length, the difficulties met with and overcome by the various administrators are indicated, and many happy stories are told illustrative of the mentality of the folk of *Tir nan Og*.

WM. MCWILLIAM.

Hallucinations: Their Nature and Significance. (*Amer. Journ. Psychiat.*, January, 1930.) Campbell, C. Macfie.

In clinical psychiatry the term "hallucination" is used to cover a great variety of experiences, and in this review Dr. Macfie Campbell describes the simple and impersonal hallucinations associated with a variety of toxic and organic conditions, and the more complex and personal ones related to important preoccupations, which are not infrequently dissociated from the rest of the personality. Case-histories are freely used to illustrate points raised.

WM. MCWILLIAM.

Incidence of Syphilis in Insanity. (*Amer. Journ. Psychiat.*, September, 1930.) Proescher, F., and Arkush, A. S.

Apart from paresis and cerebro-spinal syphilis, no direct relation exists between syphilis and insanity. Neither mental strain nor station in life predisposes to paresis. There is no adequate explanation of the relative frequency of paresis in males. The occurrence of some other psychosis appears to inhibit paresis in patients who are infected with the spirochæte. While there is a popular belief that venereal disease is the dominant factor in filling mental hospitals, it is actually responsible for, approximately, only one in six cases.

M. HAMBLIN SMITH.

The Physiogenic and Psychogenic in Schizophrenia. (*Amer. Journ. Psychiat.*, September, 1930.) *Bleuler, E. P.*

Psychic mechanisms do not entirely explain this disease; there must be a certain predisposition of the brain. In schizophrenia we can distinguish primary and secondary signs; most of the symptoms described by Kraepelin belong to the latter category. The main primary signs are disorders in affectivity and in association. We have here a physical disease, with a lingering course, with irregular exacerbations. The manifest disease can become fixed in any phase; and improvement, even as far as recovery, does not negative a diagnosis of schizophrenia. Hitherto we have been unable to influence the physical process; the symptoms are, to some extent, within our reach, but it is essential to select the right moment for our interference. The attitude of the patient towards other members of his family is of much importance when the question of discharge from hospital is considered. M. HAMBLIN SMITH.

Modern Ideas on Hysteria. (*Archivos Brasilenos de Neurologia y Psiquiatria, Ano XI, No. 1.*) *Roxo, Henrique.*

The author reviews the situation with reference to the ætiology of hysteria since Babinski formulated his hypothesis that the condition was due to the effects of suggestion and persuasion.

He draws attention to the view that encephalitis lethargica is a disease capable of producing almost every type of nervous syndrome. In the past many of these cases were diagnosed as hysteria.

He analyses the concepts of Sanli, 1923, Struppell, Emgelen, 1925, Papastratigakis, 1928, Ferreira de Cunha, 1928, and quotes Marinesco, who says, "There is a marked relationship between hysteria, dementia præcox and encephalitis lethargica, and the predisposition to suggestion, a fundamental principle in hysteria, is due to a meiopragia of the strio-thalamic bodies, provoked by a state of degeneration or to a toxic infective process."

The author considers further that the thyroid is the "gland of emotion," and that hyperthyroidism results in an exaggeration of the emotional reactions, while overactivity of the suprarenals or pituitary or ovarian insufficiency leads to excitement.

He believes that hysterical crises should accordingly be classed as a disendocrinia, with an auto-intoxication of the strio-thalamic bodies. He remarks on the disequilibrium of the vago-sympathetic system, which is constant in hysteria.

Roxo strongly counsels that in cases with hysterical symptoms an anatomical basis should be sought as in disease of the strio-thalamic bodies hysterical crises are frequently manifest.

J. R. BEITH ROBB.

Hereditary Factors in Manic-depressive Psychosis: A Comparison of Institutional and Extra-mural Cases. (*Arch. of Neur. and Psychiat.*, October, 1930.) *Paskind, H. A.*

The author investigated 485 cases of extra-mural manic-depressive psychosis and found a hereditary taint in 83%, which corresponds

closely with the figure for institutional cases. In the direct line there was a neuropathic taint in 68%. In the direct line psychoses and nervous disorders were more frequent in extra-mural cases; alcoholism, psychopathic personality and suicide were less frequent. The author considers that the very mild and brief cases of manic-depressive depression, frequently not recognized as such, are in their nature identical with the classic institutional cases.

G. W. T. H. FLEMING.

Mental and Emotional Phenomena of Some Psychoses in their Relation to Blood-pressure; Diagnostic and Prognostic Significance of the Latter. (*Journ. of Nerv. and Ment. Dis.*, October, 1930.) Gordon, A.

The author investigated 37 cases of psychosis. All gave a lowering of blood-pressure half an hour after the injection of 200 grm. of milk. There was no alteration in a control group of 15 normal individuals and 7 obsessional cases. In the manic cases the difference between the terminal ascent and the original blood-pressure was smaller than in the depressives. There appeared to be a relationship between these differences and the duration of each phase of a manic-depressive psychosis; the smaller the difference the longer the manic phase lasted, and the greater the difference the longer the depressive phase lasted. In the confusional cases there was a striking similarity to the depressive phases of the manic-depressive psychosis. In the dementia præcox group, during the gradual descent of blood-pressure there was a considerable abatement in restlessness, especially in the automatic and stereotyped movements. In the cases of anxiety neurosis the lowering of the blood-pressure was accompanied by an amelioration of the main symptoms.

G. W. T. H. FLEMING.

Post-Encephalitic Parkinsonism with Psychosis. (*Journ. of Nerv. and Ment. Dis.*, September, 1930.) Alpers, B. A.

The author thinks that the number of cases of post-encephalitic Parkinsonism which develop a psychosis is small. He describes three cases in his own practice which had similar mental features. All presented hallucinations, chiefly auditory but sometimes visual. There were few other mental disturbances. Hallucinations have not often been reported in the psychosis complicating Parkinsonism.

G. W. T. H. FLEMING.

Personality Factors in Alcoholism. (*Arch. of Neur. and Psychiat.*, July, 1930.) Hart, H. H.

The author examined 30 cases at the Blythwood Sanatorium. Most of the patients were typically American; there were no Jews. In all cases there was present a constitutional instability, with parental discord or alcoholism, and lack of discipline and sensible direction in the environment of childhood. Alcohol provides its own Nemesis. Alcoholism is an emotional and moral problem. The treatment, so far as it is possible, resolves itself into building

up self-respect, organizing good habits and a feeling of adequacy, rendering it not only possible but attractive to attain a level of mature responsibility—truly a stupendous task.

G. W. T. H. FLEMING.

New York Narcotic Drug Survey. (*Med.-Legal Journ.*, March-April, 1930.) Herzog, A. W.

The case-histories of 433 men and 117 women are analysed. Physical pain and mental stress were the primary causes in 13%, and bad associations in 24%. The vast majority of the addicts were of the white races. Married and single persons were represented in almost equal proportions. Heroin addiction comprised more than 59% of the cases. The majority ranged from 21 to 35 years of age. The average addict purchases from 4 to 25 shillings-worth of drug daily. The method of gradual reduction was applied in all cases, the prescribed period of treatment being three weeks.

M. HAMBLIN SMITH.

The Possible Liability of Physicians in Cases of Attempted Suicide. (*Med.-Legal Journ.*, March-April, 1930.) Herzog, A. W.

If a sane man is attempting suicide, would another person who interfered be guilty of a technical assault, or be civilly liable for any injuries which the would-be suicide might sustain? The question appears to depend upon whether an attempt at suicide is an offence under the laws of the particular jurisdiction under which it occurred. If it is not an offence, a physician, or any other person who interfered, would be criminally and civilly liable.

M. HAMBLIN SMITH.

Partial Insanity and Criminal Intent. (*Med.-Legal Journ.*, May-August, 1930.) Weihofen, H.

The New York Court of Appeals has recently laid it down that "feebleness of mind or will, not so extreme as to justify a finding that the defendant is irresponsible, may properly be considered in determining whether a homicide has been committed with a deliberate and premeditated design to kill, and thus may be effective to reduce the grade of the offence." If generally adopted, this dictum would revolutionize the legal system. It would have, in practice, to be combined with arrangements for the treatment as well as the punishment of "partially insane" offenders, and such treatment would have to be continued after the expiration of the formal sentence of imprisonment.

M. HAMBLIN SMITH.

4. Pathology.

The Physiopathological Significance of the Meningeal Permeability. (*Amer. Journ. Psychiat.*, September, 1930.) Katzenelbogen, S.

"Meningeal permeability" is selective towards substances introduced into the general circulation; there is no obstacle to

the passage in the opposite direction. The choroid plexuses, ependyma, neuroglia, cerebro-spinal vessels and leptomeninges are the main anatomical constituents of the "barrier." There is reliable evidence that the barrier acts as a dialysing membrane. Any functional disorder resulting in either increase or decrease of the permeability has an ill effect upon the nervous system. The problem is of importance from the point of view of intra-spinal treatment, and of measures aiming to increase the permeability. Among the latter, pyretotherapy is recommended. But the problem requires further investigation.

M. HAMBLIN SMITH.

The Permeability of the Hæmato-Encephalic Barrier as Determined by the Bromide Method. (*Arch. of Neur. and Psychiat.*, October, 1930.) Gordy, S. T., and Smith, S. M.

The authors examined 183 patients at the Philadelphia Hospital for Mental Disease by Walter's bromide method. In general paralysis the majority of cases showed a marked increase in meningeal permeability. In dementia præcox the majority of patients showed a normal figure, about 24% showed increased permeability and 7% diminished permeability. In cases of chronic alcoholic psychosis there was a tendency towards increased permeability. A similar tendency is shown in some degree in psychoses with cerebral arterio-sclerosis. Half of the cases of manic-depressive psychosis showed increased permeability. In post-encephalitic cases and in senile psychosis there were no abnormal tendencies.

G. W. T. H. FLEMING.

Barrier between the Blood and Cerebro-spinal Fluid. III: Distribution Ratio of Bromides in Schizophrenias. (*Arch. of Neur. and Psychiat.*, August, 1930.) Malamud, W., and Rothschild, D.

The authors investigated 210 cases. They found that in schizophrenia uncomplicated by somatic diseases, 60% of the cases showed ratios above 3.2 (up to 4.3), 38% ratios between 2.8 and 3.2, and 2% below 2.8. Active tuberculosis, cerebral arterio-sclerosis, acute infections and reaction to typhoid inoculation tended to increase the passage of bromides into the spinal fluid (*i.e.*, to decrease the ratio). There was no definite relationship between the distribution ratio and the type of schizophrenia as usually described. A large proportion of the cases with ratios between 2.8 and 3.2 ran acute courses with remissions. The few cases with a ratio below 2.8 showed passive decompensating types of schizophrenic processes.

G. W. T. H. FLEMING.

Galactose Tolerance in Dementia Præcox. (*Arch. of Neur. and Psychiat.*, September, 1930.) Sleeper, F. H., and Hoskins, R. G.

The authors determined the galactose tolerance in 135 male cases of dementia præcox. They found some variability in those

cases in which multiple determinations were made. In the series as a whole there was a downward trend of the galactose tolerance, averaging approximately 15%. In 8% the tolerance was above normal, and in 58% it was below normal. There was no relationship between weight, age, creatinine output, protein katabolism or initial blood-sugar level and galactose tolerance. There was some evidence of a decrease of tolerance in chronic cases.

G. W. T. H. FLEMING.

Deficiency of Catalytic Iron in the Brain in Schizophrenia. (*Arch. of Neur. and Psychiat.*, August, 1930.) *Freeman, W.*

The author examined the brains of a variety of psychotics histochemically, and at the same time estimated the amount of iron present in the various groups. The average iron content is slightly lower in the schizoid group than in the paranoid and cycloid group. There was both histochemically and quantitatively a deficiency of iron in the cortical ganglion cells. The lack of this catalytic agent, so essential to the utilization of oxygen by these cells, may underlie certain features in the symptomatology of this psychosis.

G. W. T. H. FLEMING.

The Problem of the Anatomy of Schizophrenia. (*Journ. of Nerv. and Ment. Dis.*, September, 1930.) *Spielmeyer, W.*

Spielmeyer has discontinued work on this subject for the present. He points out that there are three main sources of error: Firstly, that the changes so often found are the result of bodily disease. The small nerve-cell-free zones and lighter strands in the cortex occur in normal individuals, *i.e.*, in cases of accidental death, in soldiers who fell in the war, and in executed individuals. Secondly, he has also found copious fatty substances in glial cells and vessel walls in young healthy subjects. He does not consider this finding pathological. Thirdly, he has found fresh necrobiotic areas in a variety of conditions—intoxications, infections, etc.—and he does not consider these pathognomonic of schizophrenia. The positive findings, however, the author considers to be a cellular loss in the third layer of the cortex as well as the deeper layers, sometimes with an enormous accumulation of fat. In the acute stages there are active destructive phenomena in nerve-tissue with progressive and regressive changes in the glia, and often abundant destructive products.

G. W. T. H. FLEMING.

Recent Investigations into the Ætiology and Pathology of Confusional Insanity and Dementia Præcox. (*L'Encéphale*, January, 1930.) *Buscaino, V. M.*

Buscaino published works on this subject in 1920 and 1924. In the brains of cases of dementia præcox he claims to have discovered alterations (rarefaction) in the texture of the brain substance, especially in the white matter and in the basal ganglia. It would appear that these areas of "degeneration" are level or flattened, and not superimposed.

The symptoms of dementia præcox, especially the catatonic manifestations, are believed to be due to these lesions. The author has demonstrated that when the lesions were situated in extra-cortical and extra-pyramidal areas the symptoms of catatonia were more marked.

Attention is also again drawn to the author's "black reaction," produced by heating the urine with silver nitrate, and due to the presence of abnormal substances (? amines). The reaction is said to be positive in all forms of confusional insanity, and in about 80% of early cases of dementia præcox, especially of the catatonic type.

The author holds the opinion that a particular micro-organism forms toxins in the lower intestine, and as a consequence of bowel lesions, or an abnormal permeability of the mucosa, these toxins eventually have a damaging effect on a nervous system already predisposed, and cause the cerebral lesions described.

J. R. BEITH ROBB.

The Boltz (A.A.S.) Test in Cerebro-spinal Fluid. (*Amer. Journ. Psychiat.*, September, 1930.) Walker, B. S., and Sleeper, F. H.

The reaction is not specifically diagnostic for neurosyphilis. As a means for rapid estimation of the protein in the spinal fluid it is of definite value. It is very doubtful if the test can ever be made really quantitative. But where there is no time or equipment for the more elaborate methods, it supplies a convenient approximation.

M. HAMBLIN SMITH.

The Takata-Ara Colloidal Test with Spinal Fluid. (*Arch. of Neur. and Psychiat.*, October, 1930.) Karnosh, L. J., and King, H. H.

The authors conclude that the test is not highly specific. It is positive in about 82% of cases of metasyphilis. It is frequently positive in non-syphilitic organic conditions, such as cerebral arterio-sclerosis, brain trauma and tumour.

G. W. T. H. FLEMING.

Hyaline Degeneration in Dementia Paralytica. (*Arch. of Neur. and Psychiat.*, July, 1930.) Wolf, A.

The author presents a case of general paralysis, which at autopsy showed a translucent area of almost cartilaginous hardness in the upper portion of the left precentral gyrus. Similar smaller areas were found in various regions of the brain-stem, both occipital lobes, second left temporal gyrus, both gyri recti and the thalamus. The author concludes that there is a disturbance of protein metabolism in dementia paralytica, and that diseased nervous tissues contain proteolytic ferments. During the deposition of hyaline material, the vessel-walls form the first barrier and are the first site of deposition. After breaking down of the vascular defence, the second defence mechanism is a ring of inflammation and reaction of macroglia. The nervous and supporting elements are gradually destroyed by the pressure of the hyaline, which is partly absorbed,

giving rise to a *status spongiosus*. A connective-tissue framework arising from the blood-vessels forms a supporting structure for the degenerated areas.
G. W. T. H. FLEMING.

Sedimentation Rate of Red Cells in Malarial Therapy. (*Riv. Speriment. di Freniatria*, liv, 3, September, 1930.) *Benvenuti, M.*

The author has investigated the sedimentation rate in general paralysis and in non-paretic syphilis. He regards the increased sedimentation rate which occurs in the former as an aid to differentiation from the latter. The sedimentation rate in general paralysis, often high before malarial treatment, may reach a very high level during such treatment. On occasion malarial therapy brings the sedimentation rate to normal.
H. W. EDDISON.

The Blood Electrolyte Changes in Narcosis, with Special Reference to Calcium and Potassium. (*Arch. of Neur. and Psychiat.*, September, 1930.) *Katzenelbogen, S.*

The author investigated the blood chemistry in rabbits under narcosis induced by ether in 10 animals, and by dial in 58 experiments on 41 animals. He found no significant modifications in the CO₂-combining power or the phosphorus or magnesium contents. Potassium does not behave in a characteristic manner in narcosis, but there is always a decrease in calcium. There is a distinct relation between the rate of the decrease of calcium and the duration of sleep. In 14 out of 15 experiments the longer the sleep the greater the decrease of the calcium.
G. W. T. H. FLEMING.

Comment on the Mechanism of Narcolepsy. (*Journ. of Nerv. and Ment. Dis.*, October, 1930.) *Wagner, C. P.*

The author summarizes briefly the literature on narcolepsy and describes two cases of his own. One case showed both sleep and cataplectic attacks, and the other cataplectic attacks only. In his first case the author was able to produce a cataplectic attack by an intravenous injection of afeuil (a preparation of calcium chloride and urea). This patient's blood calcium, which had been 11 mgrm. per 100 c.c. of blood, was 16.5 mgrm. at the end of five minutes after the injection; in the healthy subject the figure should have returned to normal. Wagner thinks that there may be a momentary hypercalcæmia during a cataplectic attack which reduces muscle irritability to the extent of complete loss of muscle tonus. If calcium balance is controlled by an area in the floor of the third ventricle, may not a lesion in this region, by producing a disturbance of calcium balance, be responsible for the sleep and the cataplectic attacks?
G. W. T. H. FLEMING.

The Incidence of Fever and Leucocytosis in Multiple Sclerosis. (*Arch. of Neur. and Psychiat.*, September, 1930.) *McKenna, J. B.*

The author studied the records of 109 verified cases of multiple sclerosis with reference to changes in temperature, leucocyte count

and state of the spinal fluid: 40·4% showed neither fever nor leucocytosis, but 3 showed increased cell counts in the spinal fluid; 55·9% showed elevations in temperature, 44·9% between 99° and 99·5° F., 11% between 99·6° and 100° F.; 22·9% showed definite leucocytosis, 3·6% occurring without elevation in temperature, and 19·3% accompanying febrile reactions. Pleocytosis of the spinal fluid occurred in 17·4%; 3 of these cases showed normal temperatures and leucocyte counts, 7 were accompanied by fever alone, 2 by leucocytosis alone, and 7 by both fever and leucocytosis.

G. W. T. H. FLEMING.

The Nuclei of the Region of the Tuber Cinereum: Degenerative Changes in Cases of Epilepsy, with a Discussion of their Significance. (*Arch. of Neur. and Psychiat.*, August, 1930.) Morgan, L. O.

The author examined the nuclei of the tuber cinereum in six epileptic brains. He found marked shrinkage and often hyperæmia in the wall of the third ventricle and at the base of the tuber cinereum. The cells of the substantia grisea were reduced to from 15–35% of the normal number. Chromatolysis was general among the remainder. The glia-cells were increased to two or three times the normal number. Neuronophagia was common. In the nucleus tubercularis lateralis there was a loss of 35–80% of the cells, with marked widespread chromatolysis among the remaining cells. In the nucleus tubero-mamillaris the cell loss varied from 15% in one case to 35–55% in the other cases. 60 to 85% of the remaining cells in this nucleus showed chromatolysis. The author thinks that the three nuclei of the tuber may be secretory centres for the thyroid, parathyroid and suprarenal glands, and that the degeneration in the substantia grisea of the third ventricle is concerned with the mental deterioration of the epileptic.

G. W. T. H. FLEMING.

The Pituitary and Hypothalamic Region in Chronic Epidemic Encephalitis. (*Brain*, April, 1930.) Eaves, E. C., and Croll, M. M.

This is a detailed histological study of a series of ten cases, well illustrated with photographic reproductions.

The authors find that—

(1) In chronic epidemic encephalitis there is frequently some change in the pituitary.

(2) The hypothalamic region of the brain is more severely affected than any other area except the substantia nigra of the mid-brain. The changes in the two regions are usually, but not invariably, parallel.

(3) The changes in the hypothalamic region were greater than in cases of Huntington's chorea and general paralysis of the insane, which showed severe degenerative changes elsewhere.

The relations of sleep, cachexia and hæmorrhages to the general pathological picture are also discussed.

WM. MCWILLIAM.

5. Treatment.

Production of Sleep and Rest in Psychotic Cases: Preliminary Report. (Arch. of Neur. and Psychiat., August, 1930.) Bleckmann, W. J.

The author administered amytal (sodium isoamylethylbarbiturate) intravenously in more than fifty cases of all types of psychosis. Patients with mental excitement and agitation fell into profound sleep followed by a phase of physical and mental relaxation lasting from 12 to 18 hours. The natural sleep following the period of relaxation was the most desirable result obtained. Narcosis was induced on an empty stomach. The dose varied from 7-15 gr. The blood-pressure fell in the first hour. The method facilitates tube-feeding and the handling of patients with acute delirium. *Status epilepticus* can be controlled. The intravenous injection of amytal is contra-indicated where there is advanced myocarditis or generalized arterio-sclerosis.

G. W. T. H. FLEMING.

The Therapeutic Value of High Temperature Baths in Multiple Sclerosis. (Journ. of Nerv. and Ment. Dis., August, 1930.) Lindemulder, F. G.

The author treated twelve cases of multiple sclerosis by means of high temperature baths. These were given every second day, or in some cases daily for a course of eleven baths. The patient was immersed up to the neck in a continuous bath at 104° F. for 10 minutes, and then the temperature was raised to 110° for 30 minutes and brought down to 104° for 20 minutes, making a total of one hour in the bath. When the mouth temperature was at its highest the patient would be restless and confused. After the maximum fever there was a period of mental depression. Occasionally the patients would become irrational and it would be difficult to restrain them in the bath. The highest mouth temperature obtained was 108.2° F. Maxima varied between 106° and 108.2°. Usually the temperature could be maintained above 104° F. for at least one hour and a half, often for two hours. Nine patients gained weight, the average being 3 lb. Fowler's solution with iron, quinine and strychnine was given during the series of baths. There appeared to be no marked ill-effects. Four of the patients showed a decided improvement, two seemed much worse. The interval since treatment was too brief to allow of a definite conclusion as to its efficacy.

G. W. T. H. FLEMING.

Spinal Drainage in Alcoholic Deliria. (Amer. Journ. Psychiat., September, 1930.) Goldsmith, H.

Since the advent of prohibition acute alcoholic psychoses have greatly increased, and grave toxic reactions tend to occur. Spinal drainage is an effective mode of treatment in these cases. It is attended by very slight sequelæ, and the period of detention in hospital has been materially reduced. The treatment is most

effective when started within twenty-four hours of admission to hospital. In the great majority of cases no after-treatment is necessary.

M. HAMBLIN SMITH.

Auto-serotherapy in Mental Disorders [*La autoflicteneterapia en las enfermedades mentales*]. (*Boletín del Instituto Psiquiátrico, Rosario, July, August, September, 1929.*) Rotman, Isaac.

With injections of serum from blisters the author treated twelve cases of insanity, amongst whom were cases of general paralysis, dementia præcox and puerperal confusion.

Observing the usual precautions for asepsis, cantharides paste on gauze, 3 × 3 cm. to 7 × 7 cm. in size, was applied to the skin. After having been fixed firmly with a bandage for 15 to 18 hours the serum from the resulting blister was withdrawn. Doses of 8 to 18 c.c. of this serum were administered hypodermically.

Results of treatment:

- (1) The treatment is only "calming."
- (2) It is efficient only in states of excitement and moderate agitation.
- (3) The tranquillity obtained was temporary and of variable duration.
- (4) The modification observed in the leucocytic cell-count persisted for 20 days.

The procedure does not offer technical difficulties, but repeated blistering leaves unsightly scars.

J. R. BEITH ROBB.

Indications, Contra-Indications and Complications of the Malarial Treatment of General Paralysis. (*Journ. Med. Lyon, June, 1929.*) Lépine, F., Bourrat, L., Christy, H., and Larrive, E.

The authors consider that for "practical cures" and remissions in general paralysis the pentavalent arsenical preparations give the most satisfactory results. These results depend upon the periodicity of the treatment, which must commence at the very earliest signs of the disease.

If specific treatment has no influence on the syphilis, then malaria is recommended, especially in the confused or tabetic forms.

Malaria is contra-indicated when there is marked depression, wasting, repeated jaundice, pulmonary tuberculosis or nephritis, and in elderly paralytics. The aortitis so frequently present in this disease is not considered an obstacle to malarial therapy.

In this form of treatment good technique and careful observation of the patient will reduce the mortality, which the authors give in their cases as 11%.

J. R. BEITH ROBB.

Museum Meanderings. (*Occup. Therap. and Rehabil., June, 1930.*) Bracket, T.

In this article Miss Bracket describes a visit to the Newark Museum, pointing out how much of interest it holds for the occupational therapist. She indicates many designs, culled from

Japanese, English and Continental sources, which are available to the student—designs suitable for leather-work, metal-work, batik, block-printing, pottery and stencilling.

A second article by M. B. Galt and M. K. Rauch deals with similar "finds" in collections of weaving and textiles in Washington, D.C.

WM. McWILLIAM.

Quilts and Quilting. (Occup. Therap. and Rehabil., June, 1930.)
Dunton, W. and E.

The authors review the history of quilting in its various forms, from bed-covers to armour, and describe the collection of early American quilts in the Brooklyn Museum. The purpose of the article is to awaken an interest in a fascinating and useful form of needlework.

WM. McWILLIAM.

Part IV.—Notes and News.

THE ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.

QUARTERLY MEETING.

THE usual Quarterly Meeting of the Association took place at the House of the British Medical Association, Tavistock Square, London, on Thursday, November 20, 1930, the chair being occupied by the President, Dr. T. Saxty Good, O.B.E., M.A.

MINUTES.

The minutes of the previous meeting, having appeared in the JOURNAL, were taken as read, and approved.

OBITUARY.

THE PRESIDENT said it was his painful duty to announce the death of an Honorary Member of the Association, Dr. Henri Colin, and of two Ordinary Members, Dr. Anna Laila Muncaster and Dr. Felix McCarthy. He asked Sir Hubert Bond to say a few words concerning the death of Dr. Colin.

Sir HUBERT BOND said he was quite ready to pay a tribute of sincere remembrance of the late Dr. Colin, but must do so briefly. Members would know the great things which Dr. Colin had done for the specialty, not only in France, but also in our own country, and therefore in the world. Those who had been privileged to meet Dr. Colin in this country, not once but several times, would always remember his geniality and his happy little ways, which did so much to bring about, not a *rapprochement*, for that was not needed, but a cementing of individual friendships between Frenchmen and Englishmen working in the specialty in the two countries. Dr. Colin's loss would be mourned over a very wide circle. More it was scarcely necessary to say at the moment, as doubtless a fitting obituary notice would appear in the *Journal of Mental Science*.

Dr. REGINALD WORTH read the following appreciation of Dr. Muncaster: Anna Laila Muncaster died on September 26, 1930, at Maritzburg, from cerebral embolism, after a seven months' illness. Dr. Muncaster, who was Scottish by birth and education, graduated at Edinburgh University in 1909. After a varied hospital experience, she was concentrating on pathology when the outbreak of the Great War led her to abandon the laboratory and join the Scottish Women's Hospital Unit. With this unit she went to Serbia, and having assisted, in her medical capacity, in the hopeless defence of that country, she accompanied the Serbs on their terrible retreat across the Albanian mountains. Of what she suffered herself during that awful experience it was difficult to persuade her to speak, but her description of what the Serbs had endured from cold, hunger and disease was one which was not easily forgotten. When the Allied Forces rallied she went to Ostrovo, the only hospital near the front line, and from there to a dressing-station at Dobroveni, where her calm courage when operating under fire aroused the admiration of her staff and troops alike. At the conclusion of the war she returned to Scotland, and was on the staff of the Bangour Mental Hospital. Then she accepted an appointment in the Union Mental Service, and came to South Africa in 1922. She commenced her work in the Union at Valkenberg Mental Hospital, and afterwards went to the Alexander Institution, Pietermaritzburg Mental Hospital and Bloemfontein Mental Hospital. By her colleagues in the mental service she will long be remembered, both for her skill as a physician, and for her kindness to the younger members of the medical staff. By casual acquaintances she was regarded as somewhat cold and reserved, but her friends

and patients found in her a ready sympathy—devoid of sloppiness—a staunch loyalty, and a keen sense of humour.

Those present expressed their sympathy by rising in their places.

MATTERS ARISING IN THE MINUTES OF THE COUNCIL.

Dr. WORTH (Hon. Secretary) said that one matter which arose at the Council meeting was that the Association should support the Board of Control in respect of the new Commissioners' posts, which were being created. A small committee was appointed to interview the Board of Control on the subject.

A suggestion was also made that Counsel's advice be asked on some questions concerning the new Mental Treatment Act. It was expected that Counsel's fee for this would be about a hundred guineas.

ELECTION OF NEW MEMBERS.

The PRESIDENT nominated Dr. McGrath and Dr. Kimber as scrutineers for the ballot :

The following were unanimously elected ordinary members of the Association :
PAGE, WILLIAM ROBERT, B.A., M.B., Ch.M.Sydney, D.P.M.Lond., Hon. Psychiatrist, Sydney Hospital; Hon. Psychiatrist, St. Vincent's Hospital, Sydney: 221, Macquarie Street, Sydney.

Proposed by Drs. Andrew Davidson, Chisholm Ross and Alfred W. Campbell.

PATON, THOMAS, M.B., Ch.B.Glasg., D.P.M., Assistant Medical Officer, Brookwood Mental Hospital, Surrey.

Proposed by Drs. J. A. Lowry, R. N. B. McCord and Eric P. Boyle.

MACKENZIE, MYRA, M.B., Ch.B.Aberd., Assistant Medical Officer, The Lawn, Lincoln.

Proposed by Drs. Mary R. Barkas, J. Ivison Russell and William Fraser.

FISHER, JOHN WILLIAM, M.R.C.S., L.R.C.P., D.P.H., D.P.M., Temporary Assistant Medical Officer, Devon Mental Hospital; Sunny Cottage, Shaldon, near Teignmouth, S. Devon.

Proposed by Drs. R. Eager, C. F. Bainbridge and S. E. Martin.

RAE, JAMES BURNETT, M.B., Ch.B.Aberd., Hon. Physician in charge of the Department of Psychological Medicine, Croydon General Hospital; 82, Harley Street, W. 1.

Proposed by Drs. J. R. Lord, W. D. Nicol and G. F. Peters.

THE MAUDSLEY LECTURE.

Dr. J. R. LORD said that although many who were famous in law, medicine and science had been able to accept the invitation of the President and Council of the Royal Medico-Psychological Association and were present that afternoon, not a few, chiefly owing to this being a mid-week event, had found it impossible to come, and had sent letters of regret to that effect. Among them were the following: Sir Charles Briscoe, Dr. Izod Bennett, Dr. W. W. Rorke, Mr. Dougal O. Malcolm, Sir James Berry, Dr. Hutchison, Dean Inge, Mr. Owen Smith, The Clerk of the Inner Temple, Dr. J. L. Birley, The Secretary of the Law Society, Dr. E. A. Clegg, Dr. Hemingway Rees, Miss M. A. Payne, the Editor of the *Morning Post*, Sir James Purves-Stewart, Dr. Neill Hobhouse, Sir Wm. Mitchell Cotts, Sir Alan Anderson, Lord Riddall, Dame Louise McIlroy, Dr. A. D. Macpherson, Prof. Winifred C. Cullis, Dr. Dorothy Hare, Dr. Barrie Lambert, Sir Francis Acland, Lady Limerick, Mr. Montagu H. Cox, Prof. Lucas Keene, Dr. Leonard Browne, Mr. R. H. Curtis, Sir John Rose Bradford, Dr. F. N. Kay Menzies, Mr. T. G. Tibbey, Lord Southborough, Earl of Cranbrook, Miss Musson, Dr. R. G. Gordon and Prof. Francis R. Fraser.

The PRESIDENT said it was his pleasant duty to introduce the Maudsley Lecturer. He had only to say there was Scriptural authority for declaring "the truth is not in us." This certainly did imply that there was such a thing as truth. Men had sought from time to time to answer the question, "What is truth?" Who was more likely to answer them, if there were an answer, than a learned Judge who had to face the question daily in Court? And, of all our Judges, who was better qualified than the distinguished and highly esteemed Sir Henry McCardie? He called upon Sir Henry to deliver the Eleventh Maudsley Lecture on "Truth."

Sir HENRY McCARDIE then delivered the Maudsley Lecture (*vide* p. 4).

Dr. NATHAN RAW, C.M.G., in proposing a vote of thanks to the Lecturer, said that as a Past-President of the Association, it was his privilege to ask the company assembled to record their very hearty thanks to the Maudsley Lecturer. He was sure that all present had listened to a brilliant, human, witty and philosophical discourse in memory of Dr. Maudsley—a great physician and a great philanthropist. The memory of Maudsley would always be in safe keeping while the Association had a lecturer of the character of the present one. Sir Henry McCARDIE was a great ornament to the legal profession, and members knew that his sympathies were now and always had been with the medical profession. Sir Henry would forgive him saying he would have made an equally great physician or psychologist. To-day's lecture was based on long observation and experience in a very privileged position as a Justice, and he hoped members would have the pleasure of reading the lecture at leisure. On behalf of the Council he proposed that a very hearty vote of thanks be given to Sir Henry McCARDIE for having given this literary treat. (Applause.)

Sir ROBERT ARMSTRONG-JONES said he had been asked to second the vote of thanks to the learned Lecturer, the Hon. Mr. Justice McCARDIE, and he did so with very much pleasure. Truth had no creed, no country, no race. The seeker after truth, as the psychologist knew, was engaged in the highest human employment. The Law of Evidence, for instance, was based upon the search for truth, and the establishment of facts was a technical matter; it was an important and delicate process, and was quite properly subject to definite rules and principles. The great physician, like the great lawyer, had a passion for truth, and the Judge usually prepared the ground for his sober, considered and impartial judgment by placing his witnesses on their oath to speak the truth, the whole truth, and nothing but the truth. Sir Robert was not sure whether it was desirable or necessary that the doctor should always tell the whole truth. Was it right that, knowing, as psychiatrists did, the great influence of the mind upon the body, the doctor who diagnosed an inoperable cancer should tell his patient he had only a few more months or weeks to live? Dr. John Radcliffe bluntly told Queen Anne that her illness was nothing but "the vapours"—meaning hysteria—a piece of truthfulness that permanently consigned her care afterwards to other hands. The same physician had previously told William III that he would not exchange the King's swollen legs for his own, even if he received the Three Kingdoms in exchange; and he never was asked to visit the King again. It was the custom in those days to indulge in brutality of speech, and perhaps to confuse this with truth.

Sir Robert said he recently heard the Lecturer, in the midst of doctors, dilating learnedly upon the history of medicine, from Hippocrates and Galen to the present President of the Royal College of Physicians, and he had charmed and interested the present company again this afternoon. No one could have given an audience of psychiatrists more food for reflection than Sir Henry had done, and it would have delighted the great man who endowed this Lecture, and whom the speaker knew intimately, if he had been present. All were most grateful for the oration.

The PRESIDENT said he took it there was scarcely any need to put the vote to the meeting; he was sure it would be approved in the usual way.

The vote was carried by acclamation.

Sir HENRY McCARDIE, in reply, said he appreciated, most heartily, the kindly and all-too-generous words which had been spoken by Dr. Nathan Raw and Sir Robert Armstrong-Jones; both were very kind-hearted men to have done this. It had been a pleasure to come that day and deliver the address; and for the courtesy, patience and goodwill of the audience he could no other answer make than thanks, and thanks again. (Applause.)

SOUTH-WESTERN DIVISION.

THE AUTUMN MEETING of the Division was held by kind invitation of the Committee of Management and of Dr. V. L. Connolly, M.C., at the Hampshire County Mental Hospital, Park Prewett, near Basingstoke, on Thursday, October 30, 1930.

The following members were present : Drs. E. Barton White, Good, Skottowe, Davies-Jones, Connolly, Benson, Nathan Raw, B. M. Mules, McGarvey, Dawson, Jackson, Major Will, Drs. Shepherd, A. S. Mules, J. J. O'Reilly, Barber, Lornie, Eager, Dudley and Martin. Mr. C. R. de la Salle, Mrs. Robert Weir, Drs. Dykes, McWilliam and McIlroy attended as visitors.

Dr. Barton White was in the chair.

The minutes of the last meeting were confirmed and signed.

Apologies for absence were received from Drs. Bedford, Ross, Gane and others.

A letter was read from Dr. W. Starkey conveying to the members his most grateful thanks for their generous gift of a Remington typewriter on his retirement, and wishing continued prosperity to the South-Western Division.

Dr. S. E. Martin was nominated as Hon. Divisional Secretary, and Drs. Barton White and J. McGarvey as Representative Members of Council, on the proposal of Dr. J. L. Jackson, seconded by Dr. B. M. Mules, and passed unanimously.

Dr. Barton White was nominated for the position of Chairman of the Division for 1931-32 on the proposal of Dr. Nathan Raw, seconded by Dr. B. M. Mules.

Drs. Connolly and Dudley and Major Will were elected members of the Committee of Management in place of Drs. T. S. Good, Nelis and S. E. Martin, on the proposition of Dr. B. M. Mules, seconded by Dr. J. McGarvey, and passed unanimously.

The following were elected as ordinary members :

MARGARET CORDELIA VIVIAN, L.M.S.S.A., "Marley," Belle Vue Road, Southbourne, Bournemouth.

Proposed by Drs. J. P. Westrup, J. R. Benson and S. E. Martin.

CHARLES GEORGE COWIE, M.A., M.D., C.M.Aberd., M.P.C., Visiting Physician, St. Ann's Convalescent Home (Holloway Sanatorium); Bonaccord, Westminster Road, Branksome Park, Bournemouth.

Proposed by Drs. J. P. Westrup, J. R. Benson and S. E. Martin.

STANLEY MAURICE COLEMAN, M.R.C.S., L.R.C.P., D.P.M., Senior Assistant Medical Officer, Dorset Mental Hospital, Herrison, Dorchester.

Proposed by Drs. P. W. Bedford, G. W. T. H. Fleming and S. E. Martin.

The place of the Spring Meeting, 1931, was discussed, and Dr. T. S. Good kindly suggested that the meeting should be held at Littlemore on April 30, 1931. The Chairman thanked him very much, but suggested that as Dr. Good was very busy this year, if another offer was received the decision should be left in the hands of the Hon. Divisional Secretary.

Dr. Good brought before the meeting the question of "Voluntary Eugenic Sterilization," and suggested that all members should consider the *questionnaire* very carefully and give all their help and assistance to the R.M.P.A.

Dr. J. J. O'REILLY demonstrated a case of fracture of the left parietal bone followed by mental symptoms. A discussion ensued, in which Drs. Good, Barton White, Jackson, Eager, Nathan Raw and others took part.

PAPER.—"Undulant Fever," by J. J. O'REILLY, M.B., B.Ch., D.P.M., Assistant Medical Officer, Park Prewett Mental Hospital.

PREFACE.

Undulant fever is associated with two organisms which were at one time believed to be distinct species, the one *Brucella melitensis*, the causative organism of Malta fever, the other *Brucella abortus*, the causative organism of contagious abortion in cattle.

INTRODUCTION.

Interest was first aroused in this condition by the occurrence amongst British forces, during the Crimean War and after, of a peculiar remittent type of fever, of insidious onset, in some ways resembling typhoid fever, but characterized by the vaguer and more protean nature of its symptoms and by prolonged convalescence.

As a result of his investigations into these cases Bruce, in 1886, succeeded in isolating the causative organism, which he named, erroneously, the *Micrococcus melitensis*, the disease itself being known as Mediterranean, or Malta fever.

In 1904 was set up the British Commission on Malta fever, which carried out an exhaustive investigation into the incidence of the disease in Malta and eventually showed that it was due to drinking the milk of infected goats. The investigation showed that the blood-serum of 40% of the goats in Malta agglutinated the *melitensis* organism and that large numbers of apparently healthy goats were passing it in their milk. The prohibition of the use of unboiled goats' milk by the garrison forces resulted in a sudden and marked reduction in the number of cases.

A further proof, if any were needed, of the relationship of this organism to Malta fever was provided in the case of the steamship "Joshua Nicholson," which left Malta on August 19, 1905, bound for Antwerp with a cargo of 65 goats, apparently healthy, and specially picked for ultimate consignment to the United States. During the voyage the milk of these goats was used by the majority of the officers and crew. Out of 12 officers and men, 8 fell ill at varying periods from 18-34 days from the date of sailing, and of these 5 were afterwards shown to have in their blood agglutinins for the *Micrococcus melitensis*. Of the remaining four who did not develop any illness, two had taken very little of the milk, whilst the other two—German engineers—had taken boiled milk only.

The disease had been known from very early times in the area forming the Mediterranean Basin—it has been claimed by some authorities that a disease described by Hippocrates was probably Malta fever.

Contagious abortion in cattle had been described as far back as 1567, and in the *Complete Farmer* for 1807 the following paragraph occurs in relation to this disease:

"The abortion should at once be burnt and the cow segregated from the rest of the herd, nor should she be allowed to receive the bull that goes with them."

The pioneer work on this condition was carried out by Bang, who in 1896 isolated the causative organism—the *Bacillus abortus* of Bang. Later a further strain of this organism was isolated which showed an enhanced virulence for swine.

This organism, the *Bacillus abortus*, has a predilection for embryonic tissue, and in cases of abortion can be recovered with comparative ease from the membranes, placenta and colostrum. After abortion it rapidly disappears from the genital organs, but later can be found in the tissue of the udder and the lacteal ducts, whence it finds its way into the milk.

Abortion usually occurs about the seventh month, but may occur in the first or second month and pass unnoticed, and as infection with the organism in cattle gives rise to no symptoms apart from those of abortion, the infected animal may continue to excrete the bacillus in its milk, although apparently in good health. In the great majority of animals abortion does not occur more than once, but there may be sequelæ of infection in the shape of lowered milk production, or sterility, temporary or permanent. The blood and milk of the infected animal agglutinate the bacillus.

The extent of bovine infection with this organism is not actually known, but some interesting statistics on the point have been published both in this country and in America. Wilson and Nutt examined 488 samples of cows' milk in Manchester, and found that 5.7% of single milks and 8.8% of mixed milks were infected with *Bacillus abortus*. In America in 1911 Schroeder and Cotton found the organism present in more than 10% of 77 milks examined by them. In the same year the first definite instance of human infection was reported from America following the isolation of the organism, from the tonsils of a child.

Dr. Alice Evans, of the U.S.A. Department of Agriculture, made a comparative study of the two organisms, *abortus* and *melitensis*, and demonstrated that they were indistinguishable except by agglutinin absorption tests. It had been shown earlier that the organism designated by Bruce the *Micrococcus melitensis* was in reality a bacillus showing pleomorphic variation. This fact probably accounted for the long delay in recognizing the affinity between the two organisms.

Numerous terms have been applied at different times and in different countries to designate infection of man by one or other of these organisms, but the term "undulant fever" is now used by general consent to indicate human infection by the *melitensis* organism or by the bovine or porcine varieties of the *abortus* organism. As the result of further work these organisms have now been placed in one group under the heading *Brucella*, and they are usually referred to as "*Brucella melitensis*" and "*Brucella abortus*."

Melitensis infection tends to be more prevalent in sub-tropical climates, and as regards animals, chiefly affects the goat, where abortions are fairly frequent, but it may also affect cattle, sheep, dogs, etc. *Abortus* infection is practically world-wide and chiefly affects cattle, but tends to be less prominent where *melitensis* infection is rife. There is some evidence that *melitensis* infection protects against *abortus* infection, which may be the explanation at the back of the old custom amongst farmers of running a goat with the herd of cattle.

CHARACTERISTICS OF THE ORGANISMS.

The organisms are characterized by their great pleomorphism, and by the difficulty of separating human, bovine, porcine and caprine strains by ordinary laboratory methods.

The *melitensis* organism is from $5-2\mu$ long and 5μ wide, non-motile, non-sporing and Gram-negative. Primary cultivation is somewhat difficult, and growth does not appear until about five days after incubation. After a few transfers on artificial media, however, it grows abundantly on all ordinary media. *B. abortus* is somewhat more difficult to cultivate, and requires an atmosphere of 10% CO_2 to ensure growth. After 10-12 transfers it can be grown at atmospheric CO_2 tension.

The organism may be recovered from the blood during the early stages of the disease, and indeed isolation of the organism has been reported in cases lasting 6-8 months. The chances of obtaining the organism appear to be most favourable if the blood is withdrawn when the temperature is at its highest point. The organism has also been recovered from the urine.

Probably the most certain way of isolating these organisms is to inoculate a guinea-pig with the suspected blood. It is of interest to note that the *post-mortem* appearances of infected guinea-pigs strongly resembles those of tuberculosis, and it has been suggested that in some cases where guinea-pigs have been killed and examined following an inoculation with milk suspected of containing T.B., and in which *post-mortem* conditions resembling T.B., but without the presence of an acid-fast bacillus, have been found, the condition may have been due to infection with one or other of these organisms.

UNDULANT FEVER IN MAN.

Undulant fever is a disease of adults, occurring usually between the ages of 20 and 45. No case has been reported under the age of 5. It is interesting to note in this connection that young calves are said to be immune to the disease. It is said to be more prevalent amongst males, but the validity of this contention is doubtful.

There is no essential difference between the disease caused by the *melitensis* and that caused by the *abortus* except that the latter is much more rare. The disease is characterized by an insidious onset, with a feeling of general malaise, headache, bone-ache, pains in the joints of fleeting nature, and sometimes associated with transient swellings, the sacro-iliac joints being particularly liable to be affected. The temperature is remittent in type; it begins to rise between 10-11 a.m., reaches its maximum between 2 and 3 p.m., and then falls again to normal or subnormal between 10 and 11 p.m. The fall is associated with profuse sweating, so much so that it may be necessary to change the clothing once or twice during the night. The sweat has a peculiar and characteristic tang easily recognized when once experienced. There is often cardiac discomfort, palpitation and tachycardia on slight exertion, and præcordial pain. There may be harsh, troublesome cough, congestion of the lungs has been reported, but this is said to be rare. The liver and spleen are nearly always enlarged and palpable, and there may be swelling of the lymphatic glands in various regions.

Mastitis, oöphoritis and orchitis have all been reported; one of these symptoms, oöphoritis, occurred in one of our cases and caused considerable confusion in diagnosis. Mental symptoms also occur—irritability, depression, loss of memory, inability to concentrate. These were so prominent in one of our cases as to render the victim unfit for continued duty. The striking feature of the disease is the prominence of the symptoms in contrast to the lack of objective signs and the comparatively healthy appearance of the patient. Severe constipation is an invariable accompaniment of the disease.

The incubation period is unknown, but is estimated by various observers to be between 10-15 days. The duration of the disease varies; as a rule it consists of a series of febrile attacks each lasting one or more weeks, and followed by a variable period of absolute or relative freedom from pyrexia. Cases have, however, been reported lasting 6-8 months or even as long as two years. Although the mortality is low, the seriousness of the disease will be appreciated when it is stated that at the present time there is no known cure; the infection seems to burn itself out.

The blood changes are usually confined to a relative lymphocytosis, with or without an absolute leucocytosis; there may be a secondary anæmia. This relative lymphocytosis is regarded by some authorities as characteristic of the disease. Cantaloupe states that the combination of sweating, aches, constipation, asthenia, undulant temperature and relapses is found more often in this than any other disease, and is sufficient to justify a diagnosis of undulant fever. At the same time, however, these symptoms are so inconstant that no one of them can be said to be typical of the disease, and it is practically impossible to make a differential diagnosis without the aid of bacteriological and serological investigation.

DIFFERENTIAL DIAGNOSIS.

The following are some of the diseases from which undulant fever has to be differentiated: typhoid fever, malaria, tuberculosis, influenza, tularæmia, malignant endocarditis and focal sepsis.

LABORATORY DIAGNOSIS.

The three chief methods here are hæmoculture, animal inoculation and agglutination reaction. The latter is somewhat variable in this disease, and is probably not so reliable as in the enteric group. Unfortunately many of the published results of investigations of the agglutination reaction in this disease have been obtained by different methods, and it is extremely difficult to compare the figures of one worker with those of another. All the results given in this paper have been obtained with Oxford standard sera, using Dreyer's technique.

Normally the agglutination reaction appears during the second week of the disease, but cases have occurred, as in one of our own, where it has failed to appear for some time, or it has been absent throughout even though the organism has been isolated from the blood. Instances have been reported where the serum failed to agglutinate the strain isolated from the patient's blood.

There is some diversity of opinion as to the significance to be attached to a positive agglutination reaction, and as to the titre of agglutination which should be regarded as indicating active infection. Some authors have put forward the theory that the occurrence of positive reactions of low titre in apparently healthy persons is the result of absorption of agglutinins present in the cow's milk. There does not appear to be much support for this theory. It appears probable that individuals may suffer from mild infections which pass unnoticed at the time.

Wilson, in a recent paper, put forward the following suggestions:

In the absence of clinical symptoms a titre of 1-80 or less probably indicates past infection with a *Brucella* organism, which infection may not have been attended by definite disease. A titre of 1-100 or more in the absence of clinical symptoms probably indicates a latent infection or repeated past infection.

In the presence of pyrexia or other symptoms of the disease a titre of 1-100 or less may be taken as diagnostic of *Brucella* infection. A titre of 1-20 to 1-100 in the presence of clinically undulant fever may likewise be regarded as practically diagnostic of *Brucella* infection. Finally it must be emphasized that the disease may be present with complete absence of agglutinins in the blood, though this is uncommon, at any rate in *abortus* infection.

Another method of diagnosis is the intradermal reaction of Burnet, which consists in the intradermal inoculation of 0.05-0.1 c.c. of filtered 20-days' old broth culture of the organism. A positive reaction is indicated by the appearance within six hours of a small, slightly raised œdematous plaque, of a redder tinge than the surrounding skin. Its clinical value is not yet firmly established.

In the use of the agglutination reaction there are two sources of error. The causal organism is liable to agglutination by non-specific sera. This source of error may be avoided by heating the blood to 56° C. for half an hour prior to the

test. The other source of error is the occurrence of paradoxical reactions, when agglutination disappears or is absent in low dilutions but reappears in higher dilutions; it is important therefore to employ a long range of dilutions in the test. There appears also to be the possibility of agglutination of the organism by the sera of apparently healthy persons. This is a point which requires further investigation; it may be that these reactions are the result of a mild infection, past or present. In our series of routine agglutination tests, several patients gave reactions varying from 1-10 to 1-50 without other evidence of having suffered from the disease.

CASES OCCURRING IN THIS INSTITUTION.

Three cases were met with showing pyrexia, malaise, sweating and constipation, and a lymphocytosis, and giving a positive reaction with the agglutination test, varying from 1-250 to 1-1,350. They were regarded as clinically active cases of undulant fever, but in none of them was it possible to isolate the causative organism.

Case No. 1: Member of Female Staff, *æt.* 42.

In November, 1929, she began to complain of loss of appetite, a general feeling of tiredness after her day's work, and tired pains in her back and legs. She felt depressed, had a sinking feeling in her epigastrium, and was somewhat drowsy. She always felt tired when she awakened in the morning and disinclined to get up.

She used to sweat excessively at night, and in the morning would wake up "in a bath of perspiration." Sometimes she used to get a sharp stabbing pain in the right gluteal region resembling a neuralgic affection of the sciatic nerve. On January 25, 1930, she reported sick and retired to bed. During the previous week she had complained of dull pain in the lower part of the abdomen, varying from the right side to the left, and of pain on passing urine.

Physical examination failed to reveal any objective signs of disease.

During the whole of her illness she exhibited a pyrexia with a daily variation between normal and 101°, occasionally rising to 102°, the lower limit occurring about 6 a.m. and the maximum between 6 and 10 p.m., more usually at 6 p.m. Pulse-rate averaged 86, respirations 20.

The condition was at first thought to be cystitis, but her urine proved completely negative. Toward the end of February she was seen by one of the consultant surgeons to the hospital, who made a provisional diagnosis of appendicitis, or ovarian trouble, and suggested her removal to a general hospital for more detailed examination. This was done, but no physical abnormality was detected. Culture of the blood proved negative, as did also the agglutination reaction for typhoid and paratyphoid. It was then suggested that the condition might be due to infection with *Brucella abortus*. The patient had then been ill ten weeks. Her blood was examined for agglutinins to *Brucella abortus* and *melitensis*, but proved negative on two separate occasions. On the third occasion the blood agglutinated both organisms to a titre of 1 in 1,250, and absorptions tests showed the causative organism to be *Brucella abortus*.

Her red cell-count was 3,800,000 per c.mm.; her white cell-count was 8,347 per c.mm. Differential count showed polymorphonuclears 35.5%, lymphocytes 63.5%, transitionals 1%.

The patient stated that since she joined the staff of this hospital three and a half years ago, she had been accustomed to drink 1½ pints of raw milk daily.

Treatment consisted of rest in bed and general antipyretic methods; she gradually lost her feeling of tiredness, sweating was less marked, and by the end of March, 1930, her temperature had returned to normal.

Examination of her blood on May 26, 1930, showed an agglutination reaction to *Brucella abortus* in a titre of 1-150. Differential count showed polymorphs 39.5%, lymphocytes 52%.

On October 14 the agglutination titre had fallen to 1-335; she is now apparently in good health.

It is interesting to note in this case that the diagnosis was obscured by localization of symptoms to the genito-urinary system, presumably due to a condition of oophoritis, and that the agglutination reaction was absent until the tenth week of the disease. Attempts to recover the *Brucella abortus* from the blood were unsuccessful.

Case No. 2: Member of Male Nursing Staff, et. 33.

Joined the army in 1917, and entered the service of this hospital on his discharge in February, 1924. He served in France and India, and whilst in the latter country he was bitten by a mosquito and was given quinine treatment. He does not know whether he was regarded as suffering from malaria, but at intervals of perhaps six months he had to spend a few days in hospital with general malaise, feverishness, and muscular aching, his temperature rising to 102°. His condition, however, had entirely cleared up by 1924, and when he joined the staff here he felt quite fit.

In February, 1930, he began to complain of headache, tiredness, pains in his legs, and constipation. These attacks came in bouts lasting for two or three days, but he did not report sick, and his temperature was not taken. At the time he was in the habit of taking one pint of raw milk two or three times weekly. Examination of his blood in April, 1930, showed: Total red cell-count, 5,483,000 per c.mm.; total white cell-count, 6,660 per c.mm. Differential count: polymorphonuclears, 42%; lymphocytes, 56%. Agglutination reaction positive at 1-80 to *abortus* and *melitensis*.

One month later his blood showed a positive agglutination for *abortus* 1-50, *melitensis* 1-125, and agglutination absorption tests showed the causative organism to be *Brucella melitensis*. A differential count taken at the same time showed: Polymorphonuclears, 70%; lymphocytes, 22.5%; monocytes, 6.5%.

On October 14 his blood was again examined, and agglutinated *B. abortus* and *melitensis* to a titre of 1-175. He still complains of obstinate constipation, but is otherwise free from symptoms.

It is of interest to note in connection with this case a remark by Muir and Ritchie that *melitensis* organisms may remain alive in the body of a mosquito for four to five days, and that possibly these insects may occasionally be the means of carrying the disease; they add, however, that there is no evidence that this takes place to any extent.

Case No. 3: Member of Female Staff, et. 20.

In January she began to complain of feeling tired and unfit for work. Prior to this she had been a willing worker and a good nurse, and had shown considerable ability at the lectures and examinations. As a matter of fact she sat for and obtained the R.M.P.A. Certificate during her illness. This condition of general malaise gradually became more marked; she sweated on slight exertion and at night. Her appetite became poor and she complained of obstinate constipation. This condition continued until May, 1930, when she came under medical observation, having fainted whilst taking a bath.

She gave a history of having taken $\frac{1}{2}$ pint of milk (unboiled) daily with her meals. Physical examination showed nothing abnormal except tachycardia. She stated she had occasional attacks of palpitation since her illness first started. She showed a slight daily rise of temperature to 99.8°.

Her total red cell-count was 2,977,000; white cell-count 8,750. Differential count showed polymorphs 54.5%, lymphocytes 43.5%, and eosinophiles 2.0%.

Her blood agglutinated *B. abortus* to a titre of 1-250. With the exception of ten days in bed after first reporting sick the patient remained on duty during the illness, but other members of the staff began to remark that she was getting rather peculiar. She became depressed, moody and irritable, would not associate with others, and resented being spoken to by her superiors. On one occasion, for no apparent reason, she struck another nurse on the head with a bag of laundry and then ran off. She finally resigned, and left because she felt she was not being given her proper place in the wards, and I have been unable to obtain any details as to the subsequent course of her illness.

In addition to the foregoing, investigations have been carried out on the blood of 26 females—13 patients and 13 staff, and 65 males—57 patients and 8 staff.

Of the females one patient gave a positive agglutination reaction in a titre of 1-10; she showed a differential count of polymorphs 63%, lymphocytes 36%, but had no symptoms or history of suggestive *Brucella* infection.

Amongst the males 3 patients gave positive agglutination reactions. One, C.V. A—,

in a titre of 1-40, differential count polymorphs 49%, lymphocytes 48%. Examination of this patient showed no physical symptoms of any description. In 1918 he had "flu," and in 1923 and 1924 had malaria whilst abroad; this latter diagnosis, however, was his own; he had not been medically examined, nor was his blood examined for parasites. The question of a *Brucella* infection remains undecided; it may have been what he called malaria.

Another, R. A. S. D.— showed an agglutination reaction in a titre of 1-50. Differential count showed polymorphs 72.0%, lymphocytes 18.0%, eosinophiles 2.5%, and mast-cells .5%. This patient gives no history suggestive of *Brucella* infection. Another, L. P.—, reacted up to 1-20, with a differential count of polymorphs 53%, lymphocytes 43%. No history of any illness. There is, of course, the possibility that these cases had a mild infection which passed unnoticed.

Further investigation remains to be carried out before the source of infection of these cases can be traced. Up to the present we have not been able to examine the institution herd, but we hope to do so shortly. The question becomes complicated by the fact that from time to time it is necessary to supplement our own supply with milk from an outside source.

PREVENTION.

Fortunately the prevention of infection even with a contaminated herd is a comparatively easy one. Pasteurization of the milk renders it perfectly safe so far as infection with *Brucella* organisms is concerned.

Apart from this country, undulant fever has been becoming increasingly prevalent during these last twenty years, and the following forecast regarding it by Nicolle is interesting. He says, "Malta fever is in the course of evolution, and is tending to become chronic. It is a malady which on account of its manifestations and its chronicity will become one of the commonest and most stubborn of diseases. It is a disease of the future." So far the prophecy has not been fulfilled as far as this country is concerned. Up to the end of 1929, 14 cases had been reported in which the infection was supposed to have been contracted in this country. Since then, however, some 20 further cases have been reported, and it is probable that there are other cases not reported.

Whether these cases represent a real increase of the disease in this country, or are due to recognition resulting from increased knowledge, is a point which remains to be elucidated, and is dependent on a more complete knowledge of the extent to which *Brucella* infection is prevalent amongst cattle in this country; but it is interesting to note that of 928 routine agglutination tests on cows and heifers at the Royal Veterinary College during 1927-1928, 31.8% were positive, whilst of 13 sera from breeding bulls tested in the same period 46.1 were positive.

The Ministry of Agriculture of Northern Ireland carried out tests on the bloods of 158 cattle during 1927, found a positive reaction in 24.9%, and formed the opinion that contagious abortion is probably the most important disease of cattle in Northern Ireland.

Four theories have been put forward to account for the apparent immunity of this country from undulant fever:

1. That the particular strain of *abortus* causing abortion in this country has a negligible pathogenicity for man.

2. That a passive immunity has been acquired by the ingestion of protective antibodies in the cows' milk.

3. That cases may have been mistaken for other diseases owing to the unfamiliarity of practitioners with this condition.

4. That a very mild type of the disease due to low virulence of the organism or a high natural resistance in the individual may be prevalent.

This latter is the explanation favoured by most of the workers in this field.

SUMMARY.

1. It will be seen that undulant fever is not so rare in this country as was formerly supposed, and that increasing numbers of cases are being reported.

2. There is some evidence that infection of cattle with this organism is fairly frequent in this country, and milk consumed by the public has been found to contain the organism—in one particular instance in 5.7% of the samples.

3. Pasteurization of the milk destroys the organisms, although this is not a method which can be satisfactorily applied outside institutions and large urban areas. In doubtful cases it would be safer to use boiled milk only for drinking purposes.

4. The disease is liable to be overlooked or an erroneous diagnosis made unless the aid of laboratory methods is invoked. Therefore in all cases of obscure illness with pyrexia, continued or remittent, the possibility of *Brucella* infection should be borne in mind.

5. Herds in which there is an unduly high proportion of abortions or missed pregnancies should be submitted to the agglutination test of the blood or milk for evidence of infection with this organism.

In conclusion I have to thank Dr. Connolly, the Medical Superintendent, for permission to utilize the clinical material embodied in this paper, and my laboratory assistant, Mr. Gates, for his painstaking work in connection with the routine tests.

References.—(1) Report No. 56, Ministry of Health.—(2) Hull, *Diseases Transmitted from Animals to Man.*—(3) *Brit. Med. Journ.*, October 25, 1930.

Drs. LORNIE, EAGER, JACKSON, GOOD, NATHAN RAW and others took part in the subsequent discussion.

A hearty vote of thanks was proposed to Dr. J. J. O'Reilly for the interesting case he demonstrated and also for his paper on "Undulant Fever."

Owing to shortage of time it was resolved to postpone Dr. J. S. I. Skottowe's paper on "The Utility of the Psychiatric Out-Patient Clinic," with his consent, until the Spring Meeting.

Previous to the general meeting the members were most hospitably entertained to lunch by the Committee of Management of the Hospital, Mr. C. R. de la Salle, being in the Chair. The Chairman and Committee of Management were heartily thanked by Dr. Barton White for their kind hospitality.

During the morning members had the opportunity of inspecting the modern and well-equipped institution, including the Pathological Laboratory, Nurses' Home, Rookdown House, Admission Hospital, Convalescent and other Villas, X-Ray Department, Hair-teasing Room, Steam Meter Flow, etc.

A hearty vote of thanks to Dr. Connolly terminated a most successful meeting.

NORTHERN AND MIDLAND DIVISION.

THE AUTUMN MEETING of the Northern and Midland Division was held by the courtesy of Dr. C. W. Ewing at Storthes Hall Mental Hospital, Kirkburton, on Thursday, October 30, 1930.

Present: 18 members—Prof. J. S. Bolton, Drs. Barkas, Baugh, Bruce, Dove Cormac, Chevens, Ewing, Fraser, Gemmell, Horton, McGrath, Mackenzie, Mathieson, Parkin, Russell, Tattersall, Vincent, Wilson; and 6 visitors—County Aldermen Booth and Sykes, Drs. Ewing, Harkness, Miller, Montgomery.

Members were conducted round the Hospital and were afterwards entertained to luncheon.

Prof. Bolton proposed a vote of thanks to Dr. Ewing and his Visiting Committee for their hospitality, Mr. Alderman Booth and Dr. Ewing responded.

It was proposed by Prof. BOLTON, seconded by Dr. DOVE CORMAC, that in the absence of the Divisional Chairman Dr. Ewing be asked to preside. This was carried unanimously.

The minutes of the previous meeting were read, approved, and signed.

Apologies for absence from 62 members were communicated.

The following was elected by ballot an ordinary member of the Association:

JOHN JOSEPH O'RIORDAN, M.B., Ch.B., D.P.M., Assistant Medical Officer, North Riding Mental Hospital, York.

Proposed by Drs. J. Ivison Russell, William Fraser and Henry Wilson.

The following were elected to serve on the Divisional Committee of Management: Dr. Archdale, Dr. Barkas and Dr. Dove Cormac.

Invitations to hold meetings in 1931 at Wadsley Mental Hospital and at Bryn-y-neuadd Hall, Llanfairfechan, were accepted with pleasure, and the Secretary

was instructed to communicate with the respective Superintendents and arrange for dates.

An open discussion on the question of Eugenic Sterilization followed.

Prof. J. SHAW BOLTON, in opening the discussion, said : I do not intend here to repeat the usual arguments for or against eugenic sterilization, as these have probably either been read by you in the recent *questionnaire* of the Association, or will be brought up in the course of the present discussion. I propose to confine my remarks to such germane matters as occur to me, and in particular to such as perhaps may not be mentioned by others.

The Eugenics Society, as its name indicates, is primarily concerned with the scientific development of methods of improving breeding and modifying stock. The examples of this which at once present themselves to our notice are the variations in the type, size and egg-producing qualities of domestic fowls, and the beef- or milk-producing qualities of cattle

It is obvious that the success which has attended these efforts must inevitably suggest the question whether similar methods of breeding are applicable to man or not. The question is an old one, and in fact nearly thirty years ago, when it was under discussion, certain irresponsible persons, of whom I was one, sought amongst our intimates for suitable human stallions to send travelling the country at, of course, an adequate remuneration.

I propose first to raise the question whether artificial breeding methods are of more than temporary value, and whether they could or could not be applied to the human race or any part of it, and to answer this question with a direct negative. Varieties are readily produced by breeding, as everyone knows, and by constant care in breeding they can be maintained, but they need this constant attention, and even then tend to die out through loss of stamina. As far as one can make out in a general way, the chief reason why artificial varieties constantly and speedily vary in type is not the whim of judges, but the existence of better physique in the changed type. I would here point out how common throw-outs are in highly-bred types, and also the undoubted fact that neglect of constant effort results in reversion of the new varieties to more ordinary or stable types. It is possible in birds to get a new variety to breed true in some six generations, but even then examples of the more stable of the original types keep on appearing, e.g., the silkie, an ancient Eastern type of fowl, keeps appearing in apparently pure silkie-Wyandotte stock, but the Wyandotte, a very modern variety of fowl, never appears after one or two generations of the cross.

On the other hand, the naturally evolved types of living thing have taken anything up to untold millions of years to evolve, and several have long outlived their original purpose and survive as a sort of anatomical freak. The mayfly, for example, possesses neither mouth nor digestive tract, and it lives for hours only. Such an evanescent product certainly does not justify its elaborate larval life, and one must conclude that the present adult life of the insect is merely a remnant of what ages earlier had been laboriously evolved for a useful purpose.

Numerous modern insects possess prototypes dating from the period when the coal measures were laid down, and the general structure of birds is largely the same in all, in spite of their apparent great variability. Dogs still possess tails in spite of persistent efforts to curtail them artificially, especially in certain terriers who are better without them owing to their liability to develop painful neuro-fibromata from injury. Cats still remain selfish and aloof in spite of prolonged domestication. In a word, Nature takes time and does her work well and permanently, and whilst doing it strews the earth with failures. We try in the short-lived animals to imitate Nature, and fail disastrously except for our own ephemeral purposes.

Who are we, then, that we should presume to think that we can improve the breed of human beings by any method of selection in our power? It is only the law of entail which has preserved even a relatively small number of families in positions of power and responsibility, and, with a few notable exceptions, their stock is, if anything, worse than that of the run of men. Even if we could embark a nation on a fixed and successful course of human breeding for a thousand years it is doubtful whether actual benefit would result, except perhaps in physique, and probably from the mind point of view the whole nation would need treatment in mental hospitals.

I will add but one further illustration: It is some half million years or more

since man emerged from the humanoids, nevertheless our earliest evidences of what deserves to be called civilization date back less than ten thousand years. Civilizations have during this time come and gone, and it is only a few hundred years since the English-speaking race was at a relatively low level of culture in comparison with these. With the rapid spread of industrialism during the past century and a half, and with the gradual dissemination to all of the ability to read and write, which previously had been in the hands of the few in spite of the fact that the necessary cerebral mechanism was already developed, the still infantile brain of man has begun to function actively, though with but a vague appreciation of its immaturity. In spite of our half a million years of history and of our ten thousand years of civilized history, we still think our most recent war to be the last possible war, and we dream that at last we are masters of our fate and deserving of the control of our destiny, and this in spite of the presence amongst us of a majority of still savage and semi-civilized races. Could any idea be more fatuous ?

These truths are so well known to eugenist leaders that, in their endeavour to get something done on the line of their pet theory, they now alter their tune, and merely demand that certain types of person shall compulsorily or voluntarily be maimed to prevent them from breeding, and one of the chief arguments brought forward is that sterilization is cheaper than permanent detention and has no ill-effects. So, I might add, is a lethal chamber.

I shall now consider whether even this statement is true and what sterilization of human beings really implies.

Eugenists have descended from the general to the particular. Ignoring how little we really know of the laws of heredity, they demand as a merely palliative measure that individuals unable to speak for themselves should be sterilized, that persons desirous of leaving mental hospitals should be bribed to do so by agreeing on false pretences to be sterilized, and that a power, greater than that of life and death, which is possessed by the State alone, should be given to medical men. Why do I say this ? Because the function of reproduction is one of the most fundamental and powerful of our instincts, and if it is once taken away it cannot be restored. A medical man under the eye of the law is tacitly permitted to procure abortion for sufficient reasons, but here the function of reproduction is not interfered with. In cases of disease, again under the eye of the law, he is tacitly allowed to sterilize a human being when this is necessary to health. He, however, possesses no legal rights in the matter.

I shall now refer to certain facts which suggest that mental deficiency and disease are regressive and not dominant, in accordance with the proved truth that the human brain is still a developing organ—the highest and latest, in fact, of the products of evolution. The consequent suggestion following from this is that mental disease is a natural consequence of cerebral development, and is with us not as a preventable curse, but of necessity.

Mental disease, as is shown by numerous historical data, tends in a family group to antedate in onset in succeeding generations, and at the same time to become more severe, eventually ending in severe and necessarily non-breeding amentia, and thus wearing itself out. Senile insanity is followed by presenile, and that by premature dementia or imbecility. In individual families with severe double degeneracy, examples exist, of which I personally have recorded one, where succeeding children develop mental disease at an earlier age and in a more severe form. An older child develops, say, presenile insanity, a later one becomes insane during mid-adult life, and younger children fail at or soon after puberty.

These examples of Nature's method of working justify us in incarcerating certain persons as a possible menace to the social organism, but by no possible stretch of reasoning can they justify such a measure as permanent maiming of already disabled social units.

I have already taken up a good deal of our time, more perhaps than the fair share of the opener of a discussion, and will complete my remarks by referring to the pernicious statement promulgated by eugenists that sterilization is a simple operation which is quite harmless in its results.

Everyone is familiar with the psychoses of the climacteric period in women, and with their often disastrous consequences. A generation or more ago, when ovariectomy was the rage, I met with numerous examples of the severe psychosis which often follows a prematurely induced climacteric, and I still meet examples

of this condition every year. These cases occur amongst presumably normal women, who, as part of their sexual life, develop climacteric symptoms of various types at its close.

Everyone again is familiar with the psychoses of puberty in boys and girls, particularly the severer types associated with hyperactivity or with abnormal or sub-development of the generative organs.

I come lastly to adult man, who normally functions sexually up to old age. What of him? Does section of the vasa deferentia produce no after-effects? All must agree that the essential part of the sexual act is the act of ejaculation, and also that secreting glandular elements prevented from functioning by blocking of the outlet for their secretion either become cystic or atrophy, their functional activity ceasing.

A sterilized man may possess testicles, but their only function is the production of their internal secretion. That of reproduction is lost, and the individual becomes in reality a eunuch without the usual accompanying general bodily sexual neutrality being manifest. No wonder that the Committee which advocates eugenic sterilization quotes that in the United States cases of rape or other sexual assault by sterilized individuals are unknown!

The primitive idea of man as the inserter and of woman as the nourisher of the offspring still persists, and will persist in spite of the notable advances in opportunity for mental and physical development which have been gained by women of late years. A man, therefore, who cannot beget is only half a man, whereas a sterile woman, though unable to be a mother, often, for reasons not inherent to herself, is still a woman. Do we propose a subject race of eunuchs as part of our much vaunted civilization?

Inability to do what normal man can do, an inability which is irremediable, is a severe maiming for a sound and sane man, but how much more disastrous would it be to thinking and often unusually introspective individuals who had suffered such maiming to escape permanent detention, and who, when in the world outside, had, when too late, regretted their decision—a decision arrived at, it is not too much to say, in ignorance of its real meaning.

Lest I should appear to make too much of this point I will quote a passage from Xenophon, which appealed to me so much when I read it nearly half a century ago that I have never forgotten it. It refers to a general of Cyrus the Persian who had been captured by the Assyrians and, as was the custom in those barbarous times, had been castrated by them.

The sufferer refers to his disability in the following moving terms:

“And when he came near he said: ‘Cyrus, see now I give you all these my possessions: use them whenever you have need: and regard all my other goods as your own. For I have not and never shall have a son, born of my body, to whom I shall leave my property. No! My whole family and name must needs be extinguished at my decease.’ ‘Yes, and Cyrus,’ he went on to say, ‘All this has happened to me though I never did or said a wrongful or shameful thing to anyone. This I swear by the gods, who see and hear all things.’ And at these words he broke down and burst into tears at his condition, and could say no more.”

I hold that eugenic sterilization is unjustifiable and a crime to humanity.

Dr. BARKAS said that she found herself rather in agreement with Prof. Bolton. The point he had made as to the psychogenic aspect of the subject was extremely important, but it was necessary to draw a clear distinction between those who suffered from mental illness, and those who had never attained normal development. She had not had much to do with mental defectives, but from what she had read it seemed that a very considerable proportion of them had come from defective stock. It seemed on the evidence that high-grade defectives who were lacking in moral values were frequently people who had large families, and that such large families tended to be still more defective than their parents and to produce an increasing burden for society.

In New Zealand not very long ago a rather good bill was brought before Parliament for dealing with mental defectives. The bill proposed a social register and the making of certain safeguards compulsory. The bill had a sterilization clause, which was wiped out because public opinion confused the mental defective with the psychotic.

She thought that in view of the many evils which mental defect involves to

society, and taking into consideration that local authorities were not going to make adequate provision for the mental defective, there was a great deal to be said in favour of sterilization. The mental defective would not suffer by it, but she thought the Association should oppose sterilization in all psychotic cases, and that it would be most deplorable if sterilization were suggested to them on discharge.

Voluntary sterilization seemed a farce in the case of mental defectives. They would not understand what they were consenting to, and their consent would probably be "wangled." She thought that if such a measure were thought worth while, in the hope of preventing a further increase of mental defectives, it should be definitely introduced as a social necessity.

There was one thing more. What method of sterilization was to be used? We should know a good deal more about methods of sterilization by X-rays and radium, how far the effects were temporary, and how far lasting.

Dr. RUSSELL said Prof. Bolton had pointed out that it was quite hopeless to try to produce supermen by selective breeding. That, however, was not proposed. It was not proposed to produce the higher grades, but rather to eliminate the lower ones. Prof. Bolton had referred to our attempts to interfere with Nature. But if we were not constantly interfering with Nature a very large proportion of the mental defectives would not survive. It was very difficult to conceive how an idiot or an imbecile of so low a grade as to be incapable of attending to its own wants could possibly survive after its mother had ceased the ordinary attentions of infancy.

He thought it a great pity that in this discussion they bracketed together the psychotic people and those who suffered from congenital mental deficiency. They were controlled by two different Acts of Parliament, and it seemed to him that they ought to be considered separately with regard to sterilization.

As to the operation of sterilization, he thought there was a tendency to approach the subject from the wrong direction. Only very recently it seemed to be the general opinion that there was no law to forbid sterilization amongst people of sound mind, and the gynæcologists had never stopped to think whether it was legal or not. The lawyers seemed to be in doubt. But a certain law authority had stated that it constituted the crime of maiming, presumably because the operation was not directly intended to remedy a diseased condition. But if we accepted such a statement without any question, our practice would be considerably restricted. Sometimes people, not being pleased with the appearance of their teeth, went to a dentist for an artificial denture which looked better. It seemed to him that the dentist was equally guilty of maiming. Likewise the surgeon who removed the gall-bladder of an apparently healthy typhoid carrier; or the plastic surgeon who performed a beauty operation.

He would like to submit that any person of sound mind and mature age should have the right to authorize any recognized surgical operation upon himself, with the exception of any particularly specified by law. He thought that should be one of the rights of a person of sound mind. The position with regard to eugenic sterilization would then be entirely different. It would not be a question for Parliament to introduce a Bill permitting it in certain cases. It would seem rather that we should require in the Mental Deficiency Acts some clause which would regulate or prohibit it in the case of defectives. The discharged and recovered psychotic patient would, of course, be legally a person of sound mind.

We usually did, and ought to, consider any form of treatment first in the interest of the patient, and secondly in the interest of the community. He submitted that sterilization was in the interest of those defectives who were not allowed to be free amongst the community lest they should have children. It was very difficult to believe that these girls were not national slaves. They were entirely under the will of the Government, and deprived of their freedom. Under the present system they might remain so all their lives. With the benefit of an operation they would have freedom. That was from the patient's point of view, which, he thought, was not receiving very much consideration in the discussion on this subject.

From the point of view of the community and the ratepayers, no one would be bold enough to say that the problem of mental deficiency would be solved by sterilization, but even if the total number of defectives were not reduced it would be an advantage to have a larger proportion of them in their own homes. And he believed that the total number would be reduced, although statistical reports would probably not indicate the reduction, since the majority of defectives had

not been put on the official lists. Whatever measures were adopted, the official numbers would increase. His chief fear with regard to the proposal was that it could not be efficiently carried out. Of the cases he saw, nearly everyone had had one or more children before being certified, and he feared that as we were now too late in certifying, we should also be too late in sterilizing. He would therefore suggest the legalizing of abortion in the case of duly certified mental defectives, with, of course, due restrictions.

Some would say it was revolting and others that it would be subject to great abuse. He did not think the average woman looked upon the idea of abortion as repulsive. It was freely spoken of without any sign of horror. It was also difficult to see how it could be abused, because the patient would require to go through all the procedure of certification, and if subsequently found to be not defective, the medical officers who certified would be answerable for their action.

With regard to the psychological effect of sterilization, he did not think that mental defectives were a very sensitive or introspective class of people, but if they were capable of suffering from feelings of inferiority as a result of this condition, they had as much reason to feel inferior when they had been certified, detained in an institution, and allowed out on licence on the strict condition that they should not marry or have children. That he thought, would be quite as hurtful to any sensitive person as the operation.

Dr. BAUGH said that, as Dr. Russell had pointed out, a number of defectives were detained because it was not safe for them to be allowed with the other sex. He referred to the cases instanced by Dr. Russell, who would be willing to accept sterilization to set them free. That was the point in his mind—that the defectives had a lower intelligence; they thought that they would be given safety by being sterilized. If these women were set free they thought they would be able to lead immoral lives with safety, and that was a question which would have to be considered from the point of view of the general moral standard of the world—whether it would be safe to set free a lot of immoral, unstable people.

The question of consent in the case of the defective seemed to him absurd. If a person was really defective consent could be "wangled." There should be no "voluntary" sterilization.

Dr. EWING said it was a great advantage to have had Prof. Shaw Bolton to open this discussion. It was significant, he thought, that so acknowledged an authority on mental abnormality should emphatically reject the suggested application of sterilization as a means of preventing the social burden created by this inevitable human failing. Since public attention had been directed to the proposal to legalize voluntary sterilization of mental defectives and cases of recovered insanity, it was opportune that the subject had been put down for discussion at this meeting. In the first place he submitted it might be advisable to consider the evidence we possessed as to the causation of these conditions, and of the respective rôles played by heredity and environment. It was on our own knowledge of these factors that our efforts to deal with the problem should rest. The report of the Mental Deficiency Committee was the first statistical statement and analysis of the facts that we had concerning mental deficiency. Certain of the figures it contained and the deductions in relation to them were necessarily built on assumptions. He instanced, in this respect, the hypothetical "social problem" or "subnormal" group, estimated to comprise 10% of the whole population. This group was looked upon as the reservoir from which originated the contamination of mental degeneracy. There was also the question as to there being any real increase on that of the previous ascertainment. As to our statistics of inheritance in insanity, he thought it would be generally admitted that they were partial and lacking in detail and accuracy.

Referring to our knowledge of the complex problem of inheritance, he said opinions were divergent and undetermined. The researches of genetic science did not yet provide any formula for predicting the results of human matings.

The environmental factors of causation were as yet vague and speculative. These gaps in our knowledge, far from warranting legislative sanction for sterilization, merely formed the bases of future research. The alleged menace to the race of mental deficiency and insanity had been with us since the "first bleat of anthropological man," and would probably remain until the end.

The environment of the masses of our population was undergoing a profound transformation, which he submitted was of greater concern to the eugenicist, the

politician and the taxpayer than any scheme of sterilization could be, and he was convinced it was to the factors involved in it that we should look for any practical amelioration of this problem.

Prof. BOLTON, in replying to the discussion, said that it was difficult or impossible to summarize the question, and he would therefore confine his reply to such matters of interest as had appealed to him.

He remarked that the subject of mental deficiency was much more complicated than was thought by most people, and that it was impossible to fix an arbitrary standard as a basis for diagnosis. He drew attention, for example, to the case of lack of moral sense mentioned by Dr. Baugh where, without his scientific knowledge of the history of the case, it would have been impossible to detect any degree of mental deficiency. In this connection he referred them to the relatively low mental type of the population of certain areas of the North Riding which had been noted by Dr. Russell, and he compared this observation with his own experience in East Sussex. He remarked that the mentality in rural districts might readily be regarded as subnormal on the basis of the standard of large towns, although it would not be justifiable to compare such a population with the submerged mental tenth of cities. It was, therefore, impossible to judge of the existence of mental deficiency on the basis of mentality alone.

Prof. Bolton next referred to the question whether unmarried women who had had one or two illegitimate children should be sterilized in order that they might be discharged from workhouses. This was a detail specially emphasized by Dr. Russell, who stated that he knew several such cases who were voluntarily awaiting sterilization in order that they might obtain their discharge. He remarked that he took a different view from that of Dr. Russell. He regarded the question as more complicated. From his point of view it was not a question of whether any person was willing to be sterilized, but whether it was right that a person should be allowed voluntarily to submit to sterilization, and he drew special attention to the fact that such individuals would rarely appreciate the nature of the operation and the gravity of the permanent maiming which would follow it. He opposed sterilization because he regarded it as anti-social from the point of view of our moral standards. As far as he was concerned, he would sooner risk permanent detention than submit to being made into what was practically a eunuch in order that he might be granted his liberty; he would sooner be a whole man inside an institution or prison than half a man outside. He did not consider that we should be doing our duty to mental defectives by sterilizing them and turning them out into society solely to save ourselves from expense and trouble in looking after them. Mental deficiency was the penalty of our civilization, and it was a penalty which we ought to shoulder and not endeavour to evade. If the State decided to sterilize, let it sterilize, but without asking the patient. Should a nation be so unwise as to commit what, in his opinion, was a crime, it should commit it honestly and not hide behind the supposed free will of the patient. If it wished to do wrong let it do so without making any excuse.

Members were afterwards kindly entertained to tea by Dr. and Mrs. Ewing.

SCOTTISH DIVISION.

THE AUTUMN MEETING of the Scottish Division was held at the Jordanburn Nerve Hospital, Morningside Park, Edinburgh, on Friday, December 5, 1930.

The following members were present: Drs. R. B. Campbell, C. C. Easterbrook, T. C. Mackenzie, J. H. C. Orr, Patrick Steele, C. A. Crichtow, J. H. MacDonald, Donald Ross, W. Tuach Mackenzie, J. H. Skeen, W. Boyd, A. M. Dryden, A. J. Brock, C. J. Shaw, J. R. Robb, J. Macleod, Alexander Dick, R. D. Hotchkis, R. D. Clarkson, S. H. MacLachlan, M. E. McLaren, T. R. C. Spence, W. J. Rait, D. McMillan, Angus MacNiven, Aidan Thomson, W. D. Chambers, W. R. D. Fairbairn, George Gibson, D. J. Forbes, R. Bailey, W. H. Bryce, T. A. Munro, R. Dods Brown, A. Ninian Bruce, J. Borrie Harris, W. M. Harrowes, Neil T. Kerr, W. M. Buchanan, J. Ivison Russell, Prof. Robertson and Dr. R. Mary Barclay.

Dr. R. B. Campbell presided at the outset, and after expressing his thanks to

the officials of the Division for their help during his term of office, introduced his successor as Chairman of the Division, Dr. Neil T. Kerr, who thereafter presided.

The minutes of the last Divisional Meeting were read, approved and signed by the Chairman.

Apologies for absence were intimated from Drs. D. K. Henderson, John Keay, Douglas McRae, S. R. Macphail, Henry Carre, J. McDougall, C. G. A. Chislett, Mary Knight and Sir Arthur Rose.

The Secretary read a letter of acknowledgment from Mrs. Macphail, thanking the members, on behalf of her husband, for their letter of sympathy and good wishes.

Dr. Douglas McRae was nominated for the position of Divisional Chairman for the year 1931-1932.

Drs. Douglas McRae and T. C. Mackenzie were nominated for the position of Representative Members of Council, and Dr. W. M. Buchanan for the position of Divisional Secretary.

The following candidate, after ballot, was unanimously admitted an ordinary member of the Association:

JOHN BORRIE HARRIS, L.R.C.P.&S.E., L.R.F.P.&S.G., Assistant Physician, Royal Edinburgh Hospital, West House, Morningside, Edinburgh.

Proposed by Prof. Robertson and Drs. T. R. C. Spence and M. E. McLaren.

The SECRETARY reported that he had again been unable to arrange a meeting of the Committee appointed to consider the method of nomination for divisional appointments, and was instructed to communicate with Drs. McRae and McAllister, inquiring if they still desired to press the points raised by them, failing which the meeting was of opinion that the Committee should be discharged.

The SECRETARY reported that, as instructed, the question of the marking of the May final examination papers had been raised at the quarterly meeting of the Educational Committee at Oxford in the month of July. Similar dissatisfaction with the marking was also expressed on behalf of the Irish training schools. The standard of one of the examiners had been found to be much higher than usual. In fairness to the candidates this examiner had consented to a reassessment of the papers marked by him, and as a result, forty additional passes had been notified to the training schools in Scotland.

Dr. T. C. MACKENZIE, having asked for explanations of several points in the new Regulations and Rules for the Nursing Certificate Examination (both as revised, February, 1930) inquired by what policy the Educational Committee was actuated in making the recent changes. It almost appeared as if an effort was being made to approximate the examination for the Association's Nursing Certificate to that of the General Nursing Council's, and he deplored this, considering that with the differences presently existing between the two examinations, that conducted by the Association was much the more suitable for mental nurses.

Several other members concurred, and expressed the opinion that too many changes in the Nursing Examination had recently been rushed without full consideration.

The meeting instructed the Scottish members of the Educational Committee to raise the question at the next quarterly meeting.

On the motion of Dr. T. C. MACKENZIE, seconded by Dr. R. B. CAMPBELL, it was unanimously agreed to request the Educational Committee to postpone the date when the Revised Rules and Regulations come into force from May, 1931, till November, 1931.

Members were kindly entertained to lunch, after which Mr. T. M. GARDINER, Chairman of the Board of Managers, welcomed the Division to Jordanburn, and Dr. NEIL T. KERR thanked the managers and Prof. Robertson and his staff for their hospitality and for the arrangements made in connection with the meeting.

After lunch members were shown the accommodation for early treatment, including the University Psychological Clinic for Children and Juveniles, the Out-Patient Department, and the Jordanburn Nerve Hospital. The rearranged hospital accommodation at the West House, Morningside, and the recently unveiled bust of Pinel were also inspected.

On the reassembly of the meeting, Prof. ROBERTSON, in a short address, outlined the essential features of a comprehensive scheme for the prevention and early treatment of mental disorders, and described how provision had been made for each of these features in association with the Jordanburn Hospital.

Dr. DREVER gave an account of the types of case seen in the Psychological Clinic, and of the methods of investigation and treatment.

Dr. ANGUS MACNIVEN described the work of the Out-Patient Department.

Dr. T. R. C. SPENCE, in an analytical review of 100 consecutive cases admitted to the wards, described the forms of mental disorder and the results of treatment, and Dr. M. E. McLAREN gave detailed descriptions of some illustrative cases.

An interesting discussion followed, which was contributed to by Drs HARROWES, AIDAN THOMSON, R. M. BARCLAY, J. H. MACDONALD, A. J. BROCK, DODS BROWN, T. C. MACKENZIE, R. D. CLARKSON and Dr. J. IVISON RUSSELL, the Secretary of the Northern and Midland Division. Prof. ROBERTSON shortly replied.

A vote of thanks to the Chairman terminated the business of the meeting, after which members were kindly entertained to tea.

IRISH DIVISION.

THE AUTUMN QUARTERLY AND CLINICAL MEETING of the Irish Division was held at Portrane Mental Hospital, Donabate, co. Dublin, on Thursday, November 6, 1930, by the kind invitation of the Committee of Management and Dr. J. O'Connor Donelan, Medical Superintendent.

The following members were present: Dr. Richard R. Leeper in the chair, Drs. J. O'Connor Donelan, J. Mills, D. L. O'Kelly, W. Eustace, J. C. Martin, G. H. Keene, F. J. Deane, Stanley Blake, B. Lyons, Eveleen O'Brien, D. E. Allman, John FitzGerald, P. J. Cassin, B. F. Honan, C. B. Molony, K. Dillon, J. Dunne, J. Kearney, and R. Thompson, Hon. Sec.

The minutes of the previous meeting were read, approved, and signed by the Chairman.

Before the business of the meeting was undertaken, the Chairman informed the members of the sad news he had just received of the death of Dr. Owen Felix McCarthy, Medical Superintendent of Cork Mental Hospital. He paid a high tribute to the personal and professional qualities of Dr. McCarthy, and proposed that a letter, conveying the deep sympathy of the Division, be sent to Mrs. McCarthy.

The following were, after ballot, declared unanimously elected members of the Association:

FRANCIS DE SALES McMENAMIN, M.C., M.B., Ch.B.Edin., 28, Upper Pembroke Street, Dublin.

Proposed by Drs. J. O'Connor Donelan, R. R. Leeper and John FitzGerald. JOHN JOSEPH FITZGERALD, M.D.Durh. & Brux., Assistant Physician, Mental Hospital, Cork.

Proposed by Drs. Owen F. McCarthy, J. O'Connor Donelan and P. Moran. GEOFFREY J. HARRISON, L.R.C.P. & S.I., Assistant Medical Officer, St. Edmondsbury, Lucan, co. Dublin.

Proposed by Drs. R. R. Leeper, R. Taylor and R. Thompson.

The meeting learned with pleasure that the General Nursing Council of the Irish Free State had invited Dr. O'Kelly to allow his name to go forward for election to the Council.

The Spring Meeting was fixed to take place on Thursday, April 2nd, 1931, at the Royal College of Physicians, if convenient.

PAPER.—"Some Aspects of Dementia Præcox, with Special Reference to Modern Methods of Treatment," by J. KEARNEY, M.B., D.P.M., Assistant Medical Officer, Portrane Mental Hospital.

After a comprehensive review of the work done to elucidate the pathology of dementia præcox, the author gave the following account of his own results with the sulfosin treatment:

Few diseases have led to so many therapeutic and other efforts to find a cure as dementia præcox. Hence, when Dr. Loberg, of Sweden, instituted the treatment of dementia præcox by sulfosin, for the introduction of which treatment here we have to thank Dr. P. J. Dwyer, Deputy Medical Superintendent, we decided to adopt it with quite open minds. You will recollect that during Dr. Loberg's visit here last May, he read a paper on this subject before the members of this

Association at the Royal College of Physicians. In the course of that paper he mentioned that the fever therapy in cases of dementia præcox was not of recent growth, and recalled the early attempts of Donath (1907) and Lundvall (1909) with sodium nucleinate. Pascal and Davesne in recent years claimed improvement in 58 dementia præcox cases out of 103 by the treatment known as "Fixation Abscess."

We have followed the same procedure with sulfosin treatment as that adopted by Dr. Loberg, that is to say all cases have first been examined with a view to excluding other organic diseases, such as phthisis, etc., and have had their temperatures recorded morning and evening for a period of seven days prior to the commencement of the injections.

The injections are given intramuscularly in immediate proximity to the periosteum, at the junction of the middle and upper thirds of the thigh and on the external aspect. The important precautions to be observed are (1) that the sulfosin must be homogeneous. This can be effected by immersing the ampoule in tepid water for about 30 seconds and then shaking thoroughly. (2) Care must also be taken not to inject into a blood-vessel. The injections, especially the larger ones, are liable to cause a certain amount of local pain, but compresses of Burrows' solution give much relief.

The outstanding effects of sulphur applied parenterally in therapeutic doses are fever, leucocytosis, and lowering of blood-pressure and of the blood-sugar value. On account of the lowering of the blood-pressure it is advisable to administer either digitalis and strychnine or strophanthus during the course of the treatment.

We have in this mental hospital treated 27 cases in all, 6 females treated by my colleague, Dr. O'Brien, and 21 males by myself. The recorded duration of the disease in these cases ranged from one to ten years. The initial dose was in each case 1 c.c., and was given about 5 p.m. As the temperature begins to rise after ten to twelve hours, a record is taken every two hours from 3 a.m. the following morning. Each succeeding dose is increased by 1 c.c. up to 10 c.c., and is given after 24 hours' normal temperature.

Of the 6 females treated, one was sufficiently improved to be allowed to go home. Another patient showed obvious improvement, but unfortunately this only lasted about six weeks, and she relapsed to her previous condition. She is, however, undergoing a second course of treatment at present, and some improvement is perceptible. Of the other 4 females, 3 became more or less excited after each injection, and show no improvement, while the other remained unchanged.

With regard to the male patients, improvement has been noted in 8 cases. One of these has been in the institution for ten years, and his mental condition improved to almost normal. Prior to the commencement of treatment he was quite listless and apathetic, and only smiled inanely when questioned. He became quite rational in conversation and conduct. At the end of six weeks, however, he relapsed, and is gradually falling back to his previous condition. In 3 other cases there was marked improvement, and in the remaining 4 improvement was perceptible. In no case, however, was it maintained, and they relapsed in periods of from three to six weeks.

These figures show that of the 27 cases treated improvement was noted in 10, or 37%. Dr. Loberg's figure was somewhat higher, being 45.9%. He treated in all 135 cases and got improvement in 62. The improvement was of short duration in 50 of these 62 patients; in the remaining 12 it was maintained for periods varying from 3½ to 15½ months. Similar results have been recorded by Marcuse and Kallman, who obtained improvement in 16 out of 40 cases.

Dr. Loberg states that he found a distinct positive correlation between the average maximum temperature during the course of the treatment and the therapeutic results, but I have not found that to be the case. Furthermore, he noted a poorer reaction in the case of his female patients. In my series the reaction, in the case of female patients, as shown by the temperature, has been equal to that of the males.

With such a small number of cases, which were taken at random, the results may not appear at first sight very encouraging, but the fact that some improvement was obtained should stimulate us to further efforts in the treatment of this disease.

I am indebted to the Medical Superintendent, Dr. J. O'Connor Donelan, for his permission to carry out these investigations, and to quote work done in the hospital; to the Deputy Superintendent, Dr. P. J. Dwyer, for his assistance and

encouragement in adopting and carrying out the treatment, and to my colleague, Dr. E. O'Brien, for detailed information on the cases treated by her.

The paper was followed by a lengthy discussion on the ætiology and pathology of dementia præcox, in which the majority of the members took part.

At this stage Dr. Donelan took the opportunity of conducting the members to the newly-built farm houses and byres, where the members saw, amongst other things, the tubercle-free dairy herd and the recently installed modern milking plant.

PAPER.—"Treatment of Epilepsy," by EVELEEN O'BRIEN, M.B., B.Ch.N.U.I., D.P.M., Assistant Medical Officer, Portrane Mental Hospital.

[Abstract.]

This is a brief account of the treatment carried out in this hospital during the past few months. Chemotherapy solely was employed, and in all cases the general hygienic condition was kept at as high a level as possible. The procedure was as follows:

Every female epileptic patient was put under observation during the months of June, July and August. All fits were recorded on charts specially ruled for the purpose. Treatment for fits was in abeyance, but intercurrent infections, if any, were, of course, attended to if and when they occurred. On September 1st the charts were examined and those of the patients who showed no fits for the three months were eliminated; the others, numbering 37, were listed for treatment. I divided these into eight groups of 4 and one of 5. The cases were not picked—merely grouped together as their charts came to hand.

Group I was put on luminal $\frac{1}{2}$ gr. twice daily for 1 week.

" II " luminal sodium $\frac{1}{2}$ gr. twice daily for 1 week.

" III " gardenal " " "

" IV " gardenal sodium " " "

Dosage of all above to be increased by $\frac{1}{2}$ -gr. up to 5-6 gr. if necessary.

Group V was put on rutonal 3 gr. twice daily, increasing to 12 gr. if necessary.

" VI was put on Gelineau's dragées 2 daily for 1st week.

3 " 2nd and 3rd weeks.

4 " 4th week,

but increasing less rapidly if there was any improvement or if the individual was of delicate constitution.

Groups VII and VIII were put on mixtures:

Group VII:	Pot. brom.	} $\bar{a}\bar{a}$ gr. x.
	Sod. brom.	
	Ammon. brom.	
	Mag. sulph.	
	Liq. arsenicalis		$\mathfrak{Mij}$
	Aquam ad	$3j.$

Group VIII:	Pot. brom.	gr. xx.
	Mag. sulph.	gr. x.
	Boracis purif.	gr. v.
	Tinct. bellad.	\mathfrak{Mv} .
	Liq. arsenicalis	\mathfrak{Mij} .
	Aquam ad	$3j.$

The mixtures were given in ounce doses three times daily.

Group IX was put on weekly hypodermic injections of 5% solution of peptone (Auld's No. 2), beginning with \mathfrak{Mv} doses and increasing by this amount for the following three doses. A month's interval is allowed before the second course, which commences with \mathfrak{Mx} and three further doses of \mathfrak{Mxx} . Any subsequent dose will consist of four injections of \mathfrak{Mxx} .

In all cases the maximum dose was given as nearly as possible to the expected occurrence of the fits. If nocturnal the main dose was given at bedtime; if diurnal, in the morning as soon as the patient awoke. The Gelineau's dragées were always given after a meal, and where one dose was larger than the others it was given after the evening meal.

Notes on the drugs employed.—In the first four, luminal, luminal sodium, gardenal and gardenal sodium, the replacement of the ethyl group by the phenyl apparently modifies the depressant action on the cerebral functions in the direction of producing an earlier effect in the lower tracts, *e.g.*, the motor tract, than is produced by the typical narcotics of the fatty series. Rutonal is of the same class, but is much milder. This drug proved unsatisfactory, and after the first fortnight I gradually substituted the three bromides mixture in its stead. Gelineau's dragées consist of potassium bromide, picrotoxin, and arseniate of antimony. The picrotoxin in small doses curbs the attacks by controlling the spasmodic contraction of the vessels of the brain, and thus overcoming the cerebral anæmia. Arsenical preparations act on epileptics in several ways, but their chief value lies in their general tonic effect on the nervous system and in their bactericidal properties. This particular preparation is admirably borne even in doses twice as large as those of the other arsenical preparations. The combination of these similar drugs produces an effect more prompt and certain, and more marked than the equivalent dose of a single substance. Borax is said to facilitate the action of bromides—how I do not know. Moreover, as it acts in the blood like an alkali it flies in the face of Pierre's theory that epilepsy is due to a failure of the neutralizing powers of the blood, resulting in a fall of the hydrogen ion concentration—an alkalosis in fact. The treatment by peptone injections is based on the allergic theory of epilepsy, peptone being given on the assumption that it acts as a desensitizer.

RESULTS.

The treatment has been in force for two months only, so I am comparing the number of fits during that period with the number occurring in two previous months when patients were under observation.

	June-July (observation).	Sept.-Oct. (treatment).
No. of fits . . .	459	113
That is . . .	57 per week	14 per week.
That is . . .	8 per day	2 per day.

In other words, the number of fits has been cut down to one-quarter of what they were, giving an improvement of 75%.

Taking the groups individually there has been an improvement in each one. The best results were from :

<i>Luminal:</i>	Before.	After.
M. J. C—	5	2
M. D—	1	0
A. F—	3	0
M. S—	16	7
	—	—
	25	9

Improvement of 64%.

Sodium luminal:

T. C—	3	0
B. C—	22	2
M. D—	12	4
W. H—	62	10
	—	—
	99	16

Improvement of 83·8%.

Gardenal:

M. J. D—	61	2
M. Mc—	52	15
A. F—	32	4
B. K— (died of intercurrent disease) . . . . .	..	..
	—	—
	145	21

Improvement of 85½%.

Sodium gardonal :

M. T—	13	.	0
J. McG—	3	.	9
J. C. C—	11	.	3
M. G—	14	.	4
	<hr/>		<hr/>
	41	.	16

Improvement of 60.9%.

Gelineau's dragées :

B. K—	33	.	5
K. McE—	24	.	6
M. Mc—	11	.	4
M. A. S—	13	.	2
	<hr/>		<hr/>
	81	.	17

Improvement of 79%.

Three bromides :

C. J—	3	.	0
E. C—	2	.	1
K. H—	17	.	7
B. S—	2	.	4
	<hr/>		<hr/>
	24	.	12

Improvement of 50%.

Bromide and borax and belladonna :

M. McD—	1	.	0
E. S—	5	.	0
G. P—	2	.	0
A. K—	1	.	0
	<hr/>		<hr/>
	9	.	0

Improvement of 100%.

Peptone injections :

B. R—	2	.	1
M. R—	24	.	12
M. R—	13	.	8
A. L—	0	.	3
	<hr/>		<hr/>
	39	.	24

Improvement of 38.4%.

There was an increase of 6 fits in one patient on sodium gardonal, an increase of 2 fits in one on the three bromides mixture, and an increase of 3 fits in one on the peptone injections. With the latter group there was a tendency for the fits to occur shortly after the injections, and there was no diminution in their intensity and not much in their frequency.

AFTER-EFFECTS.

I must mention that there may be secondary effects, drowsiness, hebetude, nausea, rashes—urticarial and morbilliform. These generally appear with the larger doses of 5 gr. or more—so far I have not gone beyond—and have had no ill-effects. The symptoms may pass off in a day or two, but if persisted in treatment must be suspended. There is a real element of danger here. If any of the five drugs of the barbituric acid group is suddenly discontinued, the seizures may return with greater intensity and frequency, and status epilepticus supervenes. One should, therefore, reduce gradually, substituting bromides in increasing doses.

As regards the treatment in general, it involves a considerable amount of work, pharmacological as well as medical, but the results I think are a fair recompense for the labour involved.

On the motion of Dr. Deane, seconded by Dr. Martin, a vote of thanks was passed to Dr. J. O'Connor Donelan, Medical Superintendent, and the Committee of Management of Grangegorman Mental Hospital for their kind hospitality.

This terminated the proceedings.

The Treatment of Epilepsy," by JOHN FITZGERALD, M.D., D.P.M., Assistant Medical Officer, Grangegorman Mental Hospital, Dublin.

[Abstract of a paper read at the Summer Meeting of the Irish Division, held on July 10, 1930, at the Stewart Institution, Palmerstown.]

After a short historical introduction the author discusses the general treatment of epilepsy. He warmly advocates colony life for the epileptic, and points out the shortcomings of the usual mental hospital treatment. He then gives detailed instructions as to diet and general management of a case. Passing to "medical treatment," the principal drugs used are reviewed and their mode of action and methods of administration discussed. The author then gives his personal results with drug treatment as follows :

The tables give the results of eight groups of medical treatment on 40 epileptics under observation for twelve months. They were grouped without any consideration of the frequency and severity of their seizures. The number of fits—*grand mal* seizures—was recorded for a period of three months before patients were placed on a particular treatment, and then for subsequent periods of three months. In those cases in which there was no improvement after three months on one drug a change was made to another group, and so on.

GROUP I.—Gardenal.

Case No.	Number of fits for 3 months before treatment.	Number of fits for first 3 months on drug.	Number of fits for second 3 months.	Number of fits for third 3 months.
A ₁	8	0	2	9
A ₂	10	2	1	10
A ₃	111	44	3	1
A ₄	10	0	0	0
*A ₅	22	19	*	*
A ₆	2	0	0	0
†C ₂	5	9	0	Died of inter-current disease.

Of this group *A₅, who showed no material change in the number of his seizures, was transferred to Group III.

†C₂ was placed in this group, having shown an increase in fit incidence when in Group III.

GROUP II.—Sodium gardenal.

Case No.	Number of fits for 3 months before treatment.	Number of fits for first 3 months on drug.	Number of fits for second 3 months.	Number of fits for third 3 months.
B ₁	9	2	0	3
B ₂	73	40	4	7
B ₃	42	12	4	2
*B ₄	47	54	*	*
B ₅	7	1	0	0
†H ₃	12	13	3	5

*B₄, who showed an increase in his fit incidence, was transferred to Group III.

†H₃ was placed in this group, having shown an increase in fit incidence in Group VIII.

GROUP III.—*Luminal*.

Case No.	Number of fits for 3 months before treatment.	Number of fits for first 3 months on drug.	Number of fits for second 3 months.	Number of fits for third 3 months.
C ₁	71	4	0	0
*C ₂	5	9	*	*
C ₃	9	2	2	2
C ₄	9	4	0	0
†A ₅	22	19	15	23
‡B ₄	47	54	80	5

*C₂, who in this group showed an increase in fit incidence, was transferred to Group I.

†A₅, who showed no material improvement in Group I, was transferred to this group

‡B₄, who showed an increase in fit incidence in Group II, was transferred to this group.

§B₄, who again showed increase in fit incidence in this group, was transferred to Group VI.

GROUP IV.—*Sodium Luminal*.

Case No.	Number of fits for 3 months before treatment.	Number of fits for first 3 months on drug.	Number of fits for second 3 months.	Number of fits for third 3 months.
D ₁	38	15	11	1
D ₂	77	39	8	2
D ₃	13	4	0	0
D ₄	12	0	6	5
*G ₃	27	35	4	10
†E ₁	13	12	22	7

*G₃, who showed increase in fit incidence in Group VII, was placed in this group.

†E₁, who showed increased fit incidence in Groups V and VIII, was transferred to this group.

GROUP V.—*Rutonal*.

Case No.	Number of fits for 3 months before treatment.	Number of fits for first 3 months on drug.	Number of fits for second 3 months.	Number of fits for third 3 months.
*E ₁	13	12	*	*
E ₂	25	10	2	6
E ₃	8	0	0	0
E ₄	1	0	0	0
E ₅	36	10	7	2
†H ₅	11	14	2	0

*E₁, who showed no improvement in this group, was transferred to Group VIII.

†H₅, who showed an increased fit incidence in Group VIII, was transferred to this group.

GROUP VI.—*Mag. sulph., Pot. brom., Sod. brom., Ammon. brom., aa. gr. x, Liq. arsenicalis ℥ij, Aquam ad ʒj. Ft. haust. Sig. t.d.s. p.c.*

Case No.	Number of fits for 3 months before treatment.	Number of fits for first 3 months on drug.	Number of fits for second 3 months.	Number of fits for third 3 months.
F ₁	67	13	5	4
F ₂	20	2	5	3
F ₃	8	3	5	5
F ₄	5	0	0	2
F ₅	6	1	0	0
*B ₄	47	54	80	60

*B₄, who showed increased fit incidence in Groups II and III, was transferred to his group.

GROUP VII.—*Mag. sulph. gr. x, Pot. brom. gr. xx, Boracis purif. gr. x, Tinct. belladonnae ℥v, Liq. arsenicalis ℥ij, Aquam ad ʒj. Ft. haust. Sig. t.d.s. p.c.*

Case No.	Number of fits for 3 months before treatment.	Number of fits for first 3 months on drug.	Number of fits for second 3 months.	Number of fits for third 3 months.
G ₁	48	19	3	6
G ₂	31	4	9	Died of inter-current disease.
*G ₃	27	35	•	•
G ₄	11	1	1	4
G ₅	5	1	1	0
G ₆	4	1	4	0

*G₃, who showed increased fit incidence, transferred to Group IV.

GROUP VIII.—*Gelineau's Dragées.*

Case No.	Number of fits for 3 months before treatment.	Number of fits for first 3 months on drug.	Number of fits for second 3 months.	Number of fits for third 3 months.
H ₁	22	15	12	12
H ₂	45	21	7	7
*H ₃	12	13	•	•
H ₄	13	3	4	3
*H ₅	11	14	•	•
†E ₁	13	12	22	†

*H₃ and H₅ of this group, who showed no improvement, were transferred to Group II and V respectively.

*E₁, who showed no improvement in Group V, was transferred to this Group. He also showed increase in fit incidence in this group and was transferred to Group IV.

A study of the above results shows that in no one group was there a constant result. In all groups there were some cases which showed a marked improvement, some no change, and others an increase in fit incidence. The latter, on being transferred to other groups, in some cases showed an improvement, and in others no change, or even an increase.

These results are, of course, incomplete and inconclusive. It is evident that a year's observation could not possibly allow of all the different transfers from group to group; and again, where a patient was in a group after his fit incidence had been reduced, say, 50%, it is quite possible that trial in another group might result in a 75% reduction. However, from the results one may conclude that a drug which reduces the fit incidence in one epileptic does not necessarily do so in another, in whom an entirely different drug may effect the desired change.

A physician should never be satisfied with placing a patient on any particular drug. He should carefully note the effect of the drug on the fit incidence, and in the event of an unsatisfactory result try another remedy, in the hope that ultimately he will hit upon the drug which gives the maximum amount of relief. Obviously such a procedure will entail a lot of trouble, but one is fully recompensed if one can allay the condition, even in a limited number of cases. The promiscuous dosing of epileptics with one particular drug to the exclusion of others is to be deprecated—a practice only too prevalent.

During the last few months dialecetin has also been tried on a few cases. Its chemical composition is allylparacetamino-phenol and diallyl-barbituric act gr. 4½ and 1½, in tabloid form. No opinion can yet be expressed as to its advantages or otherwise.

Various theories of epilepsy—the toxic, the vaso-motor, the metabolic and the allergic—are reviewed, and forms of treatment based upon these are described.

The ketogenetic treatment is an attempt to increase the H-ion concentration of the blood by increasing the fats and diminishing the proteins and carbohydrates in the diet. The diet as used in this institution was as follows:

Breakfast: Olive oil 1 oz., margarine 2 oz., 1 egg, bran biscuits, and tea without sugar.

Dinner : Fat bacon 4 oz., cabbage, 1 pint beef tea, olive oil 1 oz., bran biscuits.
Tea : Tea or cocoa without sugar, margarine 2 oz., cheese 1 oz., and bran biscuits.
It was given a trial for a period of six months.

The results were very disappointing. It must be remembered, however, that all these cases were of well-established epileptic habit and many were well advanced in years. Several claims of excellent results have been reported from America, where the treatment has enjoyed an extensive trial. It would appear that the earlier a case is treated the better the prospects of amelioration or cure, and also that a favourable result is more likely in the younger subjects.

In the technique of the peptone treatment, introduced by Auld in an attempt to induce non-specific protein desentization, there is little to quote beyond strict asepis. Patients are treated by a course of hypodermic injections of a 5% solution of peptone (Auld's No. 2). The commencing dose is $\text{m}v$, and this is increased each week, rising to Mx the second week. The third week's dose is $\text{m}xv$, the fourth $\text{m}xx$.

At least a month's rest is then allowed before a second course is started, and this has a commencing dose of $\text{m}x$ and three further doses of $\text{m}xx$. Subsequent courses consist of four injections of $\text{m}xx$.

Up to date only two full courses of the treatment have been completed, the results of which are appended below.

The subcuticular route has been used in all cases, but it can also be injected intramuscularly or intravenously. There have been no complications, but sometimes a skin eruption, simulating the bullæ found in scabies, results. It subsides in a few days. The intravenous route gives rise at times to slight malaise and rigor.

In all cases the medical treatment has been reduced to half the dosage of the particular drug on which the patient was being treated previous to the injection.

The following is a tabulated result of the findings in 12 cases on whom the treatment was tried :

Case No.	Number of fits during 3 months before medical treatment.	Fits during 3 months on medical treatment.	Fits during first course of injections and subsequent month.	During second course of injections and subsequent month.
1	111	45	3	1
2	73	40	4	6
3	69	41	9	0
4	30	26	4	10
5	35	4	9	1
6	43	21	2	7
7	22	15	11	12
8	14	12	22	8
9	11	12	3	7
10	43	12	4	3
11	47	55	79	60
12	35	9	7	2

An examination of these results will not give any definite idea as to the success of this line of treatment, because the first course of injections was started too soon after medicinal treatment, and a fall in fit incidence might be due to a further beneficial action of the drug. However, it will be noticed that with the "critical dose" reduced by a half there was no increase in fit incidence, except in one case, which would go to show that this treatment is well worth a trial, when the beneficial effects of the drug treatment appear to be stationary. At a later date it is hoped to try this treatment as an initial treatment, and also on cases of *definite* stationary fit incidence, so as to be in a better position to decide as to its efficacy.

The psychogenic theory is considered at length, and the author concludes his paper with some general observations on treatment, thus :

Firstly I would like to stress the importance of a thorough investigation of the various bodily functions in all cases, and the paramount importance of restoring the various systems to correct functioning.

Focal sepsis should be remedied as far as possible by careful attention to dental hygiene. All sources of sepsis, sinus trouble, etc., should be cleared up, and errors of refraction corrected when possible.

Of the utmost importance is the care of the alimentary tract. Every effort should be made to restore it to a clean condition, regular elimination encouraged and constipation avoided.

The diet should receive careful attention, a point which I think I have fully stressed in the earlier part of this dissertation.

With regard to the medicinal treatment, I would urge careful methodical investigation of the effect of the various drugs, so that "no stone is left unturned" to find the drug of maximum benefit to each individual epileptic. Personally, I am convinced of the importance of this point, and fear that even at the present day the habit of prescribing one drug for all epileptics is only too prevalent.

Now, if at any stage the patient's condition becomes stationary, other lines of treatment should be tried—for example, the ketogenic and desentization treatments.

Having followed this line of treatment for even such a short period as twelve months I have had very encouraging results. I kept careful records of the cases of 38 patients for that period. The total number of fits for the three months previous to treatment was 993, and for the last quarter of the year 201—a decrease in fit incidence for all cases of just 80%.

In conclusion I would like to thank Dr. Steele, of Middlesbrough, for his kindness and assistance, which was always forthcoming whenever I approached him.

I am indebted to the Medical Superintendent, Dr. J. O'Connor Donelan, for his permission to carry out these investigations and to quote work done in the hospital.

ANNUAL MEETING, 1930.

The following contribution to the discussion on Dr. Gibson's paper ("Mental Changes in Cardiac Disease") was inadvertently omitted from the October number:

Dr. A. HELEN BOYLE said: Having greatly enjoyed Dr. Gibson's paper I should like to contribute a suggestion on one point he mentioned.

He said, if I did not misunderstand him, that he had no explanation to offer why in cases with apparently similar lesions one did not get similar mental conditions. May it be that in some of the cases the necessary excretion of noxious substances was interfered with to the extent of causing confusional mental states, while in the others, with less of these toxins, the brain was less affected by the similar circulatory condition? In cases of high blood-pressure (such as 240 systolic) the mind is as a rule clear, but should the pressure in such cases fall the mind frequently becomes confused, with disorientation for time and place and sometimes hallucinations. That this is due to the fall may be shown by the fact that when it is again raised the brain clears with rapidity, and the high pressure, if menacing in other ways, can be reduced safely, from the mental point of view, only if excretion can be effectively secured by means such as steam baths, colon douches, very free consumption of liquids, etc.

I suggest that in the cases which showed little mental disturbance the eliminative organs were efficiently excreting, even with a low pressure and poor circulation, but that in those which were mentally perturbed, the patients, with lowered blood-pressure and poor circulation, were unable to rid themselves of substances which irritated their brains.

EDUCATIONAL NOTES.

The Maudsley Hospital, Denmark Hill, S.E. 5 (University of London).—Lectures and Practical Courses of Instruction for a Diploma in Psychological Medicine, Course XIV, 1931, Part II.

Twelve Lectures on Morbid Psychology. By Edward Mapother, M.D., F.R.C.P., F.R.C.S. On Wednesdays, commencing March 4, 1931, at 2.30 and 4 p.m.

Six Clinical Demonstrations in Psychiatry. By Edward Mapother, M.D., F.R.C.P., F.R.C.S. On Wednesdays, commencing April 22, 1931, at 2.30 p.m.

Eight lectures on Treatment :

Two Lectures on General and Routine Treatment. By Sir Hubert Bond, K.B.E., D.Sc., M.D., F.R.C.P. On Tuesdays, March 3, at 2.30 p.m., and March 10, 1931, at 4 p.m.

Two Lectures on Drug Therapy. By F. L. Golla, M.B., F.R.C.P. On Tuesdays, March 17 and 24, 1931, at 4 p.m.

Four Lectures on Special Therapy. By J. S. Harris, M.D., M.R.C.P., D.P.M. On Tuesdays, March 31, April 14, 21, and 28, 1931, at 4 p.m.

Twelve Clinical Demonstrations in Neurology :

Six by James Collier, M.D., F.R.C.P. On Thursdays, March 5, 12, 19, 26, May 7 and 14, 1931, at 2.30 p.m., at the National Hospital for Paralysis, Queen Square.

Six by F. L. Golla, M.B., F.R.C.P. On Thursdays, April 9, 16, 23, 30, May 21 and 28, 1931, at 3 p.m., at the Hospital for Paralysis and Epilepsy, Maida Vale.

Two Demonstrations on Abnormalities of the Fundus Oculi. By R. Foster Moore, M.A., B.Ch., F.R.C.S. On Mondays, April 13 and 20, 1931, at 2.30 p.m.

Eight Lectures on the Psychoneuroses. By Bernard Hart, M.D., F.R.C.P. On Mondays, commencing April 27, 1931, at 3 and 4.30 p.m.

Four Lectures on Mental Abnormalities of Children. By William Moodie, M.D., M.R.C.P., D.P.M. On Wednesdays, commencing April 22, 1931, at 4.30 p.m.

Six Lectures on the Practical Aspect of Mental Deficiency. By F. C. Shrubbsall, M.D., F.R.C.P. On Tuesdays, March 3, at 4 p.m., and March 10, 17, 24, 31, and April 14, 1931, at 2.30 p.m.

Four Lectures on the Legal Relationships of Insanity. By Sir Hubert Bond, K.B.E., LL.B., D.Sc., M.D., F.R.C.P. On Fridays, April 24 and May 1, 1931, at 2.30 and 4 p.m.

Six Lectures on Crime and Insanity. By W. Norwood East, M.D., M.R.C.P. On Tuesdays, commencing April 21, 1931, at 3 p.m.

Three Lectures and demonstrations on Laboratory Methods, including the Examination of the Blood and Cerebro-spinal Fluid. By S. A. Mann, D.Sc., F.I.C. On Tuesdays, commencing May 5, 1931, at 4.30 p.m.

Four Demonstrations on Pathology of the Central Nervous System. By Charles Geary. On Fridays, commencing May 8, 1931, at 2.30 p.m.

Fees for the whole of Part II, £10 10s.

Inquiries as to Lectures, Fees, etc., should be addressed to "The Director of the Central Pathological Laboratory," Maudsley Hospital, Denmark Hill, S.E. 5.

The Fellowship of Medicine, 1, Wimpole Street, W.1, will collect fees from and issue admission tickets to medical men intending to take the course who are introduced by the Fellowship.

In addition to the special lectures and demonstrations of the above course, there is opportunity for clinical experience and instruction available at the Hospital. In particular there are a limited number of appointments available as clinical assistants; service in this capacity (either whole time or part time) is recognized by the various examining bodies as constituting the clinical experience required by the regulations for the diploma. Applications and inquiries regarding these clinical facilities should be made to the Medical Superintendent of the Hospital.

National Hospital, Queen Square, Bloomsbury, London, W.C. 1.—Courses of Post-Graduate Lectures are given thrice yearly during the months of February–March, May–June and October–November. The Courses consist of the following subjects: (1) Out-patient Clinics, on each weekday except Saturday, at 2 p.m. (2) Clinical Lectures and Demonstrations, Mondays, Tuesdays, Thursdays and Fridays, 3.30 p.m. (3) Lectures on the Pathology of the Nervous System, on Mondays at 12 noon. (4) Lectures on the Anatomy and Physiology of the Nervous System (if sufficient applicants), on Wednesdays and Fridays at 12 noon. (5) Clinical Demonstrations on Methods of Examination (if sufficient applicants), Tuesdays and Thursdays at 5 p.m.

The Fee for the Course, including Pathology Demonstrations, is £6 6s. For those who hold Perpetual Tickets, or Clinical Clerks, the fee is £4 4s.

Dr. J. G. GREENFIELD will give Eight Lectures on the Pathology of the Nervous System on Mondays at 12 noon. Fee included above.

Dr. J. PURDON MARTIN will give Ten Lectures on the Anatomy and Physiology

of the Nervous System on Wednesdays and Fridays at 12 noon, commencing on February 11th. The Fee for this Course will be £2 2s.

Dr. CARMICHAEL will give a Course of Twelve Demonstrations on Methods of Examination of the Nervous System, if sufficient entries are received, on Tuesdays and Thursdays at 5 p.m., commencing February 10th. The Fee for this Course will be £2 2s.

For attendance at the Out-Patient Clinics only the fee is £2 2s. for three months.

Mr. ARMOUR and Sir PERCY SARGENT operate at the Hospital on Tuesday and Friday mornings at 9 a.m., or at such other times as may be announced.

Any part of the Course may be taken separately. Special arrangements will be made for those unable to take the whole Course.

Fees should be paid to the Secretary of the Hospital at the office on entering for the Course.—J. G. GREENFIELD, Dean of Medical School.

A BRIEF ACCOUNT OF A TOUR TO SOME SCOTTISH MENTAL HOSPITALS.*

By B. F. HONAN, L.R.C.P.&S.I., D.P.M.,

Senior Assistant Medical Officer, Down County Mental Hospital, Downpatrick.

Does one get into a rut? Sometimes I am inclined to think that we, in our own hospitals, either by accident or design, do not see enough of how other people do the same work in their institutions. Mental diseases, as a rule, are the same the world over, yet how different are the methods adopted by alienists for their treatment. I can assure you that quite recently I have met a distinguished consultant who adopts and recommends bleeding up to 15 oz. as his treatment for all cases of mania or excitement. On the other hand, I have met another well-known superintendent who has not had a patient fed artificially for twenty-eight years.

To help to broaden one's outlook the Study Tour and Post-Graduate Education Committee of your Association has arranged various tours under the very able guidance of Dr. A. Edward Evans, and this is a brief account of this year's visit to some Scottish mental hospitals.

For details and statistics I must refer you to the annual reports of each mental hospital.

The Irish members of the party met at York Street Station, Belfast, on Monday, June 2, 1930, and proceeded *via* Larne and Stranraer to Dumfries. They arrived at midnight, to be met at the station by Dr. Evans, who, I might add, did not spare himself in looking after the comfort of each individual member.

The following are the salient points of the different institutions as they struck me:

Tuesday, June 3, 1930, the first day of our tour, was spent at the Crichton Royal, Dumfries. Dr. Easterbrook, Physician-Superintendent, met the completed party at the hotel, guided us to the hospital, and in a very picturesque little summer-house, giving a good view of the grounds, explained the procedure in Scotland regarding admissions, and the general lay-out of the three departments and houses of this well-known institution.

1. Voluntary patients, 70 to 80% of the private admissions. Usual procedure: Patient signs a request to General Board of Control, and if the latter's sanction has not been received, also to the Superintendent. He is then admitted, and must give three clear days' notice of his intention to leave. The rate-aided patients are sent in under certificate by the parishes, and are accommodated in the Third Department, which serves

* Read at a meeting of the Irish Division at Stewart Institution, Palmerstown, Chapelizod, Co. Dublin, on Thursday, July 10, 1930.

as the District Mental Hospital for Dumfries and Galloway. The very large proportion of voluntary admissions is thus among the private class.

2. Verandah nursing: The bedsteads remain permanently in the verandahs, but the mattresses and bedclothes are brought from the wards daily with the patients. There are fixed partitions between some of the beds both for the purpose of extra privacy and for isolation of excited patients.

3. Since the adoption of verandahs or open-air treatment, hydro-therapy, electro-therapy, etc., are reserved for the more intractable hospital cases.

4. The female nursing of male patients: Male attendant is only called in for bathing purposes.

5. South end of ward furnished and used as a sitting-room for convalescents of ward.

6. Dining halls: Well behaved patients take *table d'hôte* meals at tables for four, thus forming congenial groups.

7. Occupational therapy: The instructress is paid £5 weekly. There is a quarterly sale of work; prices, actual cost of materials, plus 10% for tuition, etc.

8. All new buildings have cross ventilation.

9. Bowling-greens as a form of recreation for elderly patients.

10. Huge and elaborate farm, where own stock is bred and reared. Electric milking is favoured because it is more economical and because of the scarcity of reliable labour.

11. The few major operations are done in the adjacent Dumfries Hospital, where the well-equipped operating theatre is ready day and night.

12. One magnificent detached Church for all denominations.

13. Beautiful one-storied new hospital, with 100 beds, recently completed for Crichton Hall Department. Cost fully £400 per bed, unfurnished, or £500 per bed, furnished. South-west ends of four wards finished in bay window style, and each fitted with three sheets of plate glass (8 ft. square) which give an uninterrupted outlook.

14. Nurses in proportion to patients: First department, 1 nurse to 2.5 patients. Second department, 1 to 5. Third department, 1 to 10. Rates for private patients, from 28s. per week in the third department, to £2 per week in the second department, and in the first department from £3 to £30 per week.

Wednesday, June 4, 1930.—We left Dumfries about 10 a.m., those not having cars as the guests of those who had, and took a circuitous route to the Glengall Hospital, Ayr. This hospital has 650 beds, and the Medical Superintendent is Dr. Douglas McRae.

1. Rate-aided institution. Eighty private patients. Voluntary admissions, 5% per annum. A fire occurred in April, 1929, which destroyed two Infirm Wards accommodating 45 patients of each sex. Dr. McRae states that it would now seem that electric wires, even in steel tubing, have only a life of some twenty years where the subsoil is clayey and the atmosphere humid.

2. Observation wards, divided by a glass partition into two portions. When a case is a source of annoyance to another, they can be separated by removal of one to the other portion, and still remain under observation. If necessary, patient may be transferred to a contiguous single room.

3. Verandah nursing of every case on admission. Green counterpane to save patient's eyes from glare.

4. Attendants, no uniforms. Women nurses in men's wards has been the practice for twenty-five years.

5. Artificial feeding abolished twenty years ago. The Superintendent holds that all his patients can be persuaded to take sufficient food without being artificially fed.

6. Staff: No specially printed rules nor affixing of notices. The Medical Superintendent makes his staff individually responsible for the care of every patient in the hospital, and for the welfare of the institution as a whole.

7. Segregation of epileptics or excited patients not recommended or adopted.

8. High percentage of patients employed, both men and women. The

laundry is practically without (noisy) machinery, and there is a considerable number of women patients employed, as is also the case in the kitchens, sewing-rooms, etc.; in all 150 women. 170 men in gardens; 20 in stores and workshops.

9. High percentage of women patients confined to bed, either for physical or mental illness. Men in bed, 20 out of 338 (6%). Women, 55 out of 306 (18%).

10. Sulphonal is the routine sedative employed, along with chloral and bromide. Paraldehyde is not used.

11. Disinfectants, as a routine, are not used, as they merely mask the "warning" smell, whereas thorough scrubbing with soap and water completely removes all trace of foul matter.

12. 50% of the nurses and attendants hold the certificate of the Royal Medico-Psychological Association.

We then proceeded to Glasgow, where our headquarters were the North British Hotel.

Thursday, June 5, 1930.—Our first day in Glasgow was devoted to the Royal Mental Hospital, Gartnavel, which has 540 beds. Medical Superintendent, Dr. D. K. Henderson.

1. This is again a Royal Institution, and therefore endowed. No rate-aided patients. High percentage of voluntary admissions. Approximately 50 patients confined to bed for treatment of mental symptoms, 26 for bodily ailments, and 40 for senility.

2. Huge nursing staff. Night staff alone, 20 nurses, 11 attendants. The maids number 55.

3. Verandah nursing in practice.

4. Occupational therapy. Skilled instructress who has teaching classes. Nurses assist in turn and are encouraged to learn handicrafts. There was a fine display of work done by patients.

5. Wireless: One set, Radio Magnet, which works 15 speakers in different wards.

6. Hospital: Rail with towel at the side of every bed.

7. Elaborate detail of examination of patients on admission, and later, if indicated. The examination notes are very full, but not according to a given schedule. Weekly clinical meetings of staff to discuss new patients.

8. Erudite papers were read by Dr. Henderson and his two assistant medical officers.

Friday, June 6, 1930.—At 9.30 a.m. we proceeded by train to the Hawkhead Mental Hospital, Crookston, which has 875 beds; the Medical Superintendent is Dr. J. H. MacDonald.

1. Main building, hospital and pavilions built at a cost per head of £428, including land, 331 acres. Operating theatre built 1927, cost £1,135. Enteric hospital built 1928, 20 beds, cost £9,853. Solarium, lecture theatre and occupational therapy workshop, 40 beds, cost £15,732. Recent cases needing rest, but not acutely ill, and some convalescent patients are treated in solarium, where there is a certain amount of risk taken with the windows on balcony. The admission wards, which are pleasant, airy and quiet, are separate from the sick wards.

2. Nursing staff: On day duty—nurses 44, attendants 45; on night duty—nurses 14, attendants 13. Patients sleeping under observation, 493, i.e., roughly 60%. Number of female nurses in male wards, 10. Kitchen and laundry staff, 19. Tradesmen, 26.

3. Artificial sunlight extensively used for (a) general health tonic effect, (b) skin diseases, (c) epilepsy with doubtful results.

4. Occupational therapy department: Attendants sent to technical schools, etc., to be trained.

5. Farmstead: Ayrshire cattle, certified tubercle-free. Galvanized steam chest for sterilizing milk cans. Here they rear their own pigs, as they consider it the only profitable way. We saw 20 litters.

6. Huge theatre with a cinema projector. Films rented at 35s. per performance.

At 3 p.m. we visited the Mental Wards at Duke Street Hospital, Glasgow, which are under the care of Dr. Ivy Mackenzie.

1. In structure like the ordinary wards of a general hospital, but male nursing for male patients. If patients become unmanageable they are sent to a mental hospital.
2. Treatment for all maniacs and excited cases, bleeding, up to 15 oz.
3. Treatment adopted for confusional or toxic insanity, insulin, beginning with 5 units twice a day.
4. Dr. Mackenzie considers the morning sickness of pregnancy as toxic and not psychic.

Saturday, June 7, 1930.—We left Glasgow at 9.30 a.m. and motored to Stoneyetts Mental Deficiency Institution, Chryston. Medical Superintendent, Dr. C. A. Chislett.

1. No young children, therefore no schools. Ages 14 to 70 years. 17% of all patients moral defectives; 40% of all patients epileptic. Patients employed at general work and occupational therapy. Athletics and amusements. Here we saw braces made from discarded motor tubes, and mats from worn motor tyres. We were entertained to a very accomplished display by the patients. Ten miles away building is in progress for a new institution around Lennox Castle to house 1,000 mental defectives. Cost £400 to £500 per bed. As there is no State Institution in Scotland for dangerous defectives, Stoneyetts will still have to look after its own of this class.

In the afternoon the party motored to the Dreadnought Hotel, Callander. That evening, as the guests of the Lord Provost and Corporation of Glasgow, we enjoyed a motor-boat trip on Loch Katrine, which was followed by a coach drive to Rob Roy's Cave on the shores of Loch Lomond. This outing was very kindly arranged by Dr. McCutcheon, of Glasgow.

Whit-Sunday, June 8, 1930.—A delightful day was spent in the Highlands, where the scenery was at its very best.

Whit-Monday, June 9, 1930.—About 9.30 a.m. we left Callander and motored to Perth to James Murray's Royal Asylum. Medical Superintendent, Dr. W. D. Chambers. 190 beds. Rate, from £90 per annum to £500 per annum. 65% of the patients are voluntary boarders.

1. Part of hospital destroyed by fire six weeks previous to our visit. Cause, sparks from a chimney 60 yards away.
2. All excited and refractory patients treated in bed.
3. Verandah nursing in detached verandahs, back walls of which carry ventilators. Lower half of roof, wood, not glass.
4. Shelters in use, some for 4 beds.
5. Plans out for new hospital; to cost from £400 to £500 per bed.
6. In a short, interesting lecture the Superintendent explained Scottish procedure, and stated categorically that, in his opinion, no nursing home could take the place of asylums for acute cases.

In the afternoon, under the guidance of Dr. Gibson, Deputy Commissioner, Dr. Sturrock, Medical Commissioner, and Mr. Wood, Secretary to the General Board of Control, we visited some boarded-out patients. In one enlarged cottage we found three very happy and contented women, who were the sole support of the lady of the house. Usual rates paid for maintenance, 8s. to 18s. per week.

In the next village were three men living in the house of a small farmer, whom they helped in his work.

Lastly we saw three patients living with and helping the proprietress of a prosperous dairy farm.

1. Only harmless, old, or partially demented patients boarded out.
2. On the whole no ill-feeling by neighbours.
3. Housewives paid according to usefulness of patients.

Remarks against boarding-out principle:

1. Institutions deprived of very useful workers.
2. Patients are perhaps no happier, if as happy. They miss communal life.
3. Just one room for their three beds.
4. Patients are evidently sometimes the butt of boys' ridicule. At least the dairy wife gave this as her reason for not encouraging her patients to go to amusements, etc., in the village.

The same evening we continued our journey to the North British Hotel, Edinburgh.

Tuesday, June 10, 1930.—In Edinburgh our first Institution was the Edinburgh District Mental Hospital, built on the villa system, and known as Bangour Village. Medical Superintendent, Dr. John Keay.

1. Shop in grounds for patients and their visitors.
2. Open-air wards in the form of large verandahs; fitted with roller shutters for use in inclement weather. Female nursing of male patients in admission and hospital blocks and two villas of 60 patients each.
3. Large recreation hall with cinema projector. Pictures cost £3 8s. for each performance.
4. Elaborately equipped villa for massage, hydrotherapy, electrotherapy, actinotherapy and physical exercises. Staffed by head masseuse with 2 male and 2 female assistants. Out-patient treatment carried on.
5. Villa for special treatments, comprising X-ray rooms, ear, nose and throat theatre, eye theatre, dental theatre and chiropodist's room. *N.B.*—These villas (under 4 and 5) are detached. Patients are brought to them for treatment by the visiting specialists. The medical staff consider it no disadvantage to have them separate.
6. Detached hospital of the sanatorium or solarium type near special treatment villa for 24 patients of each sex. On each side a ward of 20 beds and four separate rooms. Large windows fitted with Vita glass.
7. Large central kitchen with glass-roofed vestibule which serves the kitchen and the general store. Motor wagon fitted with 30 compartments carries food to the patients' residences in from 2 to 7 minutes.
8. Farmstead, dairy, "Vaccar" milking machine. Grade A (T.T.) milk. Breed own dairy stock.
9. Memorial church, initiated by the Medical Superintendent and Mrs. Keay, and built by their efforts and those of the staff, patients and friends, with the encouragement and assistance of the Board of the Hospital.

Wednesday, June 11, 1930.—We had an interesting and stimulating pathological meeting at the Royal Infirmary, arranged by Dr. F. E. Reynolds, Superintendent of the Scottish Asylums Laboratory.

In the afternoon we motored to the Gogarburn Mental Deficiency Institution, which is also on the villa system. At present only a couple of villas built. Institution is to house 1,000 patients. To cost £480 per bed, unfurnished. When this institution is completed, it should be one of the finest of its kind in the world.

Thursday, June 12, 1930.—At 10 a.m. we were picked up at our hotel by a special 'bus and brought to the Royal Edinburgh Hospital, Morningside. Medical Superintendent, Prof. G. M. Robertson.

This hospital comprises four distinct branches:

1. Craig House: Rates from £4 per week upwards.
2. West House: Rates from £58 to £70 per annum. Again, voluntary admissions, verandahs, and the female nursing of male patients have long been established.
3. Jordanburn Nerve Hospital: 50 beds. Not under Board of Control. Large and well-fitted-up out-patient department. This hospital receives voluntary cases only, without any formality, like any general hospital, but they must be recommended by their own doctors in order to prevent any friction with general practitioners. At least 80% pay two guineas per week, others are admitted without payment, or at such rates as they can afford. No very excited, mentally deficient or wet and dirty cases accepted.
4. Nursing homes: None with more than 20 beds. Situation, city or country, as patient wishes. Patients' own doctors may continue to treat them, but Prof. Robertson or one of his assistants must decide whether the patient is a fit case to be treated in a nursing home. If the patient is depressed it is explained to the doctor that no responsibility will be accepted unless the patient is safely supervised. Usually the family physician asks Prof. Robertson in consultation or to take over the treatment. Noisy, excited, or wet and dirty patients not admitted in the ordinary Homes, but may be received in a special Home for this class. As there is a series of 10 linked-up nursing homes, classification is very complete. Terms, six guineas weekly. At this rate depressed cases are accepted, but must sleep

in observation wards of 6 or 8 patients. Special nurses, three guineas weekly.

This concluded the tour, but on Friday, June 13, 1930, there were three very instructive and lucid demonstrations of psychological methods of investigation by Drs. Drever, Mary Collins and Fairbairn.

Summary :

1. Acceptance of voluntary patients at every institution in Scotland. Early treatment at out-patient clinics in the cities
2. The large percentage of patients nursed in bed.
3. The large percentage under observation.
4. The general adoption of verandah nursing ; if not elaborate buildings, the use of any kind of structure. The female nursing of male patients. Occupational therapy, electric and hydrotherapy.
5. Recognized that Vita glass is only of use in special solaria, where whole body will be exposed.
6. Sedative drugs, sulphonal, chloral hydrate and hyoscine freely used.
7. Institutions lavishly carpeted and furnished.
8. Show of rhododendrons in grounds.
9. Hygienic farms—own stock bred and reared.
10. Boarding-out system.

I think you will agree that comment is unnecessary on the educational value of this tour as a whole.

In conclusion I would like to emphasize that the manner of our reception, the lavish hospitality we received at every institution, the kindness of those we met, will always remain a never-to-be-forgotten feature of the Scottish tour.

THE NEW BETHLEM HOSPITAL.

OPENING BY THE QUEEN.

It is a long step from October 23, 1247, when the Priory of St. Mary of Bethlehem was founded in Bishopsgate Without, London, to August 24, 1815, on which date the third hospital, known as Bethlem Royal, was opened in St. George's Fields, Southwark. Fortunately it is not our lot to tell the tale, for it has been most nobly written by the Rev. E. E. O'Donoghue in *The Story of Bethlehem Hospital*. Nor is it our purpose to follow the history of Bethlem Royal Hospital in the imposing buildings with its Ionic pillars to which it migrated on that day; that is written in the hearts of many grateful patients, in the pages of nearly every publication devoted to scientific psychiatry, and in the lives of the great physicians who have been its superintendents.

Our duty now is to record the opening of the fourth Bethlem at Monks Orchard, Eden Park, Beckenham, Kent, on Wednesday, July 9, 1930, by Her Majesty the Queen.

Her Majesty was welcomed by the Right Hon. Lord Wakefield of Hythe, President of the Hospital, a guard of honour being formed by male and female nurses.

Lord Wakefield said : " This is the fourth Royal Hospital of Bethlem which has been built for the maintenance, care and treatment of those suffering from mental illness. It is now entering upon a new era in its long existence, and we pray that under Divine blessing it may continue its sphere of usefulness. In the splendid grounds and modern buildings which we are looking forward with pride to showing Your Majesty this afternoon, we have everything that science and experience has taught us to employ in the treatment of this most difficult and calamitous of illnesses. We have spared no time or thought in planning schemes for the well-being of those under our care, and we have founded a school of research which we hope may be a benefit to posterity."

The Queen formally declared the Hospital open, after which a bouquet of pale pink carnations was presented to her by Miss Helen Faudel-Phillips, younger daughter of Sir Lionel Faudel-Phillips (Treasurer of the Hospital). A religious service followed, conducted by the Ven. Ernest Sharpe, Archdeacon of London.

The architects then presented to Her Majesty, in place of the usual gold key, an antique ivory Chinese vase, carved and coloured by hand. The Queen expressed her very warm thanks for the gift.

The Lord Mayor of London then spoke a word of appreciation of the work of Lord Wakefield, Sir Lionel Faudel-Phillips and their special committee. Mr. Arthur Greenwood, Minister of Health, expressed his thanks to the medical and nursing professions for their service to the cause of the insane. He said that Her Majesty's presence that day would be encouragement to other mental hospitals, and would promote interest in the Mental Treatment Bill, which awaited the Royal Assent.

As the Grenadier Guards played "God Save the King" Her Majesty passed out of the pavilion accompanied by the President, Treasurer and Physician-Superintendent, and proceeded to make a tour of the various wards and departments of the new Hospital.

The Governors state that they have reason to congratulate themselves on the generous response to an appeal for donations—a sum of nearly £50,000 was raised thereby.

Lord Wakefield has undertaken to defray the cost of erecting and equipping the Science and Treatment Laboratories, and Lady Wakefield the cost of the Chapel and equipment. In addition to these, Lady Cooper, *C.B.E.*, has given £5,000 for the erection of the Recreation Hall, in memory of her husband, the late Sir Edward Cooper, Bart. and Alderman, for many years a Governor of the Hospital. A further gift of £5,000 has been received from a generous donor who prefers to remain anonymous.

It is hoped that the up-to-date treatment and research at the new hospital will make the study of psychological medicine available to a large body of students.

The provision for the comfort of the patients varies considerably from the accommodation afforded in other mental hospitals, as apart from small four- and five-bed wards for special purposes, the patients are provided with single bedrooms all properly furnished, and in addition living-rooms and other amenities, such as obtain in good private houses. In Witley House (convalescent patients) the bedrooms have fixed wash-basins with hot and cold service.

The corridors offer means of exercise in inclement weather, and sunny day rooms, together with the billiard rooms for male patients and the writing and recreation rooms in the ladies' quarters, provide for the associate life of the patients.

Ample lavatory and bath accommodation is provided, and also special rooms for the use of the medical officers, for treatment and other special needs during the stay of a patient.

At the front of each building is an ornamental garden with a wide expanse of turf, giving ample space for exercise.

The private roads and the woodlands will be available for extended walks.

The requirements of the large staff of nurses have been met by the provision of a Nurses' Home, in which each individual has a separate bedroom. The Home is located with immediate access to a main thoroughfare.

A series of blocks of modern flats for married male nurses is contemplated. Other officers if married are provided with houses upon the estate, and if unmarried with quarters in the administration building.

Description of Buildings.

(Abstracted from Official Programme.)

Site.

The Hospital is situated on the Monks Orchard Road, Beckenham, and is some seven minutes' walk from Eden Park Station, Southern Railway, and about 10 miles from Charing Cross. The Monks Orchard Road going south enters Wickham Road, giving direct access to Croydon. The grounds extend to about 200 acres.

Lay-out of Hospital.

A drive on which is placed a gatekeeper's lodge leads direct to the Administration Building, which has the Sir Edward Cooper Recreation Hall attached thereto.

From the Administration Building a main roadway runs north to clearings in

the woodlands in which is situated Tyson House (36 men, 48 women). Off this roadway and running east and west is another main avenue on which, from the west, are placed Witley House, the convalescent unit (25 men, 35 women), Fitz-Mary House (64 women), and Gresham House (42 men). At the east end of this road is placed the kitchen and stores and the power house. Access to these for delivery of stores is by a secondary road leading from the main entrance avenue. In a secluded position with access on to this road a small mortuary is placed.

On the north side of the main avenue is placed the Lord Wakefield of Hythe Science and Treatment Laboratories.

The nurses' home is placed to the south of the main entrance drive, and the houses for the Physician-Superintendent, the Senior Assistant Physician and the Steward are placed towards the south-east. Dwellings for married subordinate officers and male nurses are situated in the Monks Orchard Road outside the Hospital grounds.

Ample areas are allotted to each unit for the exercise and recreation of patients, and in addition there is available some 150 acres of land devoted to dairy farming, gardens, orchards and woods. There is also ample space available, if needed, for cricket, football and hockey grounds.

The Lady Wakefield Chapel is placed to the north of the main entrance drive with easy access for patients and staff, and is the gift, with its fittings, equipment and organ, of Lady Wakefield of Hythe.

Administration Unit.

This building contains the necessary waiting-rooms for patients and their friends, with offices for the Physician-Superintendent and his clerical staff and for the Assistant Physicians. On the first floor is placed the Board Room. Bedrooms and sitting-rooms for the resident junior Medical Staff and quarters for the Matron are on this floor.

The Steward's offices are in this building, also office accommodation for the Matron and Head Male Nurse.

Direct entrance to the Recreation Hall is gained from the ground floor of this building.

The Sir Edward Cooper, Bart., Recreation Hall.

This is placed on the west of the main administration building and is arranged to accommodate 250 persons. It is completely fitted up with stage, dressing-rooms and property storage, and has suitable accommodation for a cinema projector and cloakrooms for both sexes.

Kitchen and Stores.

These buildings are placed at the focus of the main Hospital administrative roads and give full accommodation for all the necessary stores and the store-keeper. There is suitable kitchen and larder accommodation, with refrigerating plant and cold storage rooms. Accommodation of the restaurant type is provided for the meals of members of the staff other than female nurses.

Power House and Workshops.

These buildings are placed on the north side of the kitchen service court. The power house and workshops, with electric power plant and water-tower surrounding the main chimney-stack, are placed so as to form a strong dominating point in the complete scheme.

Steam boilers are installed for the generating of high-pressure steam for electric lighting and power, heating and hot-water services and kitchen.

Exhaust steam from the electric generating sets is utilized in calorifiers for raising the temperature of the circulating water for heating and hot-water services. This water is circulated to the various units by means of pumps.

Radiators of approved panel and hospital pattern are used throughout the buildings.

The generating plant supplies electricity at 230 volts direct current, and comprises two oil-engine sets and two back-pressure steam-engine sets, working in the manner described above. The plant will be run day and night continuously, as there is no battery installed. Two small emergency lighting batteries are installed,

one in the administration unit for the recreation hall, and one in the research unit for the operating theatre and adjoining rooms.

Electricity will be used for electrical treatment, in the central and service kitchens, for driving the cold storage plant, and for general lighting and power purposes.

An automatic system of inter-communication telephones is provided, linking up the different buildings, together with a fire-alarm system, and a synchronized system of electric clocks.

Mortuary.

The mortuary is properly equipped with *post-mortem* table, operator's toilet room, and a small room for devotional purposes.

The Lord Wakefield of Hythe Science and Treatment Laboratories.

This building is placed to the north of the quiet units and is convenient to all departments of the Hospital. On the ground floor accommodation is provided for hydrotherapy, massage, dental and electrical treatment, X-ray, psychotherapy, and a complete bath unit. The central dispensary for the Hospital with its stores is also placed in this building. On the first floor are the well-equipped research laboratories with a library and museum.

An operating theatre (with separate outside entrance) is provided, with adjoining recovery rooms and small accessory rooms for sterilizing, surgeon's toilet, etc.

The closest consideration has been given to this unit, which forms an exceptionally modern and well-equipped building not generally provided in mental hospitals, and is therefore noteworthy as giving a lead to the development of Bethlem Royal Hospital as a special study centre.

The Medical School at the old Hospital was recognized by the University of London, and this recognition, it is hoped, will be extended to the new Hospital.

Tyson House.

This unit for restless patients is placed to the north of the Hospital road in the thick woodland, large clearings being provided for recreation gardens. The unit is divided into two sections and is two storeys in height. On the women's side 48 patients and on the men's side 36 patients are provided for. These sections are separated by a central service kitchen and dining-rooms on each floor. Hydrotherapy Departments are placed in each section.

The unit is isolated from the rest of the Hospital by woodland.

FitzMary House.

Gresham House.

These are two-storey buildings, each storey being entirely self-contained, with its own dining-room, day-rooms and small service kitchen, so as to separate the patients into two sections in each unit as desired by the Board of Control. In the men's unit each floor will contain 21 patients, or 42 in all, and in the women's unit each floor will contain 32 patients, or 64 in all. Ample bed verandahs will be provided, and the whole is planned so as to give as much sunlight and air as possible to all rooms.

Witley House (Convalescent Unit).

(Associated patients.)

This is a two-storey building with its own dining-room, kitchen and lounge and recreation rooms, and is one building for both sexes, the men being placed in one wing and the women in the other. Accommodation is provided for 25 men and 35 women, and the unit is designed as far as possible to eliminate any suggestion of a mental hospital.

Nurses' Home.

This is situated on the south of the main entrance drive, and consists of three floors, giving bedroom accommodation for 90 nurses and servants. Recreation, study, reading- and dining-rooms are provided, also lecture and demonstration rooms. The whole unit is self-contained, and its situation gives ample detachment from the Hospital environment.

The associated architects for the buildings are : Mr. John A. Cheston, F.R.I.B.A., the hospital surveyor, and Mr. Charles E. Elcock, F.R.I.B.A. (of Messrs. Elcock & Sutcliffe), 60, Strand, W.C. 2.

The consulting engineers: Hot-water supply and heating—Messrs. Wingfield-Bowles & Clay, 28, Victoria Street, S.W. 1. Electrical plant, lighting, etc.—Mr. E. W. Dorey, A.M.I.E.E., Avenue Chambers, Vernon Place, Southampton Row, W.C. 1.

The general contractors : Messrs. Harold Arnold & Son, Ltd., Doncaster.

Contractors for heating and hot-water plant : Messrs. H. W. Dutton & Co., Ltd., 25, Victoria Street, S.W. 1.

Contractors for electric light plant, etc. : Messrs. Bell Bros. (London), Ltd., 7, Camomile Street, E.C. 3.

ST. PATRICK'S HOSPITAL, DUBLIN.

OPENING OF A NEW WING AND SPECIAL TREATMENT DEPARTMENT.

The Governor-General of the Irish Free State, on August 27, 1930, performed the opening ceremony of a new wing which, together with new provision for modern treatment, has been recently added to this historic Dublin institution.

Chief Justice KENNEDY, introducing His Excellency, expressed, on behalf of the Board of Governors, their great satisfaction at the honour being done them by His Excellency's presence that afternoon.

The GOVERNOR-GENERAL : I am glad to be associated with the opening of the new building which has just been added to this hospital. I need not enter into details as to the additional services which it will enable St. Patrick's Hospital to render to the mentally afflicted. The important points to recognize are that it will afford better facilities for methods of treatment which have in recent years been found to be beneficial, and that the already high percentage of recoveries among patients should consequently be raised in the future. I feel sure that you would like me to congratulate the Governors and the Medical Superintendent on being both willing and able to maintain the reputation of Swift's foundation.

History dwells on the personally pathetic side of Swift's generous bequest. It does not dwell on the difficulties of his executors in realizing that portion of the bequest which consisted in loans recoverable from poor men trying to develop business in Dublin. Swift's practical sympathy with poverty and suffering did not begin to operate only after his death, though his bequest made it possible to found the first, and for half a century the only hospital in Ireland for the relief of mental sufferers.

I am not going to occupy your time with an account of the development of this hospital nor with references to the distinguished medical men who have been associated with it, but I must mention one physician who was publicly thanked for his sympathetic efficiency. Dr. Emmet, the first paid physician, was the father of Robert Emmet. Each in his own way enriched our country by passing on an honourable tradition. The tradition handed down through this hospital from Dr. Emmet is still flourishing, but to-day medical services such as his are no longer recognized by personal presentations, but by affording greater opportunities of rendering efficient service. I know that Dr. Leeper places a higher value on the modern and less obviously personal manner of recognition.

I do not doubt that this hospital and its branch at Lucan will continue to preserve the eighteenth century traditions of charitable helpfulness and of sympathetic efficiency, and that its Governors will always, as now, recognize professional efficiency by removing obstructions to the application of steadily advancing medical knowledge.

Mr. J. A. MACONCHY said that they were sitting in a ward of what was called St. Patrick's Hospital, but was known as Swift's Hospital. So enshrined was the name of Swift in the hearts of the people that nothing could rob the hospital of that name. He came over practically a stranger, and in a few years he was the most idolized man in Ireland. His power of sarcasm had never been equalled, but behind his fierce, biting wit there was a wonderful strain of tenderness. His life

had been clouded by the dread malady of mental affliction, and all his fortune went to alleviate the sufferings of those who might become afflicted by the same disease. During the past thirty years the Governors, with Dr. Leeper, had remodelled the whole treatment of the hospital patients, and St. Patrick's was now in the first line of hospitals for the treatment of those whose minds became either temporarily or permanently afflicted.

Chief Justice KENNEDY said that he wished to make it known that Dr. Leeper was now President-Elect of the Royal Medico-Psychological Association, and to be President of that Association was, amongst men of his specialty, regarded as the highest honour they could attain. (Applause.)

Dr. LEEPER, who was received with applause, cordially thanked the Chief Justice for his kind remarks, and said that when the Association met next year in Dublin they might take it as a compliment to the country that the President was an Irishman. (Applause.)

Continuing, Dr. Leeper said: For the dawn of the treatment of the insane in the British Isles we must go a long way back. Let us go to the city of Bethlehem in the Holy Land. The basilica which enshrines the Cave of the Nativity was the starting-place of those who came to England to found a hospital for the insane. Pope Innocent IV's registers show that the Pope called upon the monks of St. Mary of Bethlehem to elect, as their Bishop, his Chaplain—Godfrey de Vico, of the Prefetti family. To this Godfrey de Vico a special encyclical letter was addressed, which was destined to cause the foundation of the institution known to half the world as Bedlam.

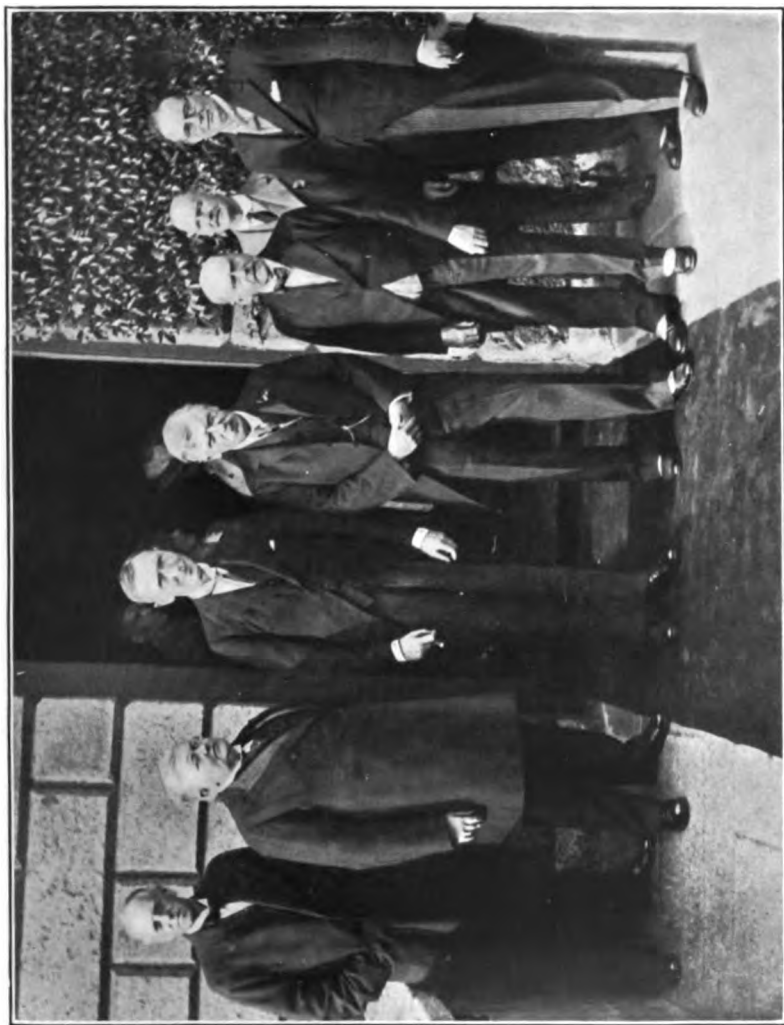
This institution was founded by the monks of St. Mary of Bethlehem in 1247, and was the first institution for the insane established in England. It is, to-day, the Bethlem Royal Hospital, rebuilt for the fourth time and re-opened, on its new site in Kent, by Her Majesty the Queen but a few weeks ago. The interest of all this is great to us here in Dublin, because our Founder—the immortal Dean of St. Patrick's—before he came here to Dublin, was a Governor of Bethlem Hospital. He was admitted a Governor, with Dean Atterbury, on April 26, 1714. No record exists of his attendance at Court or dinner, but in 1722, exercising—after a very long period—his privilege as a Governor, he nominated one Beaumont for admission to Bedlam. This is his characteristic letter:

“Beaumont is mad, in London, riding through the streets on his Irish horse, with the rabble after him and throwing his money about the street. I have sent to the Secretary of the Governors of Bedlam to have him sent there, as you know I have the honour to be a Governor.”

Swift surely had long sight when he wrote the digression on madness in the *Tale of a Tub*. Here he clearly set out the idea of mentality being influenced by what we call to-day the internal secretion of the glands of the body. Anticipating others who wrote long after him on the subject of the insanity of genius, he set out the theory that great conquerors, founders of religious and political schools were often persons whose reason was disturbed. He naively remarks that many insane persons might never have been so deranged had they found suitable occupations in life. Would it not be well, or worth while, he says, to appoint Commissioners to search Bedlam for suitable people to command regiments during war, to carry out the less agreeable researches of the laboratory, or to bawl and wrangle in the pandemonium of a law court or a contested election? Here, for instance, he says, you have a patient tearing his straw to pieces, swearing and blaspheming, and biting his grating. Well, give him a regiment and send him to Flanders. In another case you find a patient with foresight and insight. He walks daily at one pace, entreates your penny, and with due gravity and ceremony talks much of hard times and taxes; he bars up the wooden shutters of his cell regularly at 8 o'clock, and dreams of fires, shoplifters and customers. Now why should the city of London be deprived of such a model tradesman? Let the man out at once.

In 1731 it was in his mind to build a hospital called Bedlam, in Dublin.

In 1735 appears as issued from his garret in Moorfields—then the site of Bedlam—a scheme for the foundation of a hospital for incurables. This hospital for incurables was to admit incurable fools, incurable rogues, incurable liars, and the incurable vain and envious were to be eligible for admission on an urgency order. He suggests that, on the foundation, he himself should be admitted on a certificate as an incurable scribbler.



Left to Right : Sir J. Lumsden, *K.B.E.*, M.D. ; The Hon. H. Kennedy, Chief Justice ; His Excellency, The Governor-General ; Dr. R. R. Leeper, Medical Superintendent ; J. A. Maconchy, Esq. ; Brig.-General H. Twigg, *C.B.* ; R. H. R. Stewart, Esq.

OPENING OF NEW WING, ST. PATRICK'S HOSPITAL, DUBLIN.

We have recently obtained a photograph of a letter written by the Dean of Eaton Stannard, then—1735—Recorder of the City of Dublin, setting forth his intention to found St. Patrick's Hospital. This letter, written ten years before his death, is a truly characteristic one, and you may all see a photograph of it here to-day. The original letter was recently sold in London for £150, and its price to-day is over 300 guineas.

In 1740 Swift wrote :

" He gave the little wealth he had,
To build a house for fools, or mad,
And showed, by one satiric touch,
No nation wanted it so much."

As time is short I cannot do better than state something of the working of this hospital. Founded in 1745, it was the first mental hospital founded in Ireland, and for many years the only one, the Government not having established any public mental or district hospital for mental disease. It was not until 1815 that Grangegorman Mental Hospital, the parent of all the district mental hospitals in Ireland, was erected.

Swift stated, with prophetic foresight, that if a hospital extended from here to the Phoenix Park, there would be always more applicants for admission than there would be room for. This prophecy, in its partial fulfilment, explains the extension which your Excellency is here to open to-day. The Governors have found extension necessary, owing to the larger number of voluntary patients coming forward for treatment. This voluntary coming forward is due to the fact that the old idea—of there being a difference between disease of the brain and nervous system and that of the other organs of the body—is becoming dissipated, and there is a more rational outlook on the causation and treatment of mental diseases.

The Governors of this hospital have provided us with the means of carrying out every modern therapeutic method for the alleviation and cure of all forms of mental disease, and the recovery-rate, for the past thirty years, has never fallen below 50% on our admissions. This figure does not include many who have been so far relieved as to live at home with their relatives, and it has been arrived at notwithstanding that many incurable patients have—from charitable reasons—been admitted, who could not be safely cared for outside the hospital wards without grave danger to themselves or society, and therefore demanded immediate care and treatment. That the work of the hospital is appreciated is proved by the fact that patients are daily admitted from all parts of Ireland, North and South (for insanity has no boundary, though sanity may have!), and that there have been more patients admitted during the past ten years than were admitted in the previous fifty years of the hospital's existence.

Your Excellency will, I trust, have time to see portraits of Swift, Stella and Vanessa, of Dr. Robert Emmet (the father of the patriot), our first Physician and Treasurer, and one of the original Governors, Swift's *escritoire*, where the travels of Gulliver may have been penned, together with a marble bust recently acquired and said to have belonged to Mrs. Delany at Delville, Glasnevin, and a number of seats from the old Irish House of Parliament.

The GOVERNOR-GENERAL then declared the new wing opened amid loud applause. Attended by his A.D.C., Lieutenant Wall, and various officials and a large party of distinguished visitors, he inspected the new buildings, and afterwards was shown by Dr. Leeper portraits and letters of Swift and various documents and articles of interest.

J. R. L.

BALLINASLOE MENTAL HOSPITAL.

At the meeting of the Ballinasloe Mental Hospital Committee held on November 10, 1930, Dr. John Mills, the Resident Medical Superintendent, again showed the mettle for which he is well known, especially when principles are at stake.

The occasion was a complaint that a resolution passed at a former meeting ordering that older men should be promoted had not been carried out.

The following extract from *The Connaught Sentinel* forms piquant reading :

"Mr. Finnerty: We seem to attach very great importance to the M.P. certificate here. At the same time we must not forget that there are men here with long service whose terms of appointment here as attendants did not include the passing of this certificate test, and whose hours of duty thirty years ago precluded them from attending the lectures. These men should not be passed over in case of promotion, and preference given to juniors with a few years' service who have passed the test. These men have given the best years of their lives here, and they are still at the bottom of the ladder.

"Dr. Mills: There are only three men who are affected. One has had thirty years' service, another came here in 1902, the last in 1904.—Chairman: These men have given us considerable service and they have also considerable experience.—Dr. Mills: To work an institution like this on the principle of seniority would be hopeless. I won't do it, and if the Committee wishes to take the matter out of my hands they are quite at liberty to do so. I selected the most competent men for the job. I have been giving lectures here since 1898, and these men never sat, listened or attempted to attend any of the lectures. I won't budge an inch in the matter of the importance I attach to these certificates and lectures, and I leave the matter in your hands.

"Mr. Nolan: Juniors got the jobs over the heads of seniors.—Mr. Corbett: These older attendants are recognized by the Nursing Council as being qualified and are registered as such. Are we going to recognize that?—Mr. Lynch: It should not go out from us that we depreciate the importance of this certificate. Attendants themselves recognize that, but some of those elderly attendants came into our service when there was no certificate, and they are the victims of the system here, not of their own actions.

* * * *

"Chairman: To put the thing plainly, Are these three men any good, Doctor? (Laughter.)—Dr. Mills: One is no good, the second is mediocre, and the third is lazy. (Renewed laughter.)—Chairman: Now, you have it all, and that ends that."

J. R. LORD.

SIR MARRIOTT COOKE.

Sir Marriott Cooke, K.B.E., M.B., whose office as Commissioner of the Board of Control terminated on the coming into operation of the Mental Treatment Act on December 31 last, was entertained at dinner by his former colleagues on January 26 at the Café Royal (London). It may be recalled that Sir Marriott, joining the Lunacy Commission in 1898, became, in 1913, a Commissioner of the Board of Control, of which he was Chairman during the years 1916-18, and continued as an unpaid Commissioner after his retirement in 1921. The object of the dinner was to mark the affectionate esteem in which his late colleagues hold him, and their sense of his devotion to the cause of those suffering from mental disorders during his many years of public service—a period which, including the years spent as Medical Superintendent of the Mental Hospitals at Devizes and Powick, extended to fifty-six years.

CORRESPONDENCE.

To the Editors of the 'Journal of Mental Science.'

SIRS,—I have read with great interest the article on "Some Observations on the Ætiology of Dementia Præcox," with special reference to the Parsees of India, by Lt.-Col. Jagoe Shaw, M.D., I.M.S. (retd.), published in your Journal of July, 1930.

A certain amount of time has elapsed between the publication of the article and

my present contribution, but this has been unavoidable owing to the distance at which I am situated and the difficulty in obtaining the requisite statistics.

I entirely disagree with the opinion expressed by Lt.-Col. Shaw that "in-breeding" is a very definite cause of the high incidence of D.P. amongst the Parsees of India.

D.P., the mystery of psychiatry, constitutes a challenge to investigators in every field of medical research. Its aetiology is unsettled, its pathology unknown, and its clinical limits still under dispute. Numerous theories which have been advanced to explain D.P. are hopeful confessions of our ignorance. Many writers of great repute, representing different nations of the world, have, from time to time, contributed their share to the probable cause of D.P. Mott, in England, stated that there was a primary testicular or ovarian atrophy, with attendant endocrine disfunction.

Kitabayashi, in Japan, thinks that the pathology of D.P. is to be found in the choroid plexus.

Nissl and others, in Germany, are convinced that there is actually a degeneration of the cortex.

Fungfeld describes lipoid sclerosis in the third cortical cell layer, and lipoid deposits and progressive glia changes in the thalamus.

H. Josephy found changes in the brain-cells specially marked in the third and fifth cortical layers and in the frontal and temporal lobes. His work is said to have been confirmed by Naito.

Marcus claims to have identified double nuclei in some ganglion cells of the thalamus, and also lipoid degeneration.

Kraepelin explained the disease on the basis of auto-intoxication in consequence of a disordered metabolism.

Focal infection in the teeth, tonsils and colon, etc., is the belief of Cotton.

Dunlop does not believe in D.P. as a structural disease.

Many theories practically ignore the somatic aspect, and psychological hypotheses are advanced to unravel the schizophrenic splitting and withdrawal from reality.

To all the above aetiological and pathological summary we are now asked by Col. Shaw to add "inbreeding" as a very definite cause of D.P. But it is not understood why Col. Shaw has assumed that the alleged increase of D.P. is particularly high amongst the Parsees.

The high incidence of D.P. is now noticed in almost all the civilised nations of the world. It is high in England, Germany, France, Italy, and highest in America. During my last two visits to America in 1930 I found that approximately 75,000 new patients are admitted annually to the State mental hospitals in America, and the following table shows the relative frequency of the chief forms of mental disorder :

	Per cent.
Dementia præcox	27.0
Manic-depressive psychosis	16.0
Senile psychoses	12.1
General paralysis	10.6
Psychoses with cerebral arterio-sclerosis	6.4
Involution melancholia	3.2
Psychoses with mental deficiency	3.3
Paranoia or paranoid conditions	2.8
Epileptic psychoses	2.7
Alcoholic psychoses	2.2
Psychoses with psychopathic personality	2.3
Psychoneuroses and neuroses	2.1
All other psychoses	9.2

None of the above-mentioned nations are known to practise "in-breeding" like the Parsees.

Parsees are the most advanced Europeanized community of India, and they follow western civilization especially on its educative side. I am in charge of the largest and one of the most modern mental hospitals in India, the Ranchi Indian Mental Hospital, with 1,400 beds, which caters for the two provinces of Bengal and Bihar and Orissa. In my experience of lunacy work among the Indians, I

have found that the incidence of D.P. is always high in the educated classes of all communities of India. It is very high amongst the educated class of Bengalis, who, like the Parsees, follow western methods of civilization and education. Similarly, D.P. is high amongst the domiciled Anglo-Indian classes of India. This fact is also inadvertently mentioned by Col. Shaw in his article, in which he states that D.P. is high amongst the educated classes of Hindus and Mohammedans, and yet the educated communities in India, with the exception of the Parsees, practice no "in-breeding" in the same sense of the word as used by Col. Shaw. I am entirely with that school of thought which holds that the stress and strain of present-day civilization and education, though not the sole cause of D.P., has at least something to do with it, and in support of my view I quote the high incidence of D.P. amongst the highly educated and ultra-civilized nations and communities of the world.

In 1928 an article on the subject was published in the *British Medical Journal*, and with many others, I also joined in the controversy and maintained that the alleged high incidence of D.P. amongst the Parsees was due to "western education," but it appears that this view has not been accepted by Col. Shaw, on the ground that the holders of this view have no knowledge of the facts. I am a Parsee by birth and a psychiatrist by profession. It will presumably be permissible to mention here that I have a fair knowledge of psychiatric work in India as well as in Europe and America, where I have travelled extensively in pursuit of this knowledge. As a Parsee I beg to differ from the statement made in the article by Col. Shaw that "Parsees, whose main life-work is trading, rarely undergo intensive education, or rather memory training." I wonder if Col. Shaw is aware that amongst Parsees there are two sects—one, the priestly class, the Athormans, which constitutes the major portion of the community, and the other, the non-priestly class, or Bhadins. All Parsee children above the age of seven must undergo a short religious course involving intensive cramming and memory-training in order to qualify themselves to be admitted into the community by passing a severe test and religious ceremony called the *Navjot* or *Sudra Kasis* ceremony. Moreover the children of the priestly class have to undergo a higher course of intensive training in order to qualify themselves as priests, though in later life very few of them follow the priestly profession. Besides the religious training, the Parsee children also start their school career at the age of seven.

The following statements will convince Col. Shaw that the Parsees have widely adopted western education, and that, too, of a specially intensive kind. All their primary and secondary schools and colleges are modelled on western methods.

The Parsees number only 101,778 of India's 319 millions, of whom 52,364 are males and 49,414 females. Of these, 82,696 live in Bombay Province and the majority stay in British India.

It may be seen from the above figures that the bulk of the community is in Bombay. Of the 82,696, there are 17,721 boys and girls attending primary and secondary schools and colleges, i.e., out of every 1,000 Parsees there are 214·3 receiving such education. Besides, it is a well-known fact that the system of education in India is nothing but a system of intensive cramming. The Parsees in point of education far exceed the figures of Great Britain, and approach the figure of America. In England and Wales, out of every 1,000 only 160 receive primary, secondary and higher education, and in Scotland 164. In India the educational figure of other communities is 42·5 per thousand, whereas that of the Parsees is 214·3—a figure very near to that of America, which is 230 per thousand.

Further, I beg to correct the misapprehension that seems to exist in Col. Shaw's mind as to the motive of the "in-breeding" amongst the Parsees, which is in fact their desire, not to "keep their money in the family," but to preserve their racial purity. Secondly, I have not experienced the alleged "jealous family secretiveness of the Parsees." This seems to me highly fantastical. I am in no sense a champion of "in-breeding," and fully realize its undesirability, but what I am urging is that its relationship to dementia præcox has never been definitely established. Many authorities believe that the marrying of cousins conveys no danger to the offspring if the common stock is sound. The Parsees have been "in-breeding" for more than 1,200 years, and the general health of the community is not at all impaired as compared with the other communities of India. On the contrary, the community has proved itself one of the most advanced, educated and civilized of India.

The general consensus of opinion is in favour of greater hereditary predisposition in M.D.P. than D.P. Hence "in-breeding" ought to produce more M.D.P. amongst Parsees than D.P. Similarly, other organic inherited diseases which "in-breeding" is bound to influence are not reported as being on the increase amongst the Parsees by the authorities handling such cases.

In his original articles the author gives a table showing his last 100 admissions of Parsees to hospital and 50 private cases, but, unfortunately, no mention has been made as to the period covered by these admissions and consultation. Moreover, the author states in his articles that "the incidence of D.P. amongst the Parsees is peculiarly noticeable in India, as it is a comparatively rare disease amongst the Hindus, and is rarer still amongst Mohammedans." The following figures, which are taken from the annual reports of the different provincial mental hospitals in India, will convince the Colonel that D.P. is not so rare as he thinks amongst other communities in India :

Provinces and names of mental hospitals.	Manic-depressive psychosis.	Dementia præcox.	Insanity due to cannabis indica (ganja).
Ranchi Indian Mental Hospital (1928)	447	419	98
Bombay Presidency (1928)	876	417	104
Madras Presidency (1928)	304	285	72
Punjab (1928)	406	372	73
Burma (1928)	714	183	15

The bulk of the population of these provincial mental hospitals in India consists of Hindus and Mohammedans, and the majority of them come from uneducated and agricultural classes, and they do not in-breed. The chief forms of mental disease which fill up these hospitals are, in order of occurrence, M.D.P., D.P., and toxic insanity due to cannabis indica (ganja). The above table shows that D.P. takes second place in these statistics. Hence it cannot be called a rare disease in India.

However, if Col. Shaw will satisfy me as to why the incidence of D.P. is high amongst other communities and nations who follow western education and culture but are free from "in-breeding," I am quite prepared to adopt his suggestion, and take up research work in order to determine the cause or causes of the alleged high incidence of D.P. amongst the Parsees.

J. E. DHUNJIBHOY,

M.B., B.S. Bombay, Major I.M.S.,

Medical Superintendent, Ranchi Indian Mental Hospital, Bihar and Orissa (India), and Lecturer in Mental Diseases, Patna University.

N.B.—D.P. = dementia præcox ; M.D.P. = manic-depressive psychosis.

NOTICES BY THE HONORARY LIBRARIAN.

The following journals are circulated from the Library :

American Journal of Psychiatry.
The Psychological Review.
Journal of Neurology and Psychopathology.
L'Encéphale.
International Journal of Psycho-Analysis.
Journal of Abnormal Psychology.
Mental Hygiene.
Journal of Nervous and Mental Diseases.
Revue Neurologique.
Archives of Neurology and Psychiatry.
Journal of Comparative Psychology.

The following books have recently been added to the Library :

Mental Deficiency. A. F. Tredgold. 5th edition, 1929.

Psychological Medicine. M. Craig and T. Beaton. 4th edition, 1926.

Text-Book of Psychiatry. D. K. Henderson and R. D. Gillespie. 2nd edition, 1930.

Mental Disorders. H. J. Norman. 1925.

The Psychology of Clothes. J. C. Flügel. 1930.

Members are requested to return all long-outstanding books to the Library as soon as possible for the purpose of cataloguing.

Members are invited to make gifts to the Library to assist in building up a historical collection of psychiatric works from the seventeenth century onwards. In selecting books for presentation, members are advised to consult the Hon. Librarian to see what books the Library possesses and those it is desirable it should possess.

The new accommodation for the Library at the B.M.A. House is available for use. There is now ample room for the expansion of the Association's collection of books.

Any communications concerning Books, Journals or Library matters should be addressed "Librarian, Royal Medico-Psychological Association, 19b, Tavistock Square, London, W.C. 1."

NOTICES BY THE REGISTRAR.

EXAMINATIONS FOR THE NURSING CERTIFICATES.

List of Successful Candidates.

Those marked * passed "with distinction."

MAY, 1930.

Mental Nursing.

GREAT BRITAIN AND IRELAND.

Beds, Herts and Hunts (Three Counties).—Annie Scott Robson, Arthur Lee, Alfred William Lancaster, *Edward Garrity, Walter Crowhurst.

Berkshire.—Henrietta Brooke, Nellie Brooke, Constance Louisa Henwood, May O'Reilly, Phyllis Mabel Smith, Elizabeth Williams, Roseleen O'Reilly, Joseph Henry Armstrong, Herbert John Jones.

Cambridgeshire.—William Oscar Jimson, Harold George Lines, Doris Patricia Thomson, *Elsie May Bradley, Nellie Kathleen Lawes, Constance Hornsby.

Carmarthen, etc.—Gladys Williams, Jessie May Doble.

Cheshire, Chester.—Ida Gwendoline Fox, Jessie Cresswell, Mary Kennerley, Marjorie Docherty, Gladys May Hughes.

Cheshire, Parkside.—Marjorie Isobel Pitts, Mary Josephine Killen, Mary Kate Harte, Margaret McKechnie Black, Bessie Marjorie Beaufoy, Sarah Elizabeth McConckey, *Kate Maud Webb, Bessie Delaney, William Smith, Daniel Bradley, Leonard Winterburn, Walter Crossley.

Cornwall.—Olive Solomon, Louis Cooper Evans.

Denbigh, etc.—*Violet Edwards, *Dinah Jones, Jennie Roberts.

Derbyshire.—Reuben Bull, *William Kirton, Thomas Jeremiah, Clara Andrews, Lilian Hollock.

Devonshire.—Dorcas Baragwanath, Annie Rosabelle Eager, Clarissa Vericka Fowler, Winifred May Comer, Gladys Ellen Mann, Albert William Bean.

Dorset.—*Roy Cox, Leonard C. Foster, Evan William Roberts, Doris Eva Cole, Joyce Beatrice Lawley, Gladys Amy Mitchell, Edith Gladys Gerrish, Delia Lundon, Gladys Emmeline Coward, Dorothy Mary Ball, Jennie May Price, Morven Mai Jenkins.

Durham.—Mary Elsbeth Swan, Bertha Evelyn Garthwaite, Emily White Dazley, Mary Olive Walker, Albert Golder, Wilfrid O. Hill, *Arthur J. Cox.

Essex, Brentwood.—Phyllis Viola Mary Simpson, *Ma.y Clanchy, Olive Geraldine Edwards, *Albert Ernest Baker, Frank Hudson, Harry Whitley.

Essex, Severalls.—Frederick Benn, Walter Stephen Byford, Frederick Oliver Day, David John Jenkins, Winifred Alice Powell, Olwen Evans, Constance Mary Brooks, *Ella Rose Western, Violet Davey, *Eva Smith, *Myra Richards, *Annie Elizabeth Piggott.

Glamorgan.—*William Thomas John, Daniel David Richards, Thomas Rees Jones, Wyndham Hopkins, Thomas Hugh Almond, Thomas Glyn Evans, Thomas Rees Hopkins, Sidney George James, William Hubert John, Pary Thomas Lile, Dorothy Campbell, David Jenkin Owen, Trevor James Plummer, William Oliver, *Ernest George Sibery, David Isaac Thomas, Margaret Cunnick, Gwyneth Lewis, Dorothy Carter, Iris Prosser, Blanche Hawthorne, Winsor Dayes, Theresa Freeman.

Gloucester (1st).—Florence Irene Allen, Eva Lilian Mildred Browne, Laura Doris Head, Doris Robinson, Kate White, Edith White, Ethel Maud Burrows, William Ernest Brown, *Harry Henry Walford, James William Hale, William Charles Gabb, Thomas George Pockett, Cecil Harry Aston Read, Tobias Houldey, Percy Albert Dyke, Charles Herbert Price.

Gloucester (2nd).—Lily Taylor, Stella White, Dilys Irene Thomas, Louisa Maggs, Gertrude Agnes Tovey, Agnes Brady, Harriet Butler, Mavis Alberta Voyce, Dudley Richard Williams.

Hampshire, Knowle.—Edward John Long, William Henry Trivett, James Charles Ware, Ernest George Watts, Alice May Barrett, Beatrice Alice Laming, Alice Emily Travers.

Hampshire, Park Prewett.—Emily Dora Wilson, Ida Hudson, Richard Charles Panniers.

Herefordshire.—Dorothy Mary Gladys Edwards.

Hertfordshire, Hill End.—Kathleen Lavina Hartwell, Constance Angele Lambert, Grace May Darran, Marcella Josephine Hyland, *Phyllis Annie Naylor, Frank Arthur Morriss, Leonard Robert William Lee, George Cohen Sell.

Isle of Man.—Gladys Christian, Euphemia Allan, Edith Powell, Isobel Davidson McCracken, Herbert Petre Nicholson.

Isle of Wight.—Mabel Ada Gertrude Elbro, Margaret Ann Penny, Margorie Florence Derwent Tester, *Sydney Charlesworth, Constance Mary Dore, Dorothy Louisa Kershaw, Frederick Charles Peck.

Kent, Chartham.—Albert Edwin Bryant, Sydney George Godfrey, Harry Edge, Thomas James Sayer, Bertha Ada Head, Ellen Jane Cullingford, Ethel Cowan.

Lancashire, Lancaster.—Elsie Morgan, Queenie A. Leslie, Nora Agnes Walsh, Nellie Tyson, *Vera Rogers, Ethel Shepherd, *Isaac Walker, Frederick Phillip Seaman, Robert Threlfall, *Daniel Ellwood, Robert Robinson.

Lancashire, Prestwich.—Fred Holt, Edith Roberts, *Gladys Morgan, Doris Foulkes, *Nora Downey, Bernard Frederick Wardle, Richard Fraser, Wilfred James Morgan, Joseph Jackson, Charles Tunnicliffe, Robert Henry Clifford, Ivor Wynne Jones, Fred Morgan, Ivor Vaughan, *John Hamer, William Frank Moulder, Christian Richard Stevens, Francis O'Sullivan.

Lancashire, Rainhill.—Elizabeth Colquitt, Sarah Ellen Worrall, Winiferda Jones, Hilda Holden, Sarah Hulme, *Isabella Thompson, Ellen Ann O'Brien, *Ada Olive Maynard, Jane Rhodes, Mary Frodsham, Sydna Charles, *Doris Hadfield, Polly Jones, Thomas Eddleston, *Edward John Cyril Lowndes, John Thomas Murray, Herbert Lea, *Lawrence James Murphy, *Joseph McLoughlin, John Warcup, Dorothy Lea.

Lancashire, Whittingham.—Alice Mary Hayden, *Margaret Robinson, *Eva Michael, *Queenie James, Jean Henderson, Ellen Rogers, Kathleen Baldock, Lilian Enid Holder, Annie Boles, *Gwendoline Ireland, Bessie Sutton, *John Rigby, William Hodges, Sydney Duke, *Thomas F. McVinnie, Aloysius Robinson, James Prince, Alice McGrath.

Lancashire, Winwick.—*Emily Tickle, Bessie Stanley, Madge Archer, Helen Johnson, Annie May Murphy, Edna Marsh, Lily Cook, Margaret McGrail, *Marjorie Hamblett, *Mabel Bishop, Lily Atherton, *Margaret McLeish, Phyllis O'Neill, James Phillips, *Frederick Stanyer, Richard Peberdy, John James Connor, John Cain, Richard Bolton, Thomas Bellis Jones, John Thomas Lightfoot.

Leicestershire and Rutland.—Edna Noble, Robert Edward Copley, Percy Edwin Doughty, Thomas Downes.

Lincolnshire, Bracebridge.—*Mabel E. Sharp, *Nellie C. Courtney, *Doris K. Hughes, Robert Steeley, Leonard Harrod, Percy Leonard Leachman, John Leonard Hall.

Lincolnshire, Kesteven.—West Trollope.

London, Banstead.—Hilda Eva Ellen Gullis, Gwladys May Hall, Gladys Roberts, Thomas John Coombes, Sydney Garrett, Alexander Godson, Stanley Frank Hook Horton Lewis, Walter Stanley Lewis, *Henry Thomas Marchant, Benjamin John Nubley, Reginald Henry Roke, Frederick George Watson, Griffith David Williams, William Charles Young.

London, Bexley.—Stuart William Archibald Harvey, Doris Price, Harriet Lilian Saint, Doreen Frances King, Elsie Margaret Kelman, Maud Elizabeth Shepherd, *Eileen Crowley, Marjorie Ada Sidders, Ellen McCarthy, Barbara Helen Fulford, Catherine Rose Feeney, Lilian Edith Shepherd, Jessamine Florence Mason, Lilian Carter.

London, Cane Hill.—Ruby May Aprile, Olive Bridger, Constance Annie Crowley, Mary Daly, *Phyllis Mary Turner, Dorothy Rose Goodwin, Kathleen FitzGerald, Ethel Annie Horwood, Esther Mary Stanislaus Coogan, Gertrude Maud King, Arthur Frederick Pickard, Herbert Allan Stephenson.

London, Claybury.—Hubert Henry Belderson, Albert Ludbrooke Browning, Lilian Sarah Cook, Helen Jane Gumbley, Ada Evelyn Hull, Gwyneth May James, Florence May Plyer, Arthur Henry Scott, Annie Lilian Warner, *Beatrice Florence Wiley.

London, Colney Hatch.—Elsie Caroline Jones, Eleanor Brownless, Helen Cummings, Ellen Casey, Sidney Albert Sheaf, David Richard Ellis.

London, Ewell Colony.—Evelyn Blandford, Kathleen Beryl Rowley, Olwen Myfanwy Adams, Violet Phyllis Tinker, Doris Elsie Foster, Bridget Magee, Alfred Clark.

London, Hanwell.—Thomas C. Fogg, Stanley R. Salway, Henry A. Wilkinson, Lucy Towers, Eleanor R. M. Halton, Catherine M. A. Downey, Edna F. Manthorpe, Doris I. Jones, Johanna A. Lacy, Lucy Ginn, Ivy E. Knight, Gwendoline I. V. Foote.

London, Horton.—Louisa Bundy, Edith Burrell, *Ellen Margaret Cowley, Jemima Glass, Edith May Hayward, Gwendolen Mildred Johns, Elaine Hawken Johns, Jeane Pauline Palmer, Mary Ryan, Mary Grace Williams.

London, Long Grove.—Ellen Dunning, Amelia Mona Giles, Ethel Hannah Hampson, Hilda Hockaday, Annie Johnston, Irene Madeline Levick, Alice Wailes, Sydney Horace Edward Haggis, Leonard Victor Largent, James Percy Smith, George Magor Winstanley, Maurice Harry Winyard.

London, Maudsley.—Lorna Colcomb, Ethel Newton, Ada Burns, Arthur Crees, Frederick Beadle.

London, Tooling Bec.—William Thomas Webb, Reginald Alfred Calkin, Henry Albert Appleton, Joyce Bridgeland, Ellen Margaret Brooker, Mary B. Monagher, Emily Louisa Horn, Gretta Agnes Feeney, Walter Leslie Samuels, Elizabeth Williams, Maud Emily Howe, Elizabeth Edwards.

London, West Park.—Thomas Smiles, Cecil Walter Pratt, William Edward Morgan, Leyland Hornby Frank Escourt Godfrey, Reginald George Harry Barton, William Edward Percy Bartlett, Mona Brighton, Annie Evans, May Winifred Finn, Iris Lucy Jean Frost, Elizabeth Mabel Gannaway, Mary Hughes, Dilys Williams, Catherine Williams, *Doris Adams, *May Matthews Thompson, Abbey Haseltine, Elizabeth Emily Cole, Elsie Gower, Sarah Jones.

Middlesex, Napsbury.—Honor Parker, Clement Edward Bishop, William Frederick Lunnon.

Middlesex, Springfield.—Henry Hopkins, George Henry Treeby, Eardley Deal, *Louie Byrd, Hylda Maria Baker, Winifred Baker, Gladys Curtis, Dorothy Humphries, Helen McLaren, Lilian Ward.

Mid-Wales.—Ivy Liddiard, Ethel Owen, Elizabeth Jones.

Monmouthshire.—Hedley Meredith, Dorothy Marie Faulks, Ethel May James, Ethel Mackay, Alice Irene Palmer, Irene Harris.

Norfolk.—Lily Mabel Barnard, Ella Colman, Marjorie Ellen Morris, Thirza Yarham.

Northamptonshire.—Phyllis Ivy Baker, Cecilia Roberts, Ralph Mould, Walter Turland.

Northumberland.—*Frances Brown, *Doris Fuge, Elsie Ada Johnson, Mary Johnson, Doris Little, Emily O'Connor, Mary Elizabeth Wears, *Herbert Hall Basham, Harold Beaty, Edward Fletcher, Raymond Gornall, *Thomas Forster, Edmund Hardy, Thomas Muirs Martin, Ernest Mitchinson, *William Henry Robson, Joseph Watson, *Gilbert Wright.

Nottinghamshire.—Olive Mary Gardner, Edna May Attenborough, Catherine King Wallis, Nellie Huddleston, Dorothy Edith Henstock, William Henry Leslie Nuttall, Richard Leonard Reddish.

Oxford County and City.—Benjamin Frederick Rawlings, Percival Taylor, *William Ambrose Linnell, Olwen Rees, Muriel Violet Haynes.

Shropshire.—Bertha Elsie Lloyd, Albert James Oliver, Charles Davies, William Wyatt Morris.

Somerset and Bath, Taunton.—Doris Eirwen Jones.

Somerset and Bath, Wells.—*Martha May Phillips, William Stevens.

Staffordshire, Burntwood.—Mary Jane Astley, *Laura Bettanay, Florence May Jefferies, Annie Stanfield.

Staffordshire, Cheddleton.—Charles Holroyd, Thomas Edward Marshall, George Donald Whiting, Robert George Taylor, Thomas Lowther, Horace Hendra Wells, James Charles Holland, Catherine Josephine Connelly, Kate Crawley, Jessie Lillian Williamina Beck, Sarah Ellen Connolly.

Staffordshire, Stafford.—Arthur Boulton, Harry Charge, Frederick Duffin, *Alfred Edwin Moss, Edward Frederick Thomas Owen, George Stokes.

Suffolk.—Catherine Twomey, Lily Law, Rosa J. Last, Ada S. Howe, Doreen Williams, Beatrice Alderton, Dorothy Pestle.

Surrey, Brookwood.—Edith Millie Buckle, Isobel Wardle, Lily Fisk.

Surrey, Netherne.—Kathleen Isobel Parsons, Ernest William Wainwright, Vernon Edward Elmer.

Sussex, East.—*Ivy Evelyn Myrtle Stanley, Vera Mary Howard, Florence Evelyn Woodgate, Elizabeth Jane Bruncker, Elizabeth Jones, *Martha Ethel Dodds, Henry James Booth, Hilda May Steer, Nancy Evans, Rita Roche, Redvers Gwyn Huntley.

Sussex, West.—Ethel Mary Barber, Edith May Lea, Mary Annie Tinnuchi, Agnes Elveria Tinnuchi, Phyllis Dorothy Marsh, Evelyn Frances Spriggs, Ada Roberts, Bertram Frederick Grant, Alfred Arthur Barnard, *William Silver Birch.

Warwickshire.—John Cadmore, Arthur R. Giles, Frank Webb, *William Henry George, William E. Turner, Reginald Ashbourne, Mildred Moseley, Rita Mabbett, Sarah Byrne, Cynthia McGaw, Phyllis Pratt.

Wiltshire.—Josephine Evelyn Hughes, Frederick Allkins.

Worcestershire, Barnsley Hall.—Samuel Bridson, Harold Arthur Doxford, Arthur Henry Price, William Isaiah Southall, Alfred Whitehouse, Mary Bowyer, Phyllis Pickering, Mary Josephine Turner.

Worcestershire, Powick.—Richard Francis Evans, Leslie John O'Brien, John Edwin Jones, Henry Prestwood Davies, Arthur John Keyte, Elsie Bisp, Ivy Clarice Blackwell, Edith Lena Lewis, Doris Emily Hunt, Ruth Evelyn Woods.

Yorkshire, Menston.—Christine Ivy Vause, Jenny Talbot, Clara Thomas, Gladys Fletcher, Lily Hancock, Eva Field, Arthur Hobson Froggatt, William Edward Orange.

Yorkshire, Wadsley.—Ernest Wildgoose, Alice Wilde, Frank Higton, Charles Lodge, William Cash Middleton, Harry Norton, Charles Edward Horton Owen, Charles Plant, William Thomas Swift, Herbert Scholes, Owen Woolhouse, Albert Westwood, Joseph Wallis, Alice Brailsford, Mabel Louisa Birks, Gladys Chapman, Daisy Elvin, Elsie Godbehere, Alice Newsome.

Yorkshire, Storthes Hall.—John Hubert Hobson, Alfred Lewis, Herbert Snow, Harry Whittaker, Doris Miriam Eassom, Elizabeth Gallon, Ethel Florence Goodall, Henrietta Morris, Charlotte Winifred Sanderson, Edith Woodhouse.

Birmingham, Rubery Hill and Hollymoor.—Desmond Thomas Bridge, Albert Edward Bott, William Henry Shirvington, James Edward Price, *David Hickin, Leslie Reginald Burford, Roland Arthur Hulme Yates, Leah Usherwood, Madeline Harris.

Birmingham, Winson Green.—Thomas Henry Jones, *Mary Cartwright, Emma Richards Sadler, Mabel Wynne, *Martha Leach.

Brighton.—Lilian Webb, Lilian Paul, Mercy Elizabeth White, Winifred Unwin, Alice Clifford, Margaret Jane Middleton, Jack Francis Shambrook, John Blackburn, Richard LeRoy Walker, Charles William Martin, John Edward Claude Keeping, Albert Arthur Shaw.

Bristol.—Alice Kendrick, Eva Evans, Olive Dennett, William Arthur Clutterbuck, Emlyn Davies, Clifford Veale, Frederick Edward Knight, Thomas Glyndwr Richards.

Canterbury.—Kathleen Mary Howland, Margaret Baxter Sweeney, Mildred Vernon Pepper.

Croydon.—Bernard Eugene Tubby, Horace Sidney Albert Young, Dorothy Georgina Fair, Maude Helen Banks, Ada Ridley, Evelyn Marie Milne.

Derby.—Thomas William Gutteridge.

Gateshead.—Norman Johnson, Thomas William Gardner.

Hull.—Lavinia Holmes, Jane Ann Hall, Florence Walker, James William Monkman, Stanley Reginald Dahle, Rolla Pitman.

Ipswich.—George Edward Wheeler, William James Crapnell, Walter Robert Wilby, Charles Ernest Stannard, Gladys Irma Victoria Sanders, Helen Melville Law.

Leicester.—*William John Thomas.

London, City of.—Gladys Walters, Winifred Bernthall, Eileen Patricia Grace Boucher Markey, Anna Theresa Martin.

Middlesbrough.—Edna Elizabeth Sutherst.

Newcastle.—Joseph Millet, James Scanlon, Margaret Procter MacAllister, George Roddam, Ralph Davis, Alfred Kenny.

Newport.—Edna Beryl Jones, Garnett Gittens.

Norwich.—Agnes Beatrice Burnett, Evelyn Isabella Hunter, Eva Kate Pond, Doris Annie Woods, Stanley George Pointer.

Nottingham.—Ralph Bramley, Violet Ellen Stanley, Rosa Jakeman Bollington, Marie Louise Fidler, Violet Agnes Alderson, Doris Mary Barker, Margaret Wilkinson,

Plymouth.—Leonard Broad, Maud Parker, Eric Edward Tuck.

Portsmouth.—William Richard Gouge, *Edmund William Niblett, John Baker, Annie May Rollason, Constance Elizabeth Bedwell, Dorothy Beatrice Rose Shuter, Marion Edythe Pharoah, *Lilian Rose Gerny, Jessamine Verrall, *Mabel Amelia Rochefort.

Sunderland.—Robert Couldthard Butler, Norah Elizabeth Keegan, Mary Manning.

West Ham.—Lucy Victoria May Faber, Maud Margaret Godwin, Roland Hewitt, Edgar Baker, Honora Fay, Dorothy May Heffer, Hilda Winifred Hellyer.

Ministry of Pensions, Kirkburlton.—David Webb.

Bailbrook House.—Vera Marjorie Bush, Gwladys Lewis.

Barnwood House.—Florence Davies, Winifred Williams, John Hendy, Sidney Henry White.

Bethlem Royal.—Clara Barrett, Amy Coomber.

Bootham Park.—Arthur Armitage, Eliza Smith, Dorothy Humpherson, Hilda Humpherson.

Brislington House.—Florence Beatrice May Chivers, Albert Morgan Price.

Camberwell House.—Eileen Margaret McCooey, Eileen Murphy, Kathleen Dennis.

Cheadle Royal.—Harry Cooke, William Ernest Evans, John Leach.

Coton Hill.—Rosetta Foster, Katherine M. James, Hilda McKay, Elspeth Annie Parton, George Burghall.

Holloway Sanatorium.—Winifred Hilda Elkins, *Gertrude Celestine Day, Alice Feeney, Ena Mary Seymour, Phyllis Gertrude Trevethan.

Middleton Hall.—Charles Stuart Dixon.

St. Andrew's.—Winifred Cecelia Fay, Rose Ann Fay, Margaret O'Doherty, Mary Josephine O'Doherty, John Brophy, Robert Thomas Jones, Edward Gerald Mears, James Rose, Violet Emily Lovegrove.

The Old Manor.—Delia Mangan, Mai Murrinan, Thomas Hay Caldwell.

The Priory.—Phyllis Marjorie Clifton, Emily Clarke, Sarah Callcott, Lena Rowedder.

The Retreat.—Elizabeth Mary Beckwith, Edith Craven, May Morgan, Doris Nash, Gladys Owens, Lavinia Kathleen Jones, Florence Mary Smith, Lucinda Arbuthnott, Vera Emma Luty, Enid Luty, Winifred Connell, Ellen Beck, George Henry Pollard, John Emanuel Downs.

Warneford.—Gladys Reardon, Hilda Mary Townsend, David Gibson Urquhart.
Wonford House.—Arthur Reddington Griffith, Mabel Gertrude Hume, Edith Franklin.

Aberdeen City.—Margaret Fraser Cruickshank, Martha Smith McIntyre

Aberdeen Royal.—Beatrice Russell, Marion Mitchell, Alexina Anderson, Lillian McMillan, *Isobel Donald, Robina Davidson, Robert Reid, Annabella Cooper, Janet Moir Reid, Mary Jane Duncan Stronach, Margarita Yule Smith, Helen Chree Reid, Albert Finlay Morrison, Leonard Reid.

Argyll and Bute.—Kenneth MacDonald.

Ayr, Glengall.—Helen Semple Wilson, Hannah D. Milligan, Isabella K. McGeorge, Helen K. Hainey, John Morrison, Colin McInnes.

Dumfries, Crichton Royal.—William Peel Patrick, Donald John Macdonald, Gladys Meria Gordon, Mary Cathleen Friel, Kathleen Cummins, Jessie Vass, Kathleen Tennyson, John Edmunds, Euphemia Helen Carnochan, Margaret Gallagher.

Dundee, West Green.—Mary McDougall Swan Brownlie, Ainslie Wood Macintosh, Mary Ann West McFarlane.

East Lothian.—Margaret Elizabeth Jolly, Katie McKinnon, Margaret Campbell MacLeod.

Edinburgh, Bangour.—Jeanie Roy Macdonald Craig, Mary Josephine Guidera, Jessie George, Annie Wilson Reid, Jessie Smith, Agnes Smylie, Marion Cowper Stanners, Janet Wyper, Alexander George McMillan, John Gordon Moir, James Rae, George Urquhart, Annie Swan Bowmaker, Matthew Hoggan.

Edinburgh Royal Hospital, Craig House.—Annie Campbell, William Dryburgh, Emily Calder, Mary P. Clark, Joseph Davidson.

Fife and Kinross.—Catherine Swankie McLeod, Betsy Suttie Nicoll, Margaret Hannan McKenzie, Agnes Tough Arthur, Annie McBain, James Cameron, David Sutherland, Charles George Ingram Holmes, May Ferris.

Glasgow, Gartloch.—Susan Stewart Docherty, Mary Waters McNab, Catherine McKenzie Wilkie, Catherine Grant Forsythe, Margaret McRae, Elizabeth McLean Ferguson, Isobel Bradford Wylie, Margaret Martin Russell, Malcolm McLeod, Ann Cameron Campbell, Elizabeth Adamson, Mary Ann McRae.

Glasgow, Woodilee.—Mary Greig, Margaret Mackie Briceland, Isabella Blain, Mary Little, Isabella Brown McDonald, Robert Campbell, Robert Gillespie, Elizabeth Magee, James Knox.

Govan.—John Addison.

Greenock.—William Petrie Skelton, Alexander McLellan, Ronald Robertson, John McCuish, *Margaret Helen Skelton.

Inverness.—Annie McLeod, Mary Sarah Gray, Donald Allen McCuish.

Kirklands.—Margaret S. Boag, Allison Wilson.

Lanark.—Annie Mackay, Flora MacEachan, Harry Douglas Esslemont, Robert Lees, Margaret Jardine Young, Annie Anderson, Agnes Jane Millar Ramsay.

Montrose Royal.—Isabella Currie, Kate Ann McLeod, Dora May Davis, Flora Crowe, Edith Howie.

Paisley, Riccarton.—James Cheyne.

Perth, James Murray's Royal.—Barbara Anderson, Jessie Stewart Beckett, John Anderson Farquharson, Florence Fordyce, Malcolm Irvine, Margaret Smith White Wilson.

Perth, Murthly.—Janet Stewart Watson, Margaret Elsie McKenzie, Martha Morton Beattie.

Renfrew, Dykebar.—Annie Taylor, Angus Buchanan, Mary Macdonald, Isabella Madden, Mary MacAffer, Annie MacLean.

Roxburgh.—Hilda Bewley, John McDonald McRobbie, Mary Ann Innes.

Stirling.—*Flora Campbell, Kathleen Winifred Doherty, Elizabeth McKenzie, Lawrence Dickson, James Young.

Ballinasloe.—Edward Mooney, William Keane, Bridget Lyons.

Belfast.—Eleanor Gallagher, Ellen Jane Gallagher, *Ellen Liggett, Dominic McDaid, Robert Wilson, William James Johnston.

Cork.—Mary Jane Collins, Hellen K. Daly, James O'Leary, John Healy, Jeremiah Donovan, Catherine Healy, Patrick Murphy.

Dublin, Grangegorman.—James Cullen, Patrick Byrne, James Porter, Thomas Kenna, Patrick Wallace, Art. H. O'Donnell, William Baker, Mary Dunne, Anne Farrell, Bridget O'Keefe, Bridget A. Boylan.

- Kilkenny*.—Annie Whitehead, Kathleen Roache, John Boyle, Mary Mullins.
Monaghan.—Fred Mollan, Margaret McGowan, John Sharpe, Susan Tully, Sarah Kettle, Abraham Coleman, James H. Gillanders, Mary C. McCarren, Lillie Faulkner.
Mullingar.—Angela Coffey, Annie Moore, Kathleen Reilly, Agnes Wright, Anthony Brennan, John Hennessy, John McHugh, Christopher Kellaghan.
Omagh.—Maggie Stinson, Vincent Sharkey.
Portlaoighise (Maryborough).—Joseph Costigan.
Portrane.—John Farrell, Michael Kinsella, Patrick O'Brien, Margaret Doyle, Bridget Kelly, Mary C. Redmond.
St. Patrick's.—Georgina Magee, Anna Noble.
Sligo.—Noreen Kennedy, Mary E. O'Rourke, Kate A. O'Rourke, Mary Kerins.

SOUTH AFRICA.

- Bloemfontein*.—Hendrik Willem Van Zyl, Johanna Magdalena Van der Westhuizen, Ruth Vera te Water.
Fort Beaufort.—Susanna Magdalena de Preez, Martha Jacoba Marais.
Grahamstown.—Johanna Jacoba Elizabeth de Villiers.
Pietermaritzburg.—Reginald Clifford Spencer, Gerhardus Johannes Sanermann, Hermanus Johannes van Staden, Johannes Cornelius van der Berg, Jacobus Wessel Knopp, Susanna Catherina Bothma, Engela Anna Bezuidenhout, Janet Bruce McMurrin, Anna Maria Magdalena Estherhuizen, Anna Cornelia Nortier.
Pretoria.—Susara Aletta Margartha Fourie, Heinrich Hartl, Archibald Alfred Reynolds, Maria Petronella Slabbert, Ethel Willmers.
Valkenberg.—Johanna Jacobmina Barnard, Susana Johanna Schoeman, Johanna Classina Susana Maree.

Nursing of Mental Defectives.

GREAT BRITAIN AND IRELAND.

- Calderstones*.—Edith Clough, Florence Evelyn Garner, Lily Harrison, Olga Holt, Edith Twist, Phillip Robertson, Annie Clowes, Mabel Williams.
Caterham.—Hector John Wade, Albert Victor Waterhouse, Catherine Mary Exley, Edith Beatrice Smith, Alice Mary Barham, Elizabeth Alice Butler, Elizabeth Wilson Boag, Nina Benita Lake, Gordon Edgar Miles.
Darenth.—Ena Mary Spiller, May Mullender, Mary Dorothy Pentney, Kathleen Mabel Williams, Lizzie Thomas, Charles Edward Haines, Frederick John Mowles, Frank Walter Oxley, Clarence Flower.
Earlwood.—Reginald A. C. Padwick, Harold Needham, Frederick A. Moore, Edith Williams.
Fountain.—Edith Maud Adams, Ellen Jane Morgan, Ellen McLean, Amy Elizabeth Stephens, Elizabeth Ivy Ann Grimshaw, Elsie Emily Galey.
Leavesden.—Mary Creaser, Gwenllian Evans, May Evelyn Moffatt, Edith Sophia Moffatt, Annie McLean, Elizabeth Ridley, Ernest Colledge, Charles Richard Wright.
The Manor.—Margaret Blanch Joyce, Hilda Noble Thorne, Margaret Ann Gwilliam, Florence Alice Theresa Yates, *Isabella Craigie Grant, Jessie Maud Painter, Gladys Daisy Pow, *Elsie Williams, Dorothy Patience Williams.
Monyhull.—Gilbert Suggers, Emily Phoebe Stratford, Eleanor Jessie Gunby, Henrietta May Turner, Florence Davis, Gretta Moore, Jessie Smith.
Rampton State Institution.—Thomas Colclough, Percy Dixon Shorter, Fred Slater, Walter Keyworth, Jesse MacDonald Betts, Sidney Joseph Bizzell Titchener, Leonard Michael Magee, Fred Allsopp, John Thomas Noble, John Robert Rollin, Mary Christine Evans, Lucy Jane Boucher, Sarah Elizabeth Ridley.
Royal Scottish.—Helen Butler, Janet Davidson, Mary Kerr, Helen Fleming, Jessie Leishman, Elizabeth T. Leishman, Catherine McLaughlin, Minnie W. Silver.
Stoneyetts.—Susan Magee, Winifred Carrigan McCormack, Mary Brown Condie, Elizabeth Donnelly, Mary Creaton Lynch.

SOUTH AFRICA.

- Alexandra Institution*.—Beatrice Maud Jennings, Magdalena Jacoba Immelman, Maria Margrietha Elizabeth de Wet, Aletta Louw, Grace Sarah Whealdon, Elizabeth Petronella van Wyk, Ida Maria Susanna Rapp.

Wirand.—Jessie Margaretha van der Merwe, Johanna Magdalena Jonker, Alida Petronella du Plessis, Hester Ridgard, Catharina Maria Susanna Human, Elise Francoise Josephine Heyneke, Susara Petronella Oosthuizen, Johanna Elizabeth Klerk Visser, Hendrina Catharina de Beer, Susanna Francina van Wyk Nel, James William Furstenburg.

NOVEMBER, 1930.

Mental Nursing.

GREAT BRITAIN AND IRELAND.

Beds, Herts and Hunts.—George Percy Samuel Johnson, Lizzie Direen, Rebecca Collins.

Berkshire.—Gwyneth May Condon, Sarah Jane Smith, Jessica Nancy Smith, Reginald George Hewer, Francis Herbert Southall, William Steptoe.

Cambridgeshire.—Leonard Thomas James, Thomas Vernon Lewis, *George Cannell, Lilian Constance Phyllis Jones, Edith Noble.

Cheshire, Chester.—Annie Owens, Elsie Lovatt, Marie Elizabeth Roberts, Margaret Madeleine McMahon, Hilda Jenkins.

Cheshire, Parkside.—Ruth Sheila Garside, Mary Maggie McDonnell, Minnie Rogers, Rosemary Gilroy, Annie Dickinson, Eleanor Elizabeth Etheridge, Marjorie Aileen Boulton, William Richardson.

Cornwall.—Harold Ealy, Norman Richards, Eva Street.

Derbyshire.—Morgan Thomas Edwards, Albert Randall, George Edward Robins, Eva May Deacon, Sylvia Edith Llewellyn.

Devonshire.—Violet Annie Wilkinson, Mabel Curtis, Beatrice Walters, Winifred Pickard.

Dorset.—Nora Eileen Moody, Winifred M. Wrigley, Frederick George Hitchins.

Durham.—Jennie Watson Hall, Annie Harrison, Mona Elsie Keenan, Edith Esther Wheatley, Phyllis Catton, Elizabeth Westgarth Johnson, Elizabeth Dolan, William Edmunds, Ralph Robson, Richard A. Spencer.

Essex, Brentwood.—Bertha Boorne, Isabella Morton, Dorothy Ann Harrison, Clara McTiernan, Sybil Joyce Lindsay, Edith Colclough, George Greenaway, George King, Victor Edward Lancaster.

Essex, Severalls.—*Irene Elisheau Spooner, Doris Muriel Coxshall, Mary Maud Phillips, Margaret Fitzwalter Benest, Gladys May Ballinger, Jemima Griffiths, Josephine Bowes Purnell, Elizabeth Walmsley Graham, Isaac Bridge, George James Beeken.

Hampshire, Knowle.—Hilda Agnes Lydia Clay, Helen Margaret Pickard, Irene Ada Nellie Triggs, Annie Idris White, Frederick John Corbett, Albert StGeorge Savage.

Hampshire, Park Prewett.—Winifred Evans, Elizabeth Smith Hayes, Winifred Florence Fennell, Teresa Naughton, Cecelia Naughton, Julia Milne Brown, Mary Josephine Dowling, James William Standley, Fred Wade, Harold Alexander Hambling, William Henry Rigby, Joseph Glynn Edwards, Thomas James Beddoe, Arthur Armstrong, Alfred James Garman, Ivan Charlesworth.

Hertfordshire, Hill End.—Gwladys Violet Gore.

Kent, Chartham.—John Edward Dunnell, *Arthur Henry Taylor, Christopher Woodridge, Kathleen Mary O'Connor, Marjorie Isabel Meakin, Mollie Irene Thresher, Elizabeth Sophia Reeves, Mary O'Connor, Dulcie Dorothy Muriel Spratt.

Lancashire, Lancaster.—Robert Crosbie, Bertha Hodgson.

Lancashire, Rainhill.—Ellen Ashton Eccles, Alice Haines Griffiths, Ellen Swift, Dorothy Lilian Gilmore, Elizabeth O'Connor, Charlotte Ashcroft.

Lancashire, Whittingham.—John Porter, Thomas Frederick Willacy, Benjamin Alfred Wilson, John Frederick Dodding, Harry Drake, John Collins, Doris Anyon, Virginia May Sharples, Elizabeth Ellen Davies, Thomas Holland, Mary Reynolds, James Ward.

Leicestershire and Rutland.—Ernest Waterfield.

Lincoln, Bracebridge.—Margery Swinger, May Christian, Edith Liens, Alice Elizabeth Green, Ernest Walter Briggs, Joseph Herbert Everatt.

London, Banstead.—John Dennis, Thomas John Lewis, Robert George Neville, Arthur Edward Richardson, Gerald Stanley Watson, Leslie Robert George Gauld, Robert Stuart Larter, Ernest Pennington, Frederick Albert Littlejohn, Alfred Edmund Bennett, Edmund Abraham Morrdal Evans, Marjorie Clarke, Rosina Arvona Jones, Kate Moroney, Evelyn Elizabeth Savage, Mary Ellen Sedwards, Frances Ada Smith, *Lilian Taylor.

London, Bexley.—George William Clarke, Mabel Irene Chesswas, Dorothy Peal.

London, Cane Hill.—Harry William Lower, Fanny Violet Cooper.

London, Claybury.—Gertrude Matilda Bradley, Rose Barrett, Edward Cecil Billings, Ralph Clayton, Eleanor Evans, Dora Janet Fox, *Olive Herriott, Edward George Hearn, Kathleen Rose Parnell, William Henry Rozee, Doris Irene Ruth Smith, *Josephine Helena Scott, Elsie Simpson Pearse, Margaret Ceinwen Williams.

London, Colney Hatch—Lucy Marion Smith, Lilian Maude Frampton, *Evelyn Mary Rollason, Kathleen Alice Garrett, Rachel Mary Jones, Edna May Evans, Annie Maria Bidwell, Christabel Faint, William Lucien Dominic Martin, Walter James Blackwell, Thomas Prosser, Charles James Dixon, Thomas Edward Murphy, Frederick Albert Ings.

London, Ewell Colony.—Harold Jesse Veasey.

London, Hanwell.—Florence A. Freeman, Mary Curran, Marjorie Kevis, Mary L. M. Crouch, Alice Sedwards, Edith E. Chapman, Agnes G. Falconer, Walter J. Rose, *Thomas C. Doidge.

London, Horton.—Frances Irene Marsh.

London, Long Grove.—Evan John Carvell, Ernest Henry Dixon, Clifford Mallion Lambert, John George Snowdon, Sarah Catherine Corr, Nellie Fryer, Nellie Huntley, Louie Mitchell, Edith Ada Phillips.

London, Tooting Bec.—Alfred Kenderick Brooks, William Alfred Fuller, Herbert Charles Giddings, Arthur Cecil Humphrey, Roy Hoad, Albert Henry John Hutchings, Joseph William Johnston, James Thomas Kingsland, Filmer George Rendell, Ronald Henry Sevier, William Upfold, Frederick William Lazard, Charles Cecil Meggett, John Edwin Reeby, Edna Ellen Morris, Doris Daisy Ann Dexter Moore, Mary Lucy Pearse, Adeline Mary Berry, Annie Hay, Mabel Agnes Squires, Ellen Mary McGarry, Mildred Clara Doris Holliday, Annie Bridget Byrne, Marion Peters, Elizabeth Olwen Evans, May Florence Emberson, Gladys May Barnett, Jean Brown Forbes, Ruby Iris Williams, Ivy Vera Scarrott, Mary Josephine Prendergast, Nella Victoria McDonald, Honoria Mary Killoran.

London, West Park.—Robert Stanley Hancock, Frederick Smith, Evan David Lloyd, Harry Leslie Trollope, Albert Henry Mustoe, Harry William Selman, Frederick Renwick, Bertram Ernest Green, Sydney Alexander Lamport, William Edward John Ede, Harry Westover, Eleanor Gower, Annie Holvey, Lily O'Sullivan, Mary Ann McDermott, *Irene Viola Liddell, Hilda May Wilson, Sheila Long, Joan Long, Lena Robins, Annie Olwen George, Cicely Ethel Barnes, Mary Carter.

Middlesex, Napsbury.—Marion Cooper, Catherine Marron, Sidney William Barton.

Middlesex, Springfield.—Agnes Gwendoline Gibbs, Aileen Horton, Albert John Wright, Abraham Parfitt, *Albert Leonard Howse.

Monmouthshire.—Ethel Mary Lear, Arthur Pardoe James.

Northamptonshire.—Vivian Bernard Clark.

Nottinghamshire.—Dorothy Irene Craven, Ivy Hayward, Doris Madin, Basil Hamilton Drake, Walter Thomas Broughton, Charles William Wright, George Southern.

Oxford County and City.—Olive Thomas, Henrietta Marie Kiuby, *Doris Eva Green, Ivy Elizabeth Jacobs, Irene May Webb.

Somerset and Bath, Cotford.—Eva Shepherd, Frederick Stanley Sanders.

Staffordshire, Stafford.—Helen Gladys Lillian Fitzpatrick.

Suffolk.—Ada E. Tester.

Surrey, Netherne.—William G. Ledbury, Sophia G. Dodd, Lily Colclough.

Sussex, East.—Irene Parry, Elizabeth Josephine Mulligan, Mary Teresa Campbell, Imenda Marie Malone, Annie Hulme, Margaret Lynch, Clara Adams, John Denis Flawn, Walter Caton, Clifford Driscoll, *Joseph Henry Key, William Llewellyn.

Sussex, West.—Catherine Mary Watson, Beatrice Amelia Gavin, Violet Bargh, Ivy Winifred Holman, Jessie Alice Brunton, Patricia Kathleen Nolan, Marjorie McNiff, Esther Brennan, Amy Isherwood, Vivian Emma Kerridge, William David Evans, Harold William Pelly Brewer, James Andrew Morris.

Wiltshire.—Albert Edward Turner.

Yorkshire, North Riding.—*Bridget Casey, Agnes Brown, Elizabeth Costello, Lillian Dawson, June Early, Margaret Eden, Dora Ethel Goodwin, Ernest Frost, Roger Harrison Robson, John Alfred Grindrod.

Yorkshire, West Riding, Wadsley.—Rose Brennan, Olive Cooper, Mabel Longden, Annie Elizabeth Revitt, Florence Shelton, Edna Stevenson, Lily Saynor, George Frederick Stanley, Herman William Thorpe.

Birmingham, Rubery Hill and Hollymoor.—*Florence Wroe, *Ethel Mary Brookes, Lillian Foster, Violet Green, Annie Catherine Molloy, Catherine Mary Barnes, Percy Charles Busby, Edward Poole, William Poole.

Birmingham, Winson Green.—Marion Harris, Eitunned Roberts, Ivy Clifton, Ellen Elizabeth Ford, Robert John Evans.

Brighton.—Ceinwen Davies, Gwendoline May Watkins, Gertrude Thissen, Euriennydd Thomas, Linda Elizabeth Davies, Glenys Mary Robins, John Robson.

Bristol.—Blanche Charles, Winifred Ford.

Croydon.—Isabelle Pentland, Hannah Hunter.

Derby Borough.—Annie Cecilia Deacon, Mildred Martha Washington, Dorothy Mary Twigge, Ellen Rice.

Gateshead.—Charles Edward Thompson.

Hull.—Francis Norman Chamberlain, George Alfred Buckle, Elizabeth Eleanor Walker.

Ipswich.—Beatrice Stockings.

London, City of.—Helen Barclay Fleming.

Middlesbrough.—George William Bowmaker, Joseph Arthur Davis, Harker Summersgill, Ernest Young, Olive Marjorie Dowson, Winifred Sorbie, Alice May Willetts.

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Newport.—Laura Jones, Walter James Hussey, William Charles James.

Norwich.—Edward Charles Doubleday, William James Francis, Amy May Cox, Stella Levina Smith.

Nottingham.—Gordon William Hickman, *Reginald Cooling, Melinda Alice Rose, Edith Ellen Baker, Ellen Seddon, Alice Alderson, Helen Gertrude Major, Margaret Lacey, Florence Clough, Alice Howarth, Ida Bedford, Henrietta Riley, Dorothy Chapman.

Plymouth.—Henry Phillips Hawken.

Portsmouth.—Ethel Morgan, May Pitt, Clara Elizabeth Ivy Wilson, Eileen Florence Langdown, *Joyce Lydia Jermy, Harry Albert Edward Rowlands, William Charles Joseph Harbour, Edward Rickman.

West Ham.—Lilian Whittaker, Daisy Jones, Florence Edith Kennedy, Percy Frank Collingwood.

York.—Harry Midgley, Harold Penrose, Albert Thomas Reynolds, Ellen Lawrence, Elizabeth Robinson.

Ministry of Pensions, Kirkburton.—Rowland Hudson.

Netley.—*John Kelly, Robert Thomas Knight.

Basilbrook House.—Hilda Elizabeth Harbour.

Barnwood House.—Norman Samuel Hartshorne, Eleanor Morgan, Veronica Elizabeth Brock.

Bethlem Royal.—Albert Edward Daniell, Archibald James Jackman, Clarence Courtier.

Camberwell House.—Annie Mary McGuinness, Margaret Bridget McGuinness, Austin Edward Tyler.

Cheadle Royal.—Millicent M. Rowe.

Holloway Sanatorium.—Margaret Alice Pease.

The Old Manor.—Henry George Parsons, Martin Conlon, Ernest Edward Kilham, Charles Andrews, Percy Stone, Jane Bridget Kelly, Kathleen Kennedy, Miriam Watts, Mary Ann Mangan, Norah McMahon, Agnes Beatrice Davies, Frank Martin.

The Retreat.—Robert Gardner, Thomas Cyril Fawell, Eva Elizabeth Kirby, Alice Redmond, Elsie Fenton, Dorothy Jackson, Charlotte Mary Niven, Bridget Shannon.

Ticehurst.—Winifred Clara Grineau.

Warneford.—Vera Maud Calloway, *Emma Maud Mary Foreman, *Arthur Henry Smith.

Aberdeen Royal.—Rosa Helen Murray, Catherine Cowie, Anderina Craig.

Argyll and Bute.—Isabella Scott Campbell.

Crichton Royal.—Bernard Andrew MacFarlane, John Johnstone Richardson, Joseph Drysdale Black, Agnes May Chalmers Wells, Marjory Scouler Orr Brown, Agnes Jardine McCann, Marjory Nicolson, Ann Macarthur, Sarah McCann, Marjory McLean, Annie W. Goldie, Barbara Taylor Wilson, Agnes Bell, Mary Jane O'Hara, Mary Jackson, Mary Jane Dunnery, Isabella McLean, Elizabeth Blue Stalker.

East Lothian.—Annie Catherine Parker, Joanna Stewart MacKinnon.

Edinburgh, Bangour.—Jane Philip Blackie Gough, Barbara Renton Sanderson, Margaret Duncan Sneddon, Charles Duthie.

Edinburgh Royal, Craig House.—Margaret Taylor, Alice K. Hume, Flora McLennan, Georgina H. McKay, Isabella Gentleman.

Edinburgh Royal, West House.—Barbara Hamilton, Isabella Penman, Christina McDonald, Mabel Jones, Ellen Catherine Scott, David S. Kerr, John Mitchell, John Grant, Robert McLean, John Gordon.

Glasgow, Gartloch.—Helen Goodwin McKinnon, Mary Marshall Aitken, Jessie Sutherland Kerr, John Wesley Fox, Alexander Nesbit Neville.

Glasgow, Woodilee.—Isabella M. Palmer, Jane Wilson Glenn, Bella Ann Morrison.

Govan.—Alexander Johnston.

Greenock.—*Hannah Davis, *Jeannie McMenemy Drummond, Flora Montgomery, *Catherine Ann McIsaac, *Alexander Macdonald.

Inverness.—Felina MacDonald, Annie Rennie, Margaret Bruce, Robert William Corbett, William Munro.

Kirklands.—Hector McLean, Archibald Morrison.

Midlothian.—Angus McPherson, John Rankin.

Montrose.—Catherine Duthie, Jeanie Flowers, Kate Gallagher, Joan Henderson, Daisy Low, Alison Menzies, Magdalene Mitchell, Dulcie Lockhart Robertson, Ellen McVeigh.

Paisley, Riccarton.—Elizabeth Margaret Brown.

Stirling.—Jeannie Biggar Pender Forsyth, Peggie McLean, Mary Young, Robert John Anderson, Blanche Gaffney, David Mitchell, Hector McKay, Robert Williamson.

Ballinasloe.—Patrick Dolan, Frank Clayton, Kathleen Burke, Mary Norton.

Belfast.—Nellie Barclay, Catherine Connolly, Margaret A. Gallagher, May McDonald, Margaret Smyth, James McKnight.

Downpatrick.—*Norah Denvir, Margaret McCoubrey, Margaret Ellen Smyth, Margaret Wiggins, Robert Galloway, Patrick Lynch, *John Patrick McConvey.

Farnham House.—Rosemary Coyle, Mary Mescall, Eva Christina Hickey.

Grangeorman.—Patrick Dunne, William Reynolds, Michael Gernan, John Fitzpatrick, Timothy Doyle, Joseph O'Toole, Norah Duffy, Ellen Davitt, Ellen Brennan, Margaret Anglim, Winifred Daly, Ellen E. Rochford, Alice Byrne, Mary Droncy, Elizabeth N. Rooney.

Kilkenny.—John Lennon, Bridget Butler.

Mullingar.—Ellen Duffley, Teresa Moore, John O'Brien.

Omagh.—Annie Glass, Isabella Green.

Portlaoighise (Maryborough).—Margaret Moore, Catherine Richardson.

Portrane.—Elizabeth Carolin, Mary Moore, Bridget McGuinness, James Griffith, Percy Hinchy, Patrick Weston, Patrick Kieran, *Patrick Carroll, Christopher McCann, William Hayden.

SOUTH AFRICA.

Bloemfontein.—Hester Sophia Pelsler, Hester Muller, Daniellina Maryna Jacoba Olivier.

Fort Beaufort.—*Daniel Erasmus Els, Alma Charlotte Purse.

Grahamstown.—Susara Margaretha Breytenbach, Hester Louisa du Preez, Patricia Fivaz, *Emma Aletta Landman, Ethel Steyl.

Pietermaritzburg.—Cornelius Johannes Vermaak, Kenneth William Scott, Robert Evert van der Molen, Elizabeth Johanna Schnettler, Lydia Ruth Vogt, Louisa Wilhelmina Botha.

Port Alfred.—Zena Julia Hartman, Magdalena Cornelia Scheepers, Janetta Sophia Swart.

Pretoria.—Martha Catharina Lewies, *Christian Johannes Naude Swanepoel, David Johannes Janse van Rensburg, Salome Vlok, Arthur E. Whiley.

Queenstown.—Thomas Allen, Willem Christian Goosen, Petrus Johannes Nicolaas van der Merwe, Frans Thomas von Molendorf, Joseph Herman Christian Meyer, Philippus Lodewyk Daniel Olivier, Benjamin Joubert Vorster, Patrick William Kavanagh, Ethisa Elizabeth Palmer, Alberta Johanna Andrica van der Walt, Jacoba Johanna van Heerden, Hendrina Sophia Scholtz, Anna Louisa Otto.

Valkenberg.—Johannes Wilhelm Grimbeek, Hendricks Johannes Burger, Catherina Elizabeth Krige, Johanna Jacoba Krige.

Nursing of Mental Defectives.

GREAT BRITAIN AND IRELAND.

Royal Albert.—*Catherine Elizabeth Black, Hannah Elizabeth Hodson, Ethel Henedy.

Calderstones.—Lily Ada Brown, Ellen Downs, Marjorie Lilian Heaton, Rose Hannah Craddock Meade, Mary Ellen Mellan, Violet Ruddock, Frances Ward, Leonard Cowburn, Michael Robinson.

Caterham.—Edith Annie Carter, May Elizabeth Bontoft, Henry J. Burgoyne, Percy Cotterell.

Darenth.—Alfred Ernest Dudman, John Prendergast, Agnes Mary Goodhew, Gertrude Vera Martin, Edna Eileen Reynolds, Florence Edith Watson.

Farmfield.—Norman Edwin Funnell, Ernest William Parker.

Fountain.—Rhoda Morgan, Ena Doris Cecily Leggett, *Eleanor Isabella Cowan, Annie McDaid, Jessie Johnson.

Gt. Barr Colony.—Alfred Ernest Leath.

Leavesden.—Edward James Field, Harold Cecil Robins, Sidney John Sherlock, Norah Cartwright, Dorothy Edith Chinnock, Lilian May Folds, Florence Emily Garrard, Anne Kathleen Green, Elizabeth May Hart, Nellie Lynes, Doris Violet Reed.

The Manor.—Christina Bell Gafford, Evelyn Lily Evans, Vera Dorothy Tucker, Violet Dargue, Olive Alexandra Dunbar, Fanny Tipper, Gladys Eva Norton, Ellen Mary Maloney, George Hyatt, John William McManus.

Stoneyetts.—Alexander McLean.

SOUTH AFRICA.

Alexandra Institution.—Hester Maria Minnaar, Martha Catharina Wright.

Witrand.—Joseph Frederick Vorster, Hendrik Belthazar K. Bester, Johanna Wilhelmina J. Boonzaaier, Johanna Maria C. Grobler.

Bronze Medal and Prize for 1931.

Dissertations for the Association's Bronze Medal and Prize must be delivered to the Registrar by April 30, 1931.

Divisional Prizes for 1931.

Papers certified as eligible for this competition must be forwarded to the Registrar not later than April 30, 1931.

Gaskell Medal and Prize.

The following Regulation has been rescinded on the authority of the Annual General Meeting (Wakefield), 1928 :

"(3) A thesis based on original research, if of sufficient merit, may be accepted by the examiners in place of either the written or the clinical examination or both."

The examination for the Gaskell Medal and Prize and the examination for the Certificate in Psychological Medicine will be held at the Maudsley Hospital, Denmark Hill, London, in May, 1931.

Applications for entry to each examination to be made to the Registrar, St. Andrew's Hospital, Northampton.

There is no fee for entrance to the Gaskell Prize Examination.

The entrance fee for the examination for the Certificate in Psychological Medicine is three guineas.

The Nursing Badge.

This Badge, founded at the Annual Meeting (Wakefield), July 11, 1928, can now be obtained from the Registrar. The application must be made on a special form and accompanied by 6s., which includes the cost of engraving the name and registration number of the holder.

The badge is issued for general use, but especially for occasions when the nursing medal is inconvenient or inappropriate. It is fitted with a brooch-pin for women and a crescent-shaped button-hole stud for men.

For full particulars of the Association's Medals and Prizes and the Certificate in Psychological Medicine see "Year Book" prefacing the January number of the Journal.

NOTICES BY THE GENERAL SECRETARY.

The Maudsley Lecture, 1931.

Owing to unforeseen circumstances, the 12th Maudsley Lecture by Sir HUBERT BOND, K.B.E., has been postponed until the November Quarterly Meeting.

Notices of Meetings.

Quarterly Meetings.—February 25, 1931, at the British Medical Association House. May 21, 1931, at the British Medical Association House.

South-Eastern Division.—May 7, 1931, at the East Sussex County Mental Hospital, Hellingly.

South-Western Division.—April 30th, 1931, at the Oxford County and City Mental Hospital, Littlemore.

Northern and Midland Division.—April 29, 1931, at Bryn-y-Neuadd, Llanfairfechan, North Wales.

Irish Division.—April 2, 1931, at the Royal College of Physicians, Kildare Street, Dublin.

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VOL. LXXVII

THE UTILITY OF THE PSYCHIATRIC OUT-PATIENT CLINIC.*

By IAN SKOTTOWE, M.D., D.P.M.,

Deputy Medical Superintendent, Cardiff City Mental Hospital; Honorary Assistant Psychiatrist, Cardiff Royal Infirmary.

HISTORICAL.

It is usual to open a paper with a historical survey of the subject under review. In a sense that is an academic approach. This paper, however, deals with the purely utilitarian aspect of psychiatric out-patient clinics; and a historical survey would only be in place if it were to give us practical suggestions, likely to prove of value in present circumstances. Up to the present time most of the literature of this subject has been in the shape of formal annual reports. A notable exception to this general statement was the paper on "The Oxford Clinic," communicated by Dr. Good at the Annual Meeting of this Association in 1921. That paper was not only an account of the general method of working a clinic, but was a concise description of how psychiatric out-patients should be handled. It was followed in 1922 by a paper by Dr. Ninian Bruce, dealing more particularly with Ministry of Pensions Clinics, and expressing the view that the methods employed there could be satisfactorily adapted for civilian patients. It is interesting to note that Dr. Ninian Bruce used the future tense in describing the utility of these clinics, and that practically all of his forecasts either have come, or are coming, true. The methods described by these writers have been widely used in many clinics in the ten years

* A paper read at the Quarterly Meeting held in London, February 25, 1931.

which have since passed ; various practical points have cropped up ; legislation has been changed ; and a review of the utility of the psychiatric out-patient clinic in the light of these things is the aim of the present paper.

Statistics, naturally, must form the basis of any assessment of utility ; but this contribution aims rather at being an informal statement of the results of practical experience in such clinics. It is an attempt to place on record the numerous small but important points which cannot quite be gleaned from the more formal type of report ; and it is based on the personal study of some five hundred cases. There is, however, one other matter relating to the history of out-patient clinics to which I should like to refer. It is the work of the late Dr. Henry Rayner (1). As far as I can ascertain, Rayner was the pioneer of the psychiatric out-patient clinic in this country. About 1889, or thereby, whilst holding the post of Lecturer in Mental Diseases at St. Thomas's Hospital, he persuaded the Governors to open an out-patient department for early mental cases. He made public the results of his experience at the B.M.A. meeting at Newcastle in 1893, in a paper entitled "Remarks on the Out-Patient Department for Mental Diseases at St. Thomas's Hospital." A paragraph from that paper is worthy of quotation because it summarizes what are still the aims of the psychiatric clinic. It reads as follows :

"The direct work of the out-patient department is not only to treat the cases suitable for treatment, but to relegate into the proper channels those requiring change of air, hospital, infirmary or asylum care. The indirect advantages are the removal from the popular mind of the idea that mental disease is something apart from all other diseases, and the bringing of the alienist physician into more continual contact with the rest of the profession, thereby breaking down the isolation of alienism which has hitherto existed."

That was forty years ago. At the present time, when we look so much to America and to the Continent for guidance in the care of the early case, we should not forget that the fundamentally sound work of one of our own countrymen preceded the development of many, if not most, of the foreign clinics which are now regarded as so progressive.

THE PRESENT POSITION.

The passing of the Mental Treatment Act brings the subject of psychiatric out-patient clinics into sharp focus at the present time,

because statutory powers are given to local authorities to open such clinics for the management of early cases. There are two types of psychiatric clinic already established in this country. Firstly, there is the psychiatric institute type, where a whole building is devoted to the in-patient and out-patient class of early psychiatric cases—such hospitals as the Maudsley Hospital and the Jordanburn Nerve Hospital, and a few similar institutions. Secondly, there is the psychiatric out-patient department or clinic at a general hospital, which, if one excepts some of the London hospitals, is usually managed and conducted by psychiatrists belonging to the staff of a neighbouring mental hospital.

In the present discussion we are not concerned with the psychiatric institute type of clinic. Its problems are peculiar, and have already been discussed at length (2). Most people who have had dealings with early mental illnesses will agree that the psychiatric institute is the best means of providing for such cases. It will be a long time, however, before such hospitals can be erected in sufficient numbers to provide a nation-wide psychiatric service of this type.

Until such an ideal is achieved we must be content, for the majority of cases, with the second type of psychiatric clinic—that is, a department of a general hospital, managed by visiting psychiatrists and dealing almost exclusively with out-patients. One of the first things that strikes one in regard to this type of clinic is the comparatively small number of new cases seen each year. The clinics at Glasgow and Cardiff, for example, each tapping a large industrial population of between one and two millions, only receive 100 to 120 new cases annually. This certainly does not mean that the incidence of early mental illness is low. It probably means that the public and the family practitioners have not yet fully appreciated that a consulting psychiatric service is at their doorstep. There is, however, a slight but steady annual increase of new cases, which shows, that this fact is becoming more widely known. Again, there is no doubt that a large number of early cases are sent direct to Poor-Law observation wards, when they might instead have come to the psychiatric clinic.

These views are supported when one considers that in Boston, Mass., where there is a less fatalistic attitude towards mental illness than there is in this country, an annual influx of 4,000 new cases reaches the psychopathic hospital; and that institution is only one of several tapping a population which is certainly no greater than those already mentioned.

METHODS OF MANAGEMENT.

It is found, as a matter of experience, that in order to deal with a hundred new cases annually, a staff of three psychiatrists meeting once weekly for two to three hours is desirable. In addition, a nurse and a trained and experienced social worker should be available. The scheme which we have found most satisfactory at Cardiff is as follows: The medical superintendent of the mental hospital is the senior consultant at the out-patient clinic at the Cardiff Royal Infirmary. His assistants are the medical officers in charge of the male and female sides respectively of the mental hospital; one of these is a medical woman. I would draw particular attention to this arrangement. It means that if a patient attending the clinic has to go into the mental hospital, he is still under the direct care of the same medical officer—a fact which is much appreciated by patients, because it helps to dispel the strangeness which they naturally feel on first being admitted to hospital. Similarly, cases discharged from the mental hospital can attend at the clinic under the surveillance of the medical officer who cared for them during the acute stage of their illness. The nurse at the clinic is a trained mental nurse supplied by the mental hospital. Her duties are to some extent clerical. She sees that the indexing of cases, records of visits, etc., are properly done, and she is a necessity in the examination of unattended female patients.

The social worker is fully trained, and being a member of the local League of Social Service is in intimate touch with the general and personal conditions of life of our patients. Her duties are to check material facts in a patient's history, to report on the nature of the home conditions; to see that instructions regarding home treatment are carried out, and to encourage regular attendance at the clinic on the part of patients who are apt to drift and lose touch.

She is in touch with most of the official and semi-official rest homes, charitable organizations and so on, and is in a position to secure the services of those institutions should the physicians consider it necessary.

Although we find that we only use social service in about 25% of our cases, it is so essential in these that we should be practically helpless without it.

The accommodation at the clinic consists of three rooms. These are occupied separately by the psychiatrists in attendance, so that patients can receive individual and private attention. This

is not so essential for the first visit of the patient, but may become so at future attendances, when more intimate matters fall to be discussed. Thus, there is rarely any objection to students being present when a case is seen for the first time.

INDIVIDUAL TREATMENT.

A new case arriving at the clinic is seen in the first instance by the senior psychiatrist, who makes a preliminary survey of the case. This takes the greater part of an hour at least.

It may or may not be possible to make a diagnosis at this first sitting. If there is reason to suspect the presence of organic disease and the mental symptoms are not grossly developed, the patient may be admitted to the wards of the general hospital for further investigation.

This procedure is followed in early cases of general paralysis, psychoses with arterio-sclerosis or other diseases affecting the central nervous system. Reports on the cerebro-spinal fluid, blood state or other relevant matters are forwarded to the senior psychiatrist, who then makes arrangements for treatment to be carried out at an appropriate place. It may be that the patient remains where he is for treatment, and in this way we have had malaria administered to a number of very early general paralytics at the general hospital. These organic cases are few in number, however, being only about 5% of all our cases.

In a considerable number of cases the diagnosis is all too obvious—fully developed examples of schizophrenia, mental deficiency, epilepsy with psychosis, and so forth. The percentage of these gross cases fluctuates considerably from year to year, but average about 25%.

In many of them, of course, the family practitioner is fully aware of the diagnosis before he sends the case to the clinic, and he knows quite well that certification will probably be advised. It is our experience that these cases generally belong to a class which is peculiarly difficult for the general practitioner to handle. Their relatives are often difficult, and tend to pooh-pooh the family doctor's suggestion that the patient is mentally ill. The result of this is that the doctor is very reluctant to suggest even observational care, let alone certification, and it is only when he is backed up by independent expert opinion that he feels justified in pressing his views upon a completely uncomprehending relative. Many people hold the view that such cases should not be sent to a psychiatric clinic

at all—that it is a waste of time, as they cannot be treated there. Personally I entirely disagree with that view-point, and I feel that even by a single consultation and expression of opinion in such cases, the psychiatric clinic can render a very real service to the general practitioner, his patient, and the relatives.

Having cleared the ground by dealing with the more advanced cases first, let us now consider those whose mental illness takes a less pronounced form, and who, therefore, are in a position to attend the clinic regularly for treatment—such cases' as anxiety states, neurasthenia, hysteria, early depression, behaviour problems and so forth. These constitute the greater part of our patients, amounting to something between 60% and 70% of all new cases.

After a case of this group has been seen by the senior psychiatrist, the patient is handed over to one of the assistants. Patients are always managed by a psychiatrist of their own sex, because we depend a good deal on psycho-therapy, and we find that better results are obtained by adhering to this plan. We have tried it the other way.

FORMS OF THERAPY.

In considering forms of therapy, one must insist upon the importance of the modern dynamic conception of mental illness.

It is of little help to us to regard the conditions before us only from the point of view of disease entities. We are dealing with individuals, with peculiarly personal hopes, fears, beliefs and up-bringsings, who have met with some great obstructions in the path of their lives.

These obstructions may be organic diseases, psychological conflicts or traumata, or difficult social situations. Setting apart special forms of physical treatment, such as malaria, surgical operation and so on where indicated, we find that the major forms of therapy at our disposal are psycho-therapy and social service.

Psychotherapy.

We do not adhere to any one particular school, and we do not pretend to practise any psycho-analytical forms of therapy. Our psychotherapy, in the main, approaches most closely to the "persuasionist" doctrines of Déjerine, but we seek to incorporate in it the

teachings of any school which we find useful for the individual case. Our patients are not as a rule of a deeply thoughtful or highly intellectual status, and our psychotherapy must of necessity be of the common-sense variety rather than the academic. It varies from the "pat-on-the-back" type of suggestion to the explanation of simple mental mechanisms.

The following case will illustrate what is meant: A clerk, *æt.* 42, came to the clinic complaining of depression, inability to do his work, sleeplessness and anxiety attacks of about six months' duration. His illness had begun with a kind of fugue. He had wandered away for three days and had "come to himself" in a neighbouring town, having no recollection whatever of what he had been doing or where he had been since leaving his home. His other symptoms were largely secondary to this. He was thoroughly frightened; he thought something awful was wrong with him and he dreaded a recurrence of this fugue. He attended the clinic almost every week for four months. No evidence of organic disease was found. The following facts were gradually brought out in conversation with him: He was a married man with four children; he had to support his mother in addition. His income was two hundred pounds per annum. He had a good war record. He had married during the war and his wife was of a rather superior type. It was something of a come-down when he returned to civilian life. Soon afterwards, however, he had an opportunity of a post abroad, which, although less secure than that which he held, had much more attractive prospects. He was a believer in "safety first," and he stayed on where he was. Shortly before his illness began he learned that the man who had taken this post abroad in his stead was now earning two thousand pounds per annum, and was in an excellent position.

Picture to yourselves the situation. Here is a man supporting a large family on two hundred pounds per annum, married to a woman with strong ideas of social uplift, who casts up to him what he might have been, by continually referring to the success of the other man, in a job which might have been his own. He feels inferior, wretched and sick of the whole thing. He sees no way out; an escape reaction of some sort is clearly indicated.

This at any rate was the explanation gradually put to the patient. It was all discussed very fully with him. He was told that his wandering off represented a strong wish to escape. He was told that he could not bring himself to appreciate that he had such a wish, because of his very conscientious nature. Taking advantage

of his war service, it was put to him that his case was similar to many that were then called "shell-shock." This put the whole thing on an intelligible basis to the man. He no longer felt that he had some mysterious disease; he was beginning to understand himself. He fully appreciated that his other symptoms were secondary to the major thing. This took about two months to explain. The remaining two months were spent in going over the ground again, and discussing in a simple way the principles of character formation in the way outlined by McDougall. In the early stages of treatment he was not allowed to be at work. He was told how to fill in his time by suitable occupations at home and in the garden, and he was given bromides for his insomnia. For the last month or so of treatment he was sent back to light work by arrangement with his employers. He is now well and free from symptoms. We are not concerned with whether the explanation offered to the patient is the true one or not. That mechanism at least played a part in his breakdown, superficial though it was. The fact is that the man regained his mental health, and that is the criterion we go by in assessing utility.

SOCIAL SERVICE.

Social service is not only essential for the accurate collecting of facts, but it has definite therapeutic value, the two functions often going hand in hand, as the following case will show.

A boy, *æt.* 7, was referred to the clinic by the surgical unit, whither he had been sent because he complained of his "back passage being stopped up," and because he would go as long as a week without a motion. No organic lesion had been found. He was a miserable-looking child, nervous, pale, ill-kempt. His mother stated that he had been the victim of a homosexual assault some six weeks previously and had been in this condition ever since. He had changed from a bright, cheerful little fellow into a nervous, wretched object. He could not sleep at night, he could not do his lessons, and he was terrified of anyone coming into the house. His assailant was at this time awaiting trial at the Assizes.

Social service investigated this case and found that the patient's mother was a woman of the streets; his father was at home dying of cancer. The family was of the lowest grade and lived in a wretched locality. The mother, being both ignorant and in desperate financial straits, had a definite idea that in some mysterious

way she would get compensation when the case came up for trial. It was established beyond reasonable doubt that practically every one of the child's symptoms had been suggested to him by his mother. She was trying to make the child as ill as possible so that she could display him in court the better to press her case.

The mother and child were then brought back to the clinic. The child was reassured and was sent off to a rest home at the seaside for seventeen days, where he would mix with others of his own age convalescing from general hospital wards. The mother was told pretty straightly how things stood, and what effect her own behaviour was having on the child. I saw the child a short time after his return, and he was absolutely well in every way. Social service continues to keep track of this case, and will report should further action be required. As is often the case in these behaviour problems, half the treatment is to get the parents to adopt a proper attitude to the patient.

I have quoted only two cases to illustrate the methods we employ. We have many that do not progress to such a successful issue, but on the other hand, although we cannot free them of their symptoms, we can help them to such an extent that they are enabled to keep going and prevented from drifting. I do not consider that we can, except in a very few instances, arrest the development of the true psychoses, which require mental hospital care. That problem belongs, I dare to hope, more to the fields of child guidance and mental hygiene. The out-patient clinic is primarily a utility organization, serving the needs of that vast mass of indeterminate sort of people whose lives are a tangle, who drag on, not understanding themselves, mentally ill, yet not ill enough for mental hospital care, hitherto practically unprovided for, and almost without exception deeply appreciative of what is done for them.

It remains only to summarize the utility functions of the psychiatric clinic :

- (1) It brings psychiatry and general medicine closer together.
- (2) It provides unparalleled clinical experience for students if they care to attend it—for this is the sort of thing they are going to come across in general practice.
- (3) It establishes closer relationship between mental hospital patients and their physicians by paving the way for their admission and by providing a follow-up or after-care service.
- (4) It provides a consulting service for all classes, and in

this respect, particularly with difficult relatives, it is a great help to the general practitioner.

(5) It provides treatment for cases not ill enough to justify their admission to a mental hospital, and yet who will not recover without some form of treatment.

(6) It paves the way for enlightenment of the lay mind on the subject of mental illness.

In conclusion I must apologize for being didactic. It is necessary to be so in a short paper of this kind, and I thank you for bearing with me.

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FURTHER RESULTS WITH THE BOLTZ ACETIC ANHYDRIDE TEST.

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THE recent recrudescence of interest in the Boltz test, as evidenced by Dr. C. J. Thomas's paper on the subject, prompts us to publish further results obtained with this test, together with a few conclusions as to its value.

LITERATURE.

The test was first described by Boltz in 1923, and again in 1926. He found the test positive only in general paralysis and taboparesis. Grossman in 1925 confirmed Boltz's results, as did Harris in 1926. The latter believed it to be specific for general paralysis, and stated that malarial treatment had no effect upon it. In collaboration with Dr. J. P. Steel, one of us (J. E. N.) gave the earlier results obtained here, showing that the test did alter after malaria, wherein we were supported by Silverston in the same year. Other results were published by Fleming, and by Loberg. Walker and Sleeper, however, after investigation of the test, concluded that it was not specific at all.

In 1927 the test was again reported upon by Fleming, who found it invariably positive in parietic fluids. Schreus regarded it as a reliable test for syphilis, but Dietrich, Wullenweber, Scharfetter all obtained positive results in meningitis, the importance of meningeal involvement for a positive Boltz being also stressed by Cady. Baumann found it positive in 10% of psychopaths, and Duncan and Turnbull went so far as to state that it was positive in all samples of cerebro-spinal fluid, normal as well as abnormal. Greenfield and Carmichael, however, found it positive only in general paralysis and neuro-syphilis.

Further reports were published in 1928 by Nicole, Fleming,

Novick, Myerson and Halloran—the last two concluding that the test was not of much value; and in 1929 by Ewing, Nicole, Pietrowski and Herbert. By this last the Boltz test is regarded as useless for the differentiation of general paralysis from other nervous diseases. Finally in 1930, Newman, and one of us (E. J. F.), upheld the value of the test, at least in mental hospital practice, while its use was further reported upon by Ewing, McCowan, Vincent and Thomas.

As far as it is possible to summarize the views of so many observers, it might be said that in the earlier stages considerable reliance was placed upon the test, and it was regarded as specific in varying degrees in that it was thought to be a reliable indicator of either (1) general paralysis, or (2) syphilis of the nervous system in general, or at least (3) conditions of meningeal involvement. More recently considerable doubt has been cast upon its value. It has been described as running parallel with the globulin tests in its results, and has been said to be dependent upon a protein increase.

TECHNIQUE AND REAGENTS.

The technique has often been described, and little need be said about it here. As regards reagents, we have used only two samples of acetic anhydride, both of which have yielded good results. We would emphasize this fact in view of the possible chemical basis of the test, which will be discussed later. The only uncertainty we have encountered has been in connection with the ageing of the reagent. After using the same sample of acetic anhydride for eighteen months or two years the colour reaction tends to become weaker. The dirty brown colour so often referred to by other writers we have considered as negative, though we are not entirely convinced of the wisdom of invariably doing this.

MATERIAL.

The material on which our conclusions are based consists of 890 fluids, including 356 from cases of general paralysis. Of the parietic fluids, 176 were examined before and 180 after malarial treatment. The time elapsing between the malaria and the serological examination has varied from one month to $7\frac{1}{2}$ years, reckoning such time period (in those cases that had more than one course of malaria) from the date of the first course.

The Boltz test was accompanied in every case by a cell count,

a globulin reaction, and a Lange's colloidal gold test. In 111 instances a protein estimation was made, and sometimes certain other chemical tests, to be described later.

GENERAL RESULTS.

(1) *Non-paretic Fluids.*

In the 534 non-paretic fluids, the Boltz was negative in 98·67%, positive results occurring in only 7 fluids. Of these, 3 were definitely luetic in type, and 2 others were from cases showing symptoms suggestive of meningeal involvement. It is the latter type of case that is probably responsible for many writers (*e.g.*, Herbert) belittling the test as a means of differentiating general paralysis from other conditions, but in mental hospital practice these non-paretic positives are so rare that we think the test is still of value.

TABLE I.

General paralysis before treatment.				Lange paretic in all cases.				
Globulin +, Boltz +.	Globulin +, Boltz -.	Globulin -, Boltz +.	Globulin -, Boltz -.	Total globulin +.	Total globulin -.	Total Boltz +.	Total Boltz -.	Total fluids.
141	32	2	1	173	3	143	33	176

(2) *Untreated General Paralysis.*

The results of testing 176 fluids from untreated cases of general paralysis showed conclusively that though a positive Boltz may be a strong indicator of general paralysis, a negative Boltz is of no significance, for no less than 33 fluids (18·75%) were negative. Interestingly enough, we have come across several cases where a negative Boltz was obtained before malaria, whereas *very soon* after malaria a positive result occurred.

(3) *General Paralysis after Malaria.*

Here the results were very interesting. In these 180 cases the proportion of negative results to the total fluids was decidedly

high, namely, 61·11%, and the percentage was higher in examinations carried out several years after malaria. Thus in 123 fluids tested within three years of malaria, 48·78% were Boltz-negative, whereas in 57 fluids examined over three years after malaria 89·12% were negative.

TABLE II.

Highest figure of Lauge not above—	Not general paralysis.								General paralysis after treatment.									
	Globulin +, Boltz +.	Globulin +, Boltz -.	Globulin -, Boltz +.	Globulin -, Boltz -.	Total globulin +.	Total globulin -.	Total Boltz +.	Total Boltz -.	Total fluids.	Globulin +, Boltz +.	Globulin +, Boltz -.	Globulin -, Boltz +.	Globulin -, Boltz -.	Total globulin +.	Total globulin -.	Total Boltz +.	Total Boltz -.	Total fluids.
1	..	15	..	338	15	338	..	353	353	..	9	1	23	9	24	1	32	33
2	2	30	..	88	32	88	2	118	120	..	10	..	11	10	11	..	21	21
3	3	20	1	21	23	22	4	41	45	2	11	2	10	13	12	4	21	25
4	1	9	..	5	10	5	1	14	15	10	12	2	4	22	6	12	16	28
5	..	1	..	..	1	..	..	1	1	141	19	12	1	60	13	53	20	73
Total	6	75	1	452	81	453	7	527	534	53	61	17	49	114	66	70	110	180

As to the question of repeated attacks of malaria, the time periods have, as we said before, been calculated from the date of the first course and although there was a trifling preponderance of negative results in cases repeatedly treated as compared with those who had one course only, the difference was too small to be considered significant. The same remark applies to the use of adjuvants to malarial treatment, such as neosalvarsan, stovarsol, bivitol and bismuth preparations.

COMPARISON WITH OTHER TESTS.

(a) *Globulin*.*—The globulin was positive in 15·17% of non-paretic fluids, 98·30% of paretic fluids before treatment, and 63·33% of fluids from treated cases. It at once becomes apparent that the two tests by no means give parallel results. The discrepancy is most marked in the case of the treated patients; these we propose to discuss in greater detail.

The disagreement is of two kinds—positive globulin with negative

* The test used was Pandey's.

Boltz and negative globulin with positive Boltz. Comparing these two, we know that the ratio of total positive globulins to negative globulins is roughly 2 to 1. Hence, if the disagreement were evenly distributed between the two groups, we should expect the number giving positive globulin with negative Boltz to be approximately twice the number giving negative globulin with positive Boltz. This is provided that the total positive Boltz were to the total negatives as 1 to 2. Actually, they were slightly more; hence the number of positive globulins with a negative Boltz should be less than twice the number of negative globulins with a positive Boltz.

TABLE III.

		General paralysis after treatment.																			
		Globulin +, Boltz +.	Globulin +, Boltz -.	Globulin -, Boltz +.	Globulin -, Boltz -.	Total globulin +.		Total globulin -.		Total Boltz +.		Total Boltz -.		Total fluids.		Highest figure of Lange not above—					Total.
														1	2	3	4	5			
Years since malaria.	0-1	32	20	9	5	52	14	41	25	66	3	3	6	11	43	66					
	1-2	10	9	7	8	19	15	17	17	34	5	2	6	2	19	34					
	2-3	6	9	..	8	15	8	6	17	23	2	5	3	8	5	23					
	3-4	4	10	..	7	14	7	4	17	21	2	2	7	5	5	21					
	4-5	1	4	1	8	5	9	2	12	14	7	5	1	1	..	14					
	5+	..	9	..	13	9	13	..	22	22	14	4	2	1	1	22					
Total		53	61	17	49	114	66	70	110	180	33	21	25	28	73	180					

Actually, however, the proportion was just over 3 to 1. This shows that the disagreement was not evenly and proportionately distributed between the two groups, but that it was 50% higher—a significant figure—for the positive globulins with a negative Boltz than for the negative globulins with a positive Boltz. This may be of interest in view of the chemistry of the test.

(b) *Lange's colloidal gold*.—For purposes of classification we have grouped our Lange results according to the highest figure found in the curves. In the non-paretic series there were two positive Boltz with a Lange going to a 2, four with a Lange of 3 and one with a Lange of 4. In the untreated paretics all the Lange curves were typically paretic.

After treatment we again find much disagreement, more especially

with the higher Lange readings. Thus with the Lange going no higher than a 3 we obtained 6·33% *positive* Boltz (79 cases), whereas in the 101 cases with a Lange of 4 and 5 there were 36% *negative* Boltz. We should remember, however, that we have many more *negative* Boltz over three years after malaria than under, and as, of the 57 Lange done over three years after malaria, only 13 showed a reading of more than 3, very little further calculation will show that the disagreement between the two tests is more significant than might at first sight appear. Nevertheless, this disagreement is less marked here than it is between the Boltz and the globulin tests; and, for that matter, than between the globulin and the Lange. For instance, the percentage of positive globulins with a Lange of 3 and under was 40·5, compared with 82% with a Lange of 4 and 5. The corresponding figures for the Boltz test were 6·33% and 64% respectively.

(c) *Syphilitic tests*.—Inasmuch as the Boltz test is a simple chemical one, not much relation is to be expected between it and specific tests for syphilis, nor have we found any, except such as is merely due to the fact that the specific tests are indicative of a disease that *may* lead to such chemical changes as would give rise to a positive Boltz. We have numerous cases where the two disagree entirely, the Boltz being frequently *negative* in presence of positive specific tests. Four cases may be given as typical examples.

1. *Cerebro-spinal fluid*.—Cells *nil*, globulin positive, Boltz *negative*, protein 65, Lange 000122100, Wassermann positive, Sachs-Georgi positive, Sachs-Witebsky positive, Meinicke positive.

Blood.—Wassermann doubtful, Sachs-Georgi positive, Sachs-Witebsky positive, Meinicke positive.

2. *Cerebro-spinal fluid*.—Cells *nil*, globulin positive, Boltz *negative*, protein 35, Lange 1234543110, Wassermann positive, Sachs-Georgi positive, Sachs-Witebsky positive, Meinicke positive.

Blood.—Wassermann 1 in 45, Sachs-Georgi positive, Sachs-Witebsky positive, Meinicke positive.

3. *Cerebro-spinal fluid*.—Cells *nil*, globulin *negative*, Boltz *negative*, protein 20, Lange 0011211000, Wassermann positive, Sachs-Georgi doubtful, Sachs-Witebsky doubtful, Meinicke *negative*.

Blood.—Wassermann doubtful, Sachs-Georgi *negative*, Sachs-Witebsky *negative*, Meinicke *negative*.

4. *Cerebro-spinal fluid*.—Cells 30, globulin positive, Boltz *negative*, protein 25, Lange 455554321, Wassermann positive, Sachs-Georgi doubtful, Sachs-Witebsky doubtful, Meinicke positive.

Blood.—Wassermann 1 in 15, Sachs-Georgi doubtful, Sachs-Witebski positive, Meinicke positive.

CHEMISTRY OF THE TEST.

Boltz's original suggestion was that the test depended upon the cholesterol content of the cerebro-spinal fluid, and in this he was to some extent supported by Grossman, Harris, Greenfield and Carmichael, and Cady. Weston, who in 1915 and 1917 showed the cholesterol content to be raised in meningeal disease, proved that the Boltz test may be negative even in presence of an increase of cholesterol.

In 1926 Walker and Sleeper stated that the test was not specific at all, and that it was due to a reaction between the proteins of the fluid and an aldehyde present as an impurity in the acetic anhydride used. In 1927 Blix and Backlin also pointed out that the test was a protein test, not unlike the original Adamkiewicz reaction, and that it was due to tryptophane. Duncan, Fleming and Herbert have all supported the view that the test is a glyoxylic acid one, and that it must be proportional to the total protein content of the cerebro-spinal fluid.

We have been engaged recently in testing the reaction of numerous samples of cerebro-spinal fluid to various colour tests for proteins, more especially those indicative of the carboxyl and α -amino groups, the phenyl group, the hydroxy-phenyl (tyrosine) group and the indolyl (tryptophane) group. The tyrosine tests yielded no results of interest, but with the tryptophane tests we were amply able to confirm the fact that the Boltz test and the tryptophane radicle went hand in hand. Especially was this evident from the use of the Hopkins-Cole reaction. This particular test was employed on 69 fluids, and in every case where the Boltz was positive the Hopkins-Cole reaction was strong, while where the Boltz was negative the Hopkins-Cole gave only a very weak coloration.* But on the other hand, in one or two instances we got a strong Hopkins-Cole reaction with a negative Boltz. These negative Boltz were all of that dirty brown colour which most authors (*e.g.*, Levinson in his book) agree to call negative. But we strongly suspect that it may not be wise always to do this without further investigation, and that though most of these brown colours are definitely negative reactions, yet a few may be positive. This brown colour is probably due to

* The reagent was prepared by the action of 100 c.c. of a saturated solution of oxalic acid on 6 gm. of a 10% sodium amalgam, filtering after the production of gas had ceased. In every case the reagent was used undiluted, and also diluted with one, two, and three volumes of water. The actual test was performed as for the Boltz, namely, 1 c.c. of fluid, 0.3 c.c. of the reagent, mixing, and then adding 0.8 c.c. of pure sulphuric acid drop by drop.

the heat developed by the addition of the strong sulphuric acid to the acetic anhydride. The heat is necessary for the positive lilac colour to develop, but it may be so excessive as to cause a charring of organic matter which might conceal the true positive reaction, especially if it be a very weak one. This disadvantage may sometimes be obviated by a modification of technique, thus: Add the sulphuric acid to the fluid very slowly, keeping the mixture cool, then cool down to room temperature, add the acetic anhydride, and then heat slowly on a water-bath. By this means it is possible to limit the development of the brown colour due to charring, and a weakly positive reaction may be recognized, and even, by this process of slow heating, intensified.

In this connection we would emphasize the fact that a faint lilac coloration may be missed when looking *through* the tube against a white background, though it may still be recognizable on looking *down into* the tube held *over* a white background.

The charring referred to above does not, however, occur when using the Hopkins-Cole reagent. This fact alone would urge us to recommend that if such a test as the Boltz be retained as a routine measure, then it should be used in the form of a Hopkins-Cole reaction. This would also have the advantage that one would be using a known reagent of standard strength rather than relying upon a mere impurity present in uncertain amounts in the acetic anhydride used for the Boltz test.

It has been said that, being a protein test, the Boltz must, therefore, go parallel in intensity with the protein content of the cerebrospinal fluid. If that were so, then, as the Hopkins-Cole reaction is chemically the same as the Boltz, by standardizing the former reagent it should be possible to obtain such varying intensities of colour reactions that these might be made the basis for a roughly quantitative test. This we have tried on some 50 fluids, and in 48 of these we were able to prognosticate the amount of total protein present within 10 mgrm. per 100 c.c. Our two exceptions, however, were so glaring, that we came to cast very definite doubt upon this alleged relationship between protein content and the Boltz test.

Although we have not a very large series of protein estimations compared with the Boltz test, we append our results in the form of a table, from which it will readily be seen that, as one of us (E. J. F.) has already suggested, unless it be a matter of protein proportions in the fluid, total protein content would certainly not explain the Boltz test.

TABLE IV.

Protein in mgrm. per 100 c.c.	Not general paralysis.					General paralysis before treatment.					General paralysis after treatment.					All cases.				
	Globulin +.	Globulin -.	Boltz +.	Boltz -.	Total.	Globulin +.	Globulin -.	Boltz +.	Boltz -.	Total.	Globulin +.	Globulin -.	Boltz +.	Boltz -.	Total.	Globulin +.	Globulin -.	Boltz +.	Boltz -.	Total.
0-20	3	..	..	3	3	..	..	..	..	..	3	9	..	12	12	6	9	..	15	15
20-30	7	2	..	9	9	3	..	1	2	3	10	8	3	15	18	20	10	4	26	30
30-40	4	..	..	4	4	2	..	1	1	2	9	2	1	10	11	15	2	2	15	17
40-50	3	..	1	2	3	9	..	4	5	9	9	..	1	8	9	21	..	6	15	21
50-60	..	..	..	..	..	8	..	6	2	8	4	..	2	2	4	12	..	8	4	12
60-70	..	..	..	..	..	2	..	..	2	2	1	..	..	1	1	3	..	..	3	3
70-80	..	..	..	..	..	4	..	4	..	4	..	..	..	1	1	4	..	4	..	4
80-90	..	..	..	..	..	3	..	3	..	3	..	..	..	..	3	..	3	..	3	3
90-100	..	..	..	..	..	1	..	1	..	1	1	..	1	1	2	..	2	..	2	2
Over 100	2	..	1	1	2	2	..	1	1	2	..	..	..	..	4	..	2	..	2	4
Total	19	2	2	19	21	34	..	21	13	34	37	19	8	48	56	90	21	31	80	111

Should we then look for an increase of only *certain* proteins in the cerebro-spinal fluid—presumably those proteins that are particularly rich in the indolyl group? And if so, what are those proteins?

Now it has recently been stated by Ohlssen that globulins have a specially high tryptophane content. But this, if true, would lead us to expect that the Boltz test would be positive whenever the globulin was increased, and we have already seen how this is far from being the case. It might, of course, be argued that even though the globulin were moderately increased—enough to give a positive globulin test—yet it might not be sufficient to give a positive Boltz unless the other proteins were increased too—in other words unless both the globulins and total proteins were increased. Here, again, we come across instances that contradict these suggestions. Let two typical instances suffice :

1. Globulin negative, Boltz positive, Hopkins-Cole very strong, total protein 30 mgrm. per 100 c.c.
2. Globulin positive, Boltz negative, Hopkins-Cole very weak, total protein 50 mgrm. per 100 c.c.

Might it then be shown whether the real factor on which the Boltz test depends is the *relative* amounts of *different* proteins in the cerebro-spinal fluid—in other words the protein partition? It is already largely believed that the Lange depends upon this factor. But this would mean that whenever the usual proportion of 7 of

albumen to 1 of globulin altered to the paretic kind of ratio, namely about 2 of albumen to 1 of globulin, then both the Lange and the Boltz should give a positive reading. We have, it is true, already noted the fact that the Boltz test on the whole—especially after malaria—agrees more (or should we say disagrees less) with the Lange than it apparently does with any of the other tests, but even so the agreement is only very partial, and many exceptions occur that are difficult, if not impossible, to explain satisfactorily.

Perhaps, after all, we may have to return, in part at least, to the cholesterol content for an explanation. Cholesterol binds up very tightly with globulin, and it is only with difficulty removed from cholesterol-globulin mixtures. It is therefore possible that both protein and cholesterol contents are of importance. But here, of course, is where we must leave the matter. Our results disprove more than they prove anything, but inconclusive as they may be, we venture to think that they do show that it is not simply a matter of total proteins, or globulin increase, or protein partition, or cholesterol alone, but probably a combination of factors the elucidation of which will have to be carried out by investigators more skilled and learned than we are.

If this complex of factors be identified, it will be interesting to see whether it exists in certain diseases (say general paralysis) and not in others, and if this were shown to be so, the Boltz test—or some modification of it—might yet be rehabilitated to a position of some diagnostic importance in the serological investigation of nervous disorders.

CONCLUSIONS.

(1) The Boltz test is rarely positive in non-paretic cases except in certain conditions of meningeal involvement, such as are but infrequently found in mental hospital work.

(2) It is not invariably positive in general paralysis, and a negative Boltz is of little diagnostic value.

(3) It agrees with no other usual test, though it probably disagrees less with the Lange than with, say, the globulin reactions.

(4) It readily becomes negative after malarial treatment, but mostly so after some years have elapsed since the first attack of malaria.

(5) The test does not depend only on the globulin content of the cerebro-spinal fluid, or on the total protein increase, or the protein partition, though it probably does bear a relationship to the total

tryptophane value of the fluid proteins, and perhaps also to cholesterol.

(6) If the test is to be further investigated—and we think it should—it would be infinitely preferable to use it in its Hopkins-Cole form, because (a) the Hopkins-Cole reagent can be standardized, (b) the colour reactions can be graded so as to render it quantitative, and (c) there is not the brown charring found when using acetic anhydride.

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THE EFFECT OF THYROID ADMINISTRATION ON THE BLOOD CHOLESTEROL.

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IN a previous investigation (1) it was ascertained that the amount of cholesterol present in the serum of psychotic patients shows certain variations from the normal, and that it is influenced by the acuteness of the mental condition. Hypercholesterinæmia is usual in all forms of mental disorder except imbecility, and a fall in blood cholesterol content occurs during attacks of excitement, agitation or confusion. These results suggested an association between the blood cholesterol and the nervous system, probably by way of the sympathetic and endocrine gland systems.

The influence of the thyroid was observed during the administration of the dried gland to a sub-thyroidic man whose serum contained the large amount of 502 mgrm. cholesterol per 100 c.c. The mental condition—a profound emotional deterioration—improved practically to normal, and at the same time the serum cholesterol fell to 158. When treatment was suspended it rose to 414, and emotional dullness was again prominent. In view of the simultaneous mental improvement and cholesterol variation effected by thyroid administration, similar treatment was tried in other types of psychosis, and the serum cholesterol estimated at frequent intervals.

The association between thyroid and cholesterol has been noted by other observers, usually as the result of experiments on animals or observations in cases of definite thyroid disease. Luden (2) found the blood cholesterol to be high in myxœdema, with a fall to normal during thyroid treatment. In exophthalmic goitre the figure was within normal limits. Epstein and Lande (3) observed hypocholesterinæmia in Graves's disease and hypercholesterinæmia in cases of subnormal basal metabolism. The results of Laroche (4) were similar. Gardner and Gainsborough (5), using the accurate digitonin method, found the plasma cholesterol in 14 cases of exophthalmic goitre to be lower than the normal average, but practically all within the normal limits of variation. They

concluded that there was no relationship between a raised basal metabolic rate and a low blood cholesterol, but agreed that in untreated cases of myxœdema the plasma cholesterol was high. Wade (6) estimated the blood cholesterol in dogs, and found it to be increased after extirpation of the thyroid and parathyroids. A similar rise occurred after thyroidectomy for exophthalmic goitre and toxic adenoma in man. An increased blood cholesterol in rabbits was also found by Rémond, Colombiès and Bernardbeig (7) after thyroidectomy and parathyroidectomy, and by Onizawa (8) after thyroidectomy. Christie, Lyall and Anderson (9) observed a great diminution under thyroid treatment in a case of xanthomatosis with low basal metabolism and hypercholesterinæmia.

In the present investigation the serum cholesterol was estimated by the colorimetric method, as previously described (1), duplicate extractions being carried out and the mean of the two results taken. The normal limits, ascertained in the former investigation, are taken as 140 and 200 mgrm. per 100 ml. The figures refer to the total of free and combined cholesterol. Blood was obtained by vein puncture between 2½ and 3 hours after breakfast, except in 4 cases, when the blood was taken after 15 hours starvation. Thyroid was administered in the dried gland form.

Twenty-two cases were investigated, all of them male patients in a mental hospital. They included 8 cases of dementia præcox, 4 of melancholia, 1 of mania, 3 imbeciles, 1 confusional case, 1 "insanity with epilepsy," 1 paralysis agitans, 1 post-encephalitic, and 2 general paralytics. The cholesterol variations are indicated in the following notes. The daily amount of thyroid is given as the equivalent of fresh gland. The figure in brackets refers to the day on which each estimation was made, counting from that on which thyroid was commenced.

1. Dementia præcox, sub-thyroidic, æt. 28. Very dull. Resting cholesterol, 502.

During 7 weeks thyroid, 15 gr. daily; after 6 weeks, 158; 7 weeks, 163.

After thyroid: 2 weeks from cessation, 233; 4 months later, 414.

Great improvement during treatment. In this case cholesterol estimations were made in following the mental state, not as a direct study of the effect of thyroid, and were consequently at long intervals.

2. Dementia præcox, æt. 30. Demented; very dull. Resting cholesterol, 227.

During 60 days thyroid, gradually rising to 90 gr. daily: 159 (19th), 149 (39th), 121 (53rd), 119 (60th).

After thyroid: 151 (69th), 186 (74th), 212 (90th), 243 (103rd), 209 (126th), 244 (171st).

No improvement.

3. Dementia præcox, æt. 40. Always more or less stuporose. Resting cholesterol, 246.

During 81 days thyroid, gradually rising to 120 gr. daily: 163 (19th), 148 (39th), 125 (53rd), 116 (60th), 115 (67th), 135 (74th), 122 (81st).

After thyroid: 163 (88th), 209 (95th), 197 (103rd), 243 (114th), 209 (138th), 223 (171st).

Emotional state improved considerably; irritable when on larger doses. Slowly deteriorated afterwards.

4. Dementia præcox, katatonic type, æt. 29. (See Chart 1.)

No improvement.

5. Dementia præcox, æt. 25. Deluded and hostile. Resting cholesterol, 223.

During 45 days thyroid, up to 90 gr. daily: 161 (16th), 135 (23rd), 137 (31st), 127 (38th), 142 (45th).

After thyroid: 158 (52nd), 221 (63rd), 210 (76th), 239 (94th), 250 (125th).

More restless, destructive and hostile during treatment. Great improvement afterwards.

6. Dementia præcox, paranoid type, æt. 33. Very deluded. Resting cholesterol, 253.

During 70 days thyroid, up to 90 gr. daily (11th day), decreased to 60 gr. (34th day), 233 (4th), 202 (11th), 178 (18th), 181 (25th), 188 (32nd), 195 (39th), 181 (47th), 199 (60th), 171 (70th).

After thyroid: 304 (111th).

Became hypomaniacal during treatment; reverted to delusional state afterwards.

7. Dementia præcox, æt. 39. Deluded. Resting cholesterol, 225.

During 16 days thyroid, up to 90 gr. daily: 183 (7th), 164 (16th).

After thyroid: 186 (25th), 225 (35th), 230 (41st), 210 (54th)—hostile, 229 (72nd), 243 (108th).

No mental change.

8. Dementia præcox, æt. 34. Resting cholesterol, 128.

During 16 days thyroid, up to 90 gr. daily: 115 (7th), 92 (16th).

After thyroid: 123 (23rd), 144 (31st), 177 (39th), 163 (52nd), 140 (73rd), 172 (105th).

No mental change.

9. Chronic melancholia, æt. 36. Depressed and self-absorbed. Resting cholesterol, 341.

During 17 days thyroid, up to 80 gr. daily: 243 (17th—agitated).

After thyroid: 334 (38th), 344 (67th), 374 (115th).

Became agitated during treatment.

10. Melancholia, chronic nephritis, æt. 54. Depressed, self-absorbed. Resting cholesterol 335.

During 37 days thyroid, up to 90 gr. daily: 176 (8th), 195 (15th), 187 (23rd), 231 (30th), 232 (37th).

After thyroid: 232 (44th), 468 (55th), 432 (65th), 552 (86th), 573 (117th).

Between the 23rd and 30th days the amount of thyroid taken is doubtful, as the patient hid some of the tablets in his mouth and subsequently removed them.

No improvement during treatment; more self-absorbed afterwards.

11. Melancholia, senile, æt. 70. Arterio-sclerosis. Resting cholesterol, 242.

During 27 days thyroid, up to 90 gr. daily: 189 (6th), 187 (13th), 166 (20th), 143 (27th).

After thyroid: 184 (34th), 260 (41st), 273 (48th), 263 (62nd), 256 (77th), 287 (119th).

Blood taken while patient fasting. No mental change.

12. Melancholia, æt. 42. Syphilitic. Depressed, mildly agitated, hypochondriacal. (See Chart 2.)

No mental change.

13. Recurrent mania, æt. 43. Exalted; grandiose delusions. (See Chart 3.)

No change during treatment. Improvement afterwards, with a temporary relapse.

14. Confusion, chronic nephritis, æt. 38. Resting cholesterol, 233.

During 13 days thyroid, up to 60 gr. daily: 174 (6th), 135 (13th).

After thyroid: 176 (20th).

Blood taken with patient fasting. No improvement.

15. General paralysis, æt. 54. Demented. Resting cholesterol, 189.

During 14 days thyroid, up to 90 gr. daily: 144 (7th), 116 (14th).

After thyroid: 136 (21st), 203 (35th), 205 (42nd), 242 (56th), 202 (71st), 233 (113th).

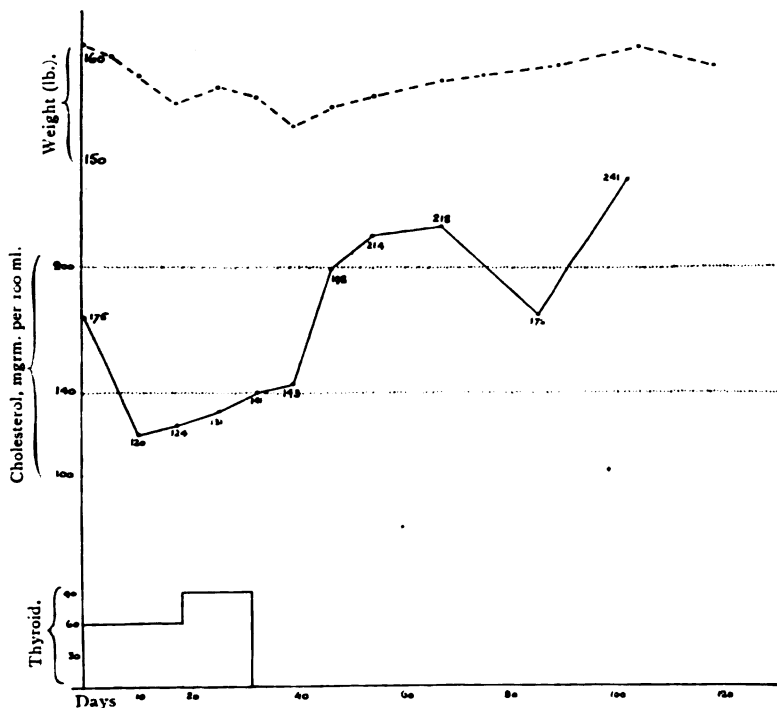


CHART 1.—Dementia praecox.

The dotted lines represent the normal limits of serum cholesterol.

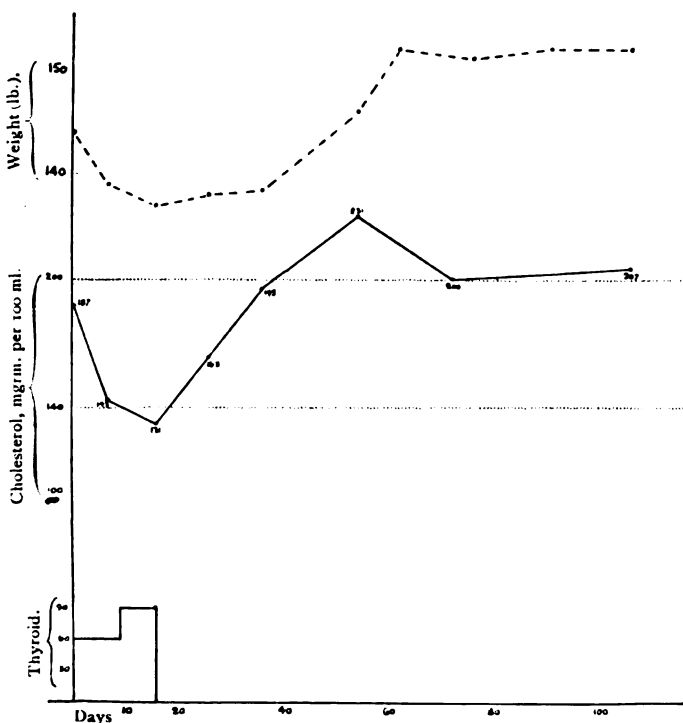


CHART 2.—Melancholia.

Less amenable and more difficult to nurse during treatment. Blood taken while patient fasting.

16. General paralysis, æt. 40. Demented. (See Chart 4.)

Had a seizure while on thyroid; more irritable. Improved later and was discharged.

17. Secondary dementia, paralysis agitans, æt. 53. Resting cholesterol, 149.

During 14 days thyroid, up to 90 gr. daily: 100 (7th), 90 (14th).

After thyroid: 97 (21st), 160 (28th), 205 (35th), 212 (42nd), 190 (56th), 171 (71st), 175 (113th).

Blood taken with patient fasting. More tremulous during treatment.

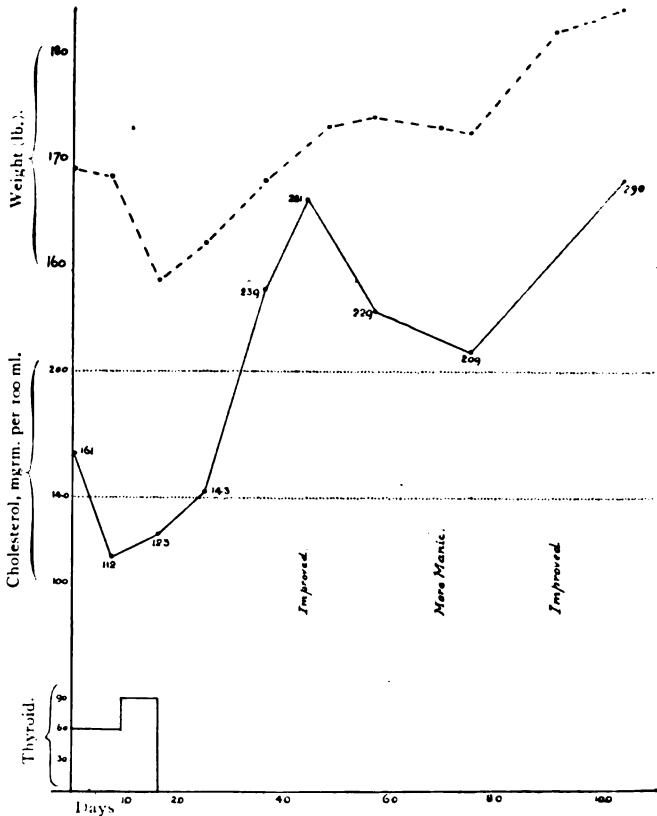


CHART 3.—Mania.

18. Secondary dementia, post-encephalitic, æt. 20. (See Chart 5.)

Signs of thyroidism on 7th day. No change in mental state.

19. Epilepsy, æt. 64. Demented. Resting cholesterol, 201.

During 14 days thyroid, up to 90 gr. daily: 154 (7th), 121 (14th).

After thyroid: 137 (21st), 210 (29th), 229 (37th), 208 (50th), 218 (71st), 202 (103rd).

No mental change.

20. Imbecile, deaf-mute, æt. 41. Resting cholesterol, 152.

During 16 days thyroid, up to 90 gr. daily: 138 (7th), 131 (16th).

After thyroid: 152 (25th), 220 (35th), 214 (41st), 209 (54th), 229 (72nd), 238 (108th).

No mental change.

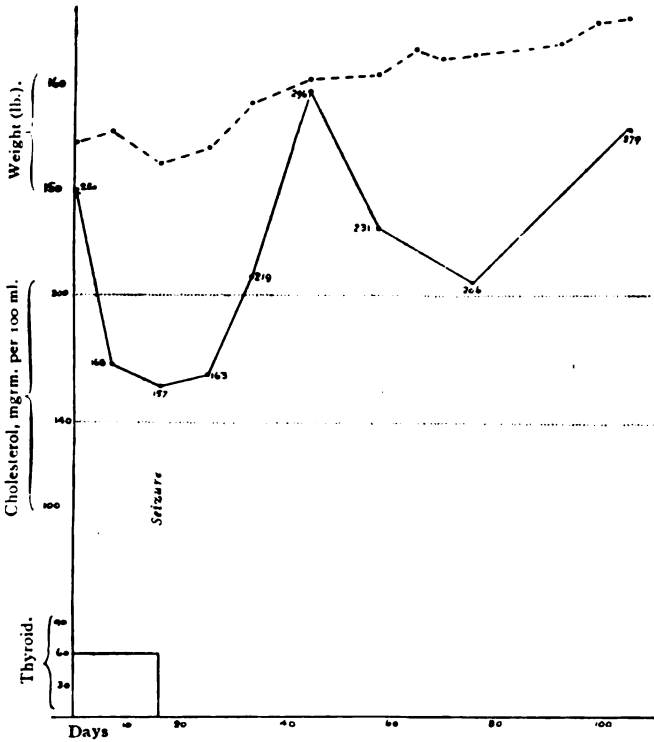


CHART 4.—General paralysis.

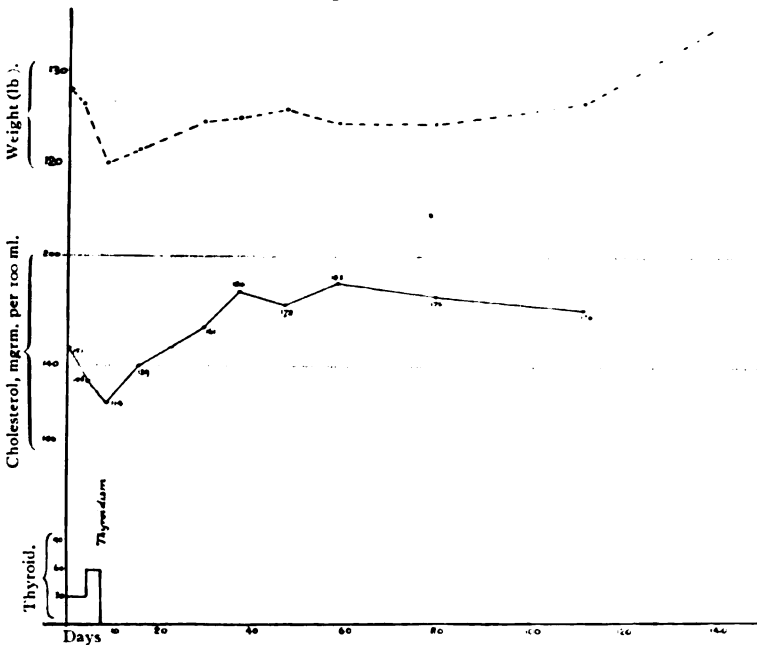


CHART 5.—Post-encephalitis.

21. Imbecile, epileptic, æt. 45. Frequent minor seizures and almost incessant muscular twitchings. Resting cholesterol, 103.

During 21 days thyroid, 30 gr. daily: 136 (4th), 87 (9th), 87 (14th), 104 (21st).
After thyroid: 130 (28th), 128 (43rd), 117 (85th).

No improvement.

22. Imbecile, hydrocephalic, æt. 49. (See Chart 6.)

No mental change.

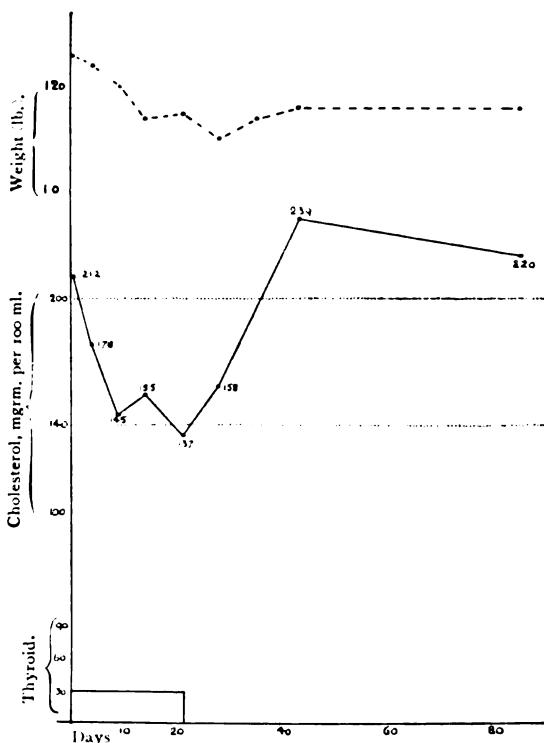


CHART 6.--Imbecile.

It is apparent from the above results that thyroid administration causes a rapid lowering of blood cholesterol. A small dose—the equivalent of 30 gr. of fresh gland daily—is sufficient to effect this; with larger doses the fall is greater and more rapid. After a week or ten days diminution is more gradual, or the amount may remain practically unchanged, or even increase. The effect of increasing the thyroid dosage at this stage is usually a further gradual cholesterol diminution, but even with large doses—equal to 90 or 120 gr. of fresh gland daily—there may be a steady slight rise in serum cholesterol. The result of stopping the thyroid administration is a rise in the cholesterol content, less rapid than

the original fall, but usually reaching a figure considerably above the former resting value.

This variation is not dependent on an initial hypercholesterinæmia, but it is most marked when the resting cholesterol is high. A moderate degree of hypercholesterinæmia is easily reduced to an abnormally low amount by thyroid. The maximum variation was found in Case 10—chronic nephritis with melancholia—a fall from 335 to 176 being followed by a rise to 573. The lowest value induced by thyroid treatment was 87 (Case 21) in an epileptic imbecile whose serum cholesterol was invariably below the normal limits, probably as the result of numerous minor seizures. This was also the only case in which an initial rise in cholesterol was observed, the preliminary figure probably being low as the result of the epileptic attacks.

The subjects of this investigation were patients suffering from a wide variety of mental disorder, including psychoses and congenital defects, "functional" and organic. Considering the constancy of the reaction of the serum cholesterol to thyroid in these, it is reasonable to assume that the effect of thyroid is not confined to psychotics and imbeciles, but also occurs in the normal individual. It has not been possible to carry out a complete test on a healthy man, but one to whom a small dose was given for a week showed a fall of serum cholesterol from 165 to 150; there was no opportunity for further estimations.

The existence of this reaction makes it possible to suggest an explanation for the high blood cholesterol often observed in psychotics and for the temporary decrease associated with an acute emotional state such as excitement or agitation. Imbeciles, who generally have a blood cholesterol value within normal limits (unless epilepsy is a complication) are detained in a mental hospital principally on intellectual grounds; emotional changes are not common or severe. Psychotics, whatever the variety of the disorder, very commonly have some emotional abnormality. A large group, including many primary demented, are apathetic; many others—the epileptics, mood-psychotics and some alcoholics—are unstable, and subject to severe emotional disturbances; a small minority, including some secondary demented and chronic delusional states, though emotionally stable, have usually passed through a phase of fear, anger, hostility or exaltation. There is some evidence for regarding the thyroid secretion as part of the mechanism concerned with the bodily reaction to an emergency, including the emotional changes of this reaction. From the disuse of this

mechanism there will result the hypercholesterinæmia seen in states of sub-thyroidism and of emotional deterioration. Its temporary working causes the lowering of blood cholesterol observed in states of excitement, agitation and hostility, similar to that obtained by thyroid administration. Periodic excessive use is the possible cause of hypercholesterinæmia in the insane, other than the apathetic group; a temporary diminution is followed by a rise to an abnormal degree, the prolonged emotional reaction or its frequent repetition resulting in persistence of blood cholesterol at a high level.

Although the object of this article is to record cholesterol variations rather than clinical changes, these are summarized for the sake of completeness. In 3 of the 8 dementia præcox cases a definite improvement coincided with the diminution of serum cholesterol; 2 of these who were extremely dull, brightened considerably under treatment, and became apathetic after its suspension; the third, a very deluded man, full of bitter complaints lost his delusions and became mildly hypomaniacal, remarkably pleased with himself and all around him; he also returned to his former state when thyroid was stopped. One dementia præcox patient became worse and was more hostile. In one melancholia case increased agitation was the result. The one maniacal patient remained so until about three weeks after cessation of thyroid, when considerable improvement coincided with a great increase of blood cholesterol. The remaining patients showed no mental change, except that both general paralytics (chronic cases, improved to a stationary condition after malaria) became less amenable and more difficult to nurse. The man with a post-encephalitic condition soon showed signs of thyroidism, and in the case of paralysis agitans the tremor was increased. Evidently any change accompanying thyroïdic diminution of blood cholesterol will result from the increased excitability of the nervous system.

I have to thank Dr. R. C. Turnbull for permission to publish these notes.

References.—(1) Duncan, *Journ. Ment. Sci.*, 1930. (2) Luden, *Mayo Clinic Papers*, 1918.—(3) Epstein and Lande, *Arch Int. Med.*, 1922.—(4) Laroche, *Presse Méd.*, 1929.—(5) Gardner and Gainsborough, *Brit. Med. Journ.*, 1928.—(6) Wade, *Amer. Journ. of Med. Sci.*, 1929.—(7) Rémond, Colombiès and Bernardbeig, *Compt. Rend. Soc. Biol.*, 1924.—(8) Onizawa, *Journ. of Biochem.*, 1929.—(9) Christie, Lyall and Anderson, *Brit. Journ. of Derm. and Syph.*, 1930.

ON THE SENSE OF EFFORT.

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† WHEN the relations between self and environment are considered, a duality is found; the attention of the observer can either be consciously directed to objects, or objects can attract conscious attention. Thus, a gun fired unexpectedly in one's immediate neighbourhood would probably attract one's attention, whereas a row of runners lined up for the race are all "attention" in readiness for the sound of the gun. This duality I shall attempt to put in terms of my fundamental equation $H + L = T$.

I would first recall the laws of the factor L . They are—

- (1) Its intensity and rate of development increase with the intensity of its producer, but the relationship is not direct.
- (2) It can be maintained in being by its producer, but subsides in its own time when the producer is removed.
- (3) A change of great intensity takes longer to subside than one of small intensity (1).

The modifications of activity depicted through these qualities of L , however, are never modifications of a single response, but always modifications of a series of rhythmical processes.

The deduction from these facts is that the structures of the brain in which the excitation processes mediating mind occur are always in a state of rhythmical activity, but that normally this fundamental activity is always below the threshold at which the responding organ gives a response. Such subliminal activity, as my work with hearts shows, can be transformed into activity capable of evoking a definite response either by addition of the factor H or by addition of the factor L , or by addition of both.

The addition of H only is exemplified, I think, in the effort of straining to see a black hat in a dark room, or the athlete's attentive straining to hear the pistol-shot, once the cautionary "Ready" has been given. In all such cases of attentive waiting it would appear, then, that the level of the fundamental subliminal activity is first raised to liminal level by the factor H , and subsequently further raised by addition of the factor L . And with arrival of the factor L there follows a more or less definite perception of something.

We appreciate, then, the possibility that consciousness of waiting for, or looking for, some definite sensation implies raising the fundamental subliminal activity of the exciting organ to a level at which the responding organ can respond, but through addition only of the factor H . Hence, in these cases, prior possession of the responding organ's field of response must be conceded to the factor H .

On the other hand, for all objective conditions which attract, or force themselves on, conscious attention, a similar priority of possession of the responding organ's field of response must be conceded to the factor L .

Either of the two factors H and L , then, may obtain prior possession of the field of response of the responding organ, and the differences of priority are associated with differences in psychic manifestation, priority to the factor H being associated with conscious directed effort, whereas priority to L is associated with the feeling of spontaneity.

A deduction from these results is that the factor H mediates the sense of effort. The same result is also deducible in respect of the changes in excitation process composition which follow training (1). Likewise it is deducible from the changes implied in ageing (1). On the same grounds also the changes wrought by alcohol should make hard work seem easier, as indeed it does, though in this connection it would be as well to point out there is a distinction between objective demonstrations that the individual does not actually perform more work, or even makes more errors, and the individual's own feeling that the task is easier.

The result, applied more generally, indicates that in all mental states in which performance is believed incorrectly to be very easy there is less H than normal, whereas in those states where all performance appears abnormally difficult there is more H than normal.

Another deduction from these results is that each of us has his own maximum capacity to generate the factor H , and with it his discriminatory power; or the deduction can be made *vice versâ*: that discriminatory power cannot be conveniently applied in full force to all the data of mind because normal working of the mental machinery requires that the sum of the two factors, H , or judging, and L , or the data judged, must fall within the limits of T . For if their sum exceed T , the result will be some sort of "fit" (2).

One possibility of this happening can arise through an individual

applying his full judging power, or H , to something of high feeling-tone. For instance, an individual may be so much buoyed up with hope concerning a certain thing, *i.e.*, possess so much L in the excitation processes mediating the idea, that he cannot normally apply to it the same amount of H , or discriminatory power, as can others who have much less hope, or L . And concerning such an individual, it would seem to be a matter of common knowledge that if he were suddenly to realize the truth he would get a shock, or fit; or, put differently, the sudden application of his full power of discrimination, or his maximum H , would make the sum of H and L greater than T (2).

The hysteric, I suggest, attains the same result by a different method. Attentive waiting for the opportune moment to "throw" the fit gives in this case the maximum H the individual can generate, and the opportune moment provides the abundant L . The attentive waiting, however, gives H prior possession of the field of responses, and with it consciousness of the happenings. On this basis also a neurosis of the type of writer's cramp could be the *petit mal* of hysteria.

But outside the hysterics, and sudden meeting of the truth by accident, it would not appear to be customary to apply full powers of discrimination to any strongly felt idea simply because, I take it, the process cannot be done without some sort of "shock" happening. Such ideas, then, can only be brought to consciousness under those effortless conditions where the amount of H , or censorship capacity, is diminished. Such conditions are realized in dream states (1).

SUMMARY.

The qualities of the factor L show that the excitation processes mediating mind are not based on new appearances of activity, but on augmentation of a subliminal fundamental activity always in action. This subliminal activity can be made liminal, as shown by work on the heart, either by addition of the factor H , or the factor L , or both.

In consciously directed thought this subliminal activity is first made liminal by the factor H , whereas the raising of liminal activity by the factor L implies that an object attracts attention.

An examination is made also of some possible conditions in which the sum of H and L could be greater than the capacity of the responding organ to give a "normal" response.

References.—(1) Burridge, *Journ. Ment. Sci.*, 1929, lxxv, p. 201.—(2) *Idem*, *ibid.*, 1929, lxxv, p. 395.—(3) *Idem*, *Quart. Journ. Exp. Physiol.*, 1928, xviii, p. 315.

ON PROTOPATHIC AND EPICRITIC SENSATIONS.

By W. BURRIDGE, D.M., M.A.Oxon.

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PROTOPATHIC sensations, I suggest, are based on impulses containing so much of the factor L that—

(1) They cannot be accurately localized.

(2) They persist after removal of their producer (stinging) (1).

Epicritic sensations, on the other hand, are based on impulses containing the adequate L to which adequate H can be supplied. They can thereby be accurately judged, also they subside without persisting after-effects (2).

We observe next that stimulation of sense-organs only capable at threshold activity of producing protopathic sensations should produce "shock" if the stimulus be of such strength as would produce radiating pain elsewhere; or, put differently, shock is produced through them more easily than elsewhere.

It would appear also that pleasurable sensations can radiate as much as, say, the pain of an aching tooth, and the orgasm may be taken as a striking example of a pleasurable sensation arising from a definite area, but containing so much of the factor L that it radiates and cannot be definitely localized.

It should be possible also for changes in pleasurable responsiveness to occur in particular areas of the body, comparable with those of hysterical hyperæsthesia and anæsthesia. Granting this, stimulation of the affected areas, which in the normal individual would give normal pleasure, should give in the abnormal person orgasmic manifestations. On the other hand, areas which normally give orgasmic pleasure should, through the same change, give impulses with so much L as to be beyond the reach of consciousness, and so cease to give pleasure; whence perversion.

References.—(1) Burridge, *Journ. Ment. Sci.*, 1929, lxxv, p. 395.—(2) *Idem, ibid.*, 1930, lxxvi, p. 101.

ON THE DIVISIONS OF MIND.

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IN previous applications of the general formula $H + L = T$ to the problems of memory (3), pain (4), "seeing" (5), etc., the cerebral excitation processes mediating these events were found capable of convenient grouping into four divisions. These divisions, considered first in terms of the factor L , are—

- (1) L too small.
- (2) L adequate.
- (3) L over-abundant.
- (4) L overwhelming.

Considered next in terms of seeing, they become—

- (1) Objects too feebly illuminated to be seen.
- (2) Objects so correctly illuminated that they can both be seen and accurately judged.
- (3) Objects so strongly illuminated as to cause dazzle.
- (4) Blinding lights.

The divisions are made subject to the proviso that there is no dividing line between them, for the first division merges imperceptibly into the second, which in turn merges into the third, whence there is merging into the fourth. Thus, when one is astir well before the sun rises there is no definite time at which the world round us ceases to be indefinite and becomes definite; likewise at nightfall there is no definite time at which the world round us ceases to be definite and becomes indefinite. We can merely appreciate that over a wide range of illuminations the world around us seems definite and, over some other overlapping range of illumination, it seems indefinite.

These four divisions may also be considered as convenient groupings of the data which are presented to the mind and which are made consciously manifest through the factor H (1), the value of which, as shown by the equation, increases as L decreases, and *vice versa*. Hence there is at each end of the scale "blindness" because, while at one end there are too few data for definite seeing,

hearing or perceiving, at the other end there is so much seen, heard, or felt, that there is no room in the cerebral machinery for adequate application of H , the conscious rendering factor. We can always expect, then, to find two kinds of "blindness" in psychic processes, but it is more convenient to consider this "blindness" primarily in terms of memory.

The memories, or rather the memory traces or data to be recalled (1), of division 4 are too intense to be consciously recalled. That is because the sum of H and L , the factors mediating the consciousness of and the data of the memory to be recalled respectively, cannot be greater than T , the maximum capacity of the responding organ to give a normal response (2). These memories, then, contain so much L that no room is left for application to them of enough of the factor H . But though as memories they cannot be consciously recalled, they are yet very much alive, the nerve-cells mediating them being fully "charged" with energy, for L is "freshness," or life (1).

In contrast with this group are those of group 1, which contain so little L that the amount of H at their possessor's disposal can make nothing of them. They are essentially the memories of the insignificant happenings of life, but can include, with lapse of time, things once deemed important, as anyone can find for himself by re-reading the text-book for some examination passed long ago. The difference between these divisions 1 and 4 is thus the same as the difference between being unable to see because there is not enough light and of being blinded by too great a light.

The reference to the examination text-book brings out the point that, in addition to the merging of one division into another, there can be passage through lapse of time also from one division into another. The data of the examination memory, for instance, are in group 2, as are also the data of a diagnosis, or a treatment, or a payment. The natural tendency of these data, however, to pass into division 1, and so become too small for definite recollection, is so well recognized that the prudent give them greater permanence by committing them to writing. A passage from division 3 to division 2 is also indicated in the healing influence of time on memories of high emotional content. Moreover, these emotional memories being remembered longest, it would appear that the stability of a memory depends, at least in part, on the amount of its L , though the relationship between the two cannot be direct.

All these transitions of ordinary experience just noted are due

essentially to diminution in the intensity of the factor *L*. These transitions may thus be termed "downward." It is also a matter of experience that neglect is an important factor determining that transition, and that the memories of division 2 require continual "refreshing" if they are to be maintained in efficiency.

Upward transitions also occur, I suggest, and are exemplified by the man who cherishes a grievance until at last it alters his whole outlook on life. Cherishing, however, should never normally take the idea beyond division 3, since the object to be attained is the application of enough *H* to feel the full influence of the *L*. Moreover, so it seems to me, cherishing implies retention of enough *H* to be conscious of the thing felt, but yet not enough *H* to accurately judge it, *i.e.*, *L*, though added, is kept within bounds.

But if some particular idea were based on ductless gland activity, *i.e.*, if its *L* were essentially developed through some ductless gland hormone (1), or arose somehow or other as a stimulus from the individual's environment, and that idea were not in accord with its possessor's general scheme of conduct, it would become one not consciously sought out, *i.e.*, in respect of this idea *H* would never be given prior possession of the field of response (6). If, then, the idea is ever to become conscious, it can only do so under those conditions in which *L* can take prior possession of the field of response, *i.e.*, in dream states (6). Granting next such prior possession, the result would seem to be that the responding organ, having found out through *H* what *L* is, somehow or other flees from that *L* and, having then given *H* prior possession, seeks, as it were, for something better, or a more congenial *L*.

Whatever the actual mechanism of "conflict" may be, the point to be made about it is that it is neither cherishing, nor neglect. And the latter, we found, allowed *L* to subside, whereas the former, while developing *L*, nevertheless kept that development within "bounds." Conflict, however, differs from both of these, so that, if by neglect *L* is lost, and by cherishing *L* is developed, but kept within "bounds," then conflict, or rather, perhaps, running away, might allow *L* to develop beyond "bounds." If such were the result, then all such conflicting ideas would eventually pass into division 4.

This division, it may now be observed, is the region of mind termed by Freud the unconscious, and the point just made concerning ideas or memories in it is that, if they were ever conscious, they must have reached this fourth division of mind through addition to them of the factor *L*. On the other hand, memories

"lost" there in childhood, or under the strains and stresses of war, probably went there at the moment the forgotten event occurred (2).

These two classes of lost memories must also present themselves differently to consciousness. A memory lost in division 1, for instance, can be, as it were, groped for through its other conscious associations, the groping implying prior possession of the field of response by the factor H . And the groping could reveal every gradation from the something not quite definite to an actual absence of consciousness of anything when L was small enough. But a memory in division 4 would be simply outside consciousness, and, having no "conscious" associations, cannot be groped for. It is, in fact, something of whose existence within us we can normally frame no conscious idea.

So far as I can judge, the existence of these two classes of lost memories and ideas has not been previously definitely recognized, and I think the recognition is practically impossible unless one has appreciated the fact that excitation processes have composition as well as size. They have, however, been confounded together, and the evidence on this point is derived from Freud, his followers, and critics.

For instance, what is the reasonable nomenclature to apply to memories of division 1? The transitions to this division are facts within everyone's experience, and that experience shows them to be memories that can be reasonably regarded as memories that have lost their life and are dead. In Europe to be dead implies burial. Accordingly, if we speak of memories buried deep down, as Freudians do, it appears to me that we are using a nomenclature only legitimately applicable to dead memories buried well down in division 1.

But if we thus regard these memories of division 1 as dead memories, as they are, then the memories of division 4, though "dissociated" from consciousness, are very much alive, being, indeed, the "poltergeists" of mind, with the proviso that they were either created such, or have been translated thereto. And, if these translations occur, "repression" or "repressed deep down" are most incongruous terms to use of such a life-giving process as is involved in the translation. Exaltation seems much more suitable.

Attempting next to criticize Freud's views on a basis of known fact, it is to be appreciated that if the only type of memory loss open to introspection is a transition down to division 1, where the memory has lost life, then a valid criticism of Freud's views

that memories and ideas in the "unconscious" can exert a highly disturbing influence on their possessor's psychic life would be that these views imply that the cerebral cells mediating those ideas and memories are highly charged with energy, whereas introspection shows only that memory loss implies energy loss.

I do not think I misjudge McDougall in thus pointing out what I consider to be a fallacy underlying his criticism not only of Freud's view of the "unconscious," but also of the view that abreaction can give vent to pent-up stores of psychic energy (9). Essentially, so I think, he considers that a memory can be lost only by fading away and losing life, whereas, as shown above, it can also be "lost" to consciousness through gathering, or being born with, enough strength in the factor L , *i.e.*, through possessing superabundant "life."

On the other hand, the disciples of Freud seem equally "at sea," as when Farnell states that "Psycho-analysis is . . . a method . . . for reaching down into the depths of the individual's mind to bring to light the underlying motives and determinants of his symptoms" (7). Farnell here uses a terminology only fitted to the memories that have faded away, and died, whereas the ideas and memories he seeks out in his patients have a superabundant vigour sufficing to last their possessor's life. True it is that Freud and his disciples frequently have to point out that "repression" is not forgetting in the sense in which that word is ordinarily used, but, while they make this distinction, they have not appreciated that "repression," if it occur, must be a life-giving process, whereas "forgetting" is a life-losing one.

In respect of these matters, then, there is at present general confusion primarily dependent on the fact that neither exponent nor critics have known where they were in the scale of mind. Nor can they learn where they are until they appreciate that excitation processes have composition as well as size. I suggest, then, that an entirely new terminology is desirable, and one which shall indicate that the mind is comparable with a scale, or spectrum.

On such a basis, divisions 2 and 3 would correspond to the visible spectrum, because it is that part of the data of our mind which we can bring within our direct cognizance. I suggest, then, that these parts of the mind should be termed the "cognoscible" mind. It corresponds with Freud's "pre-conscious" and Morton Prince's "co-conscious." The cognoscible mind becomes conscious through application of the factor H .

At either end of this visible scale there are extensions which should

be termed the "ultra-" and "infra-cognoscible," the ultra-cognoscible being division 4, or Freud's unconscious or Janet's subconscious, and the infra-cognoscible being division 1.

Once the existence of extensions beyond both ends of the scale is realized and their different reactions noted, it should then no longer be possible for someone to place a "psychic bolometer" well beyond the violet of the scale and, finding it got no heat, conclude that no heat-rays were present outside the visible spectrum; or for someone else to place a "psychic plate" in the infra-red region, and point out there are no actinic rays beyond the visible spectrum.

A further subdivision is also required in respect of divisions 2 and 3 to express their differing capacities to permit good judgment. My suggestions here are that division 2 should be called "eu-critical" and division 3 "para critical." In respect of sensation, division 2 has already been termed by Head, Rivers and Sherren the "epicritic" (8), but the analysis above indicates the "epi" to be a misnomer. The division, then, is preferably eu-critical.

SUMMARY.

The mind is found capable of division into four parts. The central portion, consisting of two divisions, is suggested to correspond with the visible spectrum and to possess extensions at either end. The central part is accordingly termed the "cognoscible" mind, and its extensions the "ultra-" and "infra-cognoscible" respectively.

The ultra- and infra-extensions of the cognoscible mind have hitherto been confounded together by Freud and his critics, whence much useless controversy.

The central, or cognoscible, part is divided, because of the differing capacities to exert good judgment, into the eu-critical and the para-critical respectively.

References.—(1) Burridge, *Journ. Ment. Sci.*, 1929, lxxv, p. 371.—(2) *Idem, ibid.*, 1929, lxxv, p. 395.—(3) *Idem, ibid.*, 1930, lxxvi, p. 96.—(4) *Idem, ibid.*, 1930, lxxvi, p. 101.—(5) *Idem, ibid.*, 1930, lxxvi, p. 103.—(6) *Idem, ibid.*, 1931, lxxvii, p. 341.—(7) Farnell, *ibid.*, 1929, lxxv, p. 440.—(8) Head, Rivers and Sherren, *Brain*, 1905, xxviii, p. 99.—(9) McDougall, *Abnormal Psychology*, 1926, London.

A FURTHER NOTE ON THE POSSIBLE STRUCTURES MEDIATING MIND.

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THE object of the present paper is to point out that two different working parts of muscle have hitherto been generally confounded together, whereas their analogues in the psychic mechanism have always been deemed separable. Scientific explanations of the phenomena of mind, however, seem ultimately to wait on knowledge of what happens in excitable tissues, such as muscle, so that the result of finding two working parts in the psychic mechanism, where it was believed there was only one analogue muscle, has been the introduction into physiological psychology of a number of what I have to suggest are superfluous terms. In addition, the present paper deals with the possible nature of the connection between cerebral excitation processes and the psychic response.

The present start is made by first taking the reader back to the time when, as a student of physiology, he applied an induced shock to a muscle and observed the resulting twitch. This experiment is as old as the application of electricity to the investigation of physiological phenomena, and the original interpretation of the result was that the "muscle" was excited by the electric current. This interpretation, however, was early subjected to attack in the form of the suggestions that muscle itself was not "excitable," and that the electric current really excited the nerves, or nerve-endings, in the muscle. But these ideas were abandoned when other experiments showed definitely that muscles possess their own proper excitability.

This point concerning the possession by muscle of its own excitability having thus been decided, it was then generally assumed that the contractile material of muscle could be directly acted upon by the electric current and thereby stimulated to contraction.

But a paper published a quarter of a century ago by Macdonald on the structure and function of striated muscle showed that the physical properties of muscle were such that its sarcoplasm

acted as an electrical insulator of the actual contractile material (3). That is to say, an electric current sent into a muscle exerts no direct action on contractile material, but instead on sarcoplasm, so that the activity of contractile material is really excited through the sarcoplasm.

Two different excitations, thus, follow the application of an induced shock to muscle: the electric current first "excites" and sets up in the sarcoplasm an excitation process which, in its turn, excites the activity of the contractile material, or muscular responding organ.

A corollary to Macdonald's exposition is that it should be possible to abolish the excitability of a muscle to induced shocks without impairing its capacity to contract. That this is so I have repeatedly shown.

The doctrine of receptive substances, associated in particular with the name of Langley, implies the same mechanism, but in a less satisfactory and indefinite form. He recognized from his experiments that there must exist between the contractile material, or contractile molecule, and the muscular or gland-cell environment some intermediate body, or receptive substance, on which stimuli from that environment first acted. Then these stimuli, having first acted on the receptive substance, caused this in its turn to set up activity in the contractile molecule. He made, however, Ehrlich's side-chain hypothesis part and parcel of his own, and so was led further to make the receptive substance a mere side-chain of the contractile molecule instead of a definite independent structure, with its own qualities for investigation. In the heart, for instance, the excitation process travels by the bundle of Stanley Kent and its ramifications and during passage excites contraction.

I would next draw attention to the point that the intermediate body plays on, or activates, the responding organ through setting up differences of electrical potential at a "Nernst" semi-permeable membrane, *i.e.*, by "action at a distance" (1, 3). The response and the excitation process which evokes it can thus be as radically unlike one another as the electric currents in a telephone wire are unlike the spoken voice. Yet, by a suitable structural arrangement and "action at a distance," every variation in the excitation process type of energy can be faithfully reproduced in the entirely different form of "response" energy.

This point, that an induced shock does not directly excite the contractile material of muscle, though it finds general neglect, is yet one of the highest importance, because the conceptions of what

happens in muscle find general application. They find particular application when one deals with the relations between consciousness and nerve-cell change.

The conception here given, and implied in previous papers, is that consciousness is a form of activity of a definite structure, which I have termed the responding organ, the exact like of which is not to be found in or associated with any other organ of the body. Instead there is found the analogue. And, on this basis, we should no more expect to find consciousness in a muscle than we should expect to find a muscle secreting saliva; also we can no more suggest that the brain secretes "thought" than we can suggest that a muscle secretes contraction. What we can expect to find some day, however, is that structure and "action at a distance" can transform in the brain the energy of nerve-cell excitation processes into those forms which we term "consciousness" and "feeling."

If, however, our speculations are based on a belief that induced shocks directly excite the responding organ of muscle, we have the difficulty that the only change they can be observed to produce in nerve-cells or nerves is an excitation process. This, of course, is all these shocks do in muscle, but investigators believed they did more in that the contraction was the culmination of the excitation process. Hence also consciousness should have been deemed to be the culmination of a nerve-cell excitation process—a possibility that investigators have generally been unable to believe. A number of terms, in what may be called physiological psychology, indicate this disbelief and, as examples of these terms, there may be quoted "emergent," "epiphenomenon," and "psycho-physical parallelism."

These terms, however, should really be regarded as superfluous, and therefore be discarded, because, if we regard them as possessing any special value, we ought also to begin calling a muscular contraction the "epiphenomenon," or the "emergent," or the "contracto-physical parallel" of the muscular excitation process. Likewise digestion would be the "emergent" of a digestive gland and so on. But, while discarding these terms, we should appreciate that they were actually necessary so long as it was believed that in muscle excitation processes and contraction took place in one structure.

What has been happening, of course, is that a number of investigators have possessed as naïve a view of what they meant by the word "muscle" as that meant by many motorists when they

use the word "motor." And just as motorists should realize that a motor is not merely something that "moves" when a button is pressed or a handle turned, so also should it be realized that a muscle does not merely "contract," but possesses within it a complicated series of working parts such as "cylinders" of definite capacity, a "sparking" mechanism, a "feed" and so on.

If, next, we apply to mental phenomena the conceptions derived from muscle that there exists for these mental phenomena a "responding organ" of definite and limited capacity, made active through two independent sources of potential, then the mechanism I have given introduces something of "law and order" into regions where the "pure" psychological approach finds nothing but personal whim.

The differences I would exemplify by discussing some of the results attendant to a group of men blown up by a shell. The psychological method of approach to this problem, so it seems to me, reveals some of the men taking a miraculously quick decision to forget the event, whereas the others, not having so decided, manage to remember it. A mechanism of the type given above, however, would make the difference between "remembering" and "forgetting" dependent, not on individual desire, but on the relations between the strength of the impression, or L , received from the burst by the individual and the capacity of his responding organ, or T . When the values of L and T approximate, the "memory" becomes ultra-cognoscible, whereas when L is distinctly less than T there can be applied to the memory trace, or L , enough of the factor H to mediate consciousness of the event (2). Other things being equal, the man with the larger T would be more liable to develop an ultra-cognoscible memory than the man with the smaller T .

References.—(1) Burridge, *Journ. of Physiol.*, 1911, xlii, p. 359.—(2) *Idem*, *Journ. Ment. Sci.*, 1931, lxxvii, p. 345.—(3) Macdonald, *Quart. Journ. Exper. Physiol.*, 1909, ii, p. 65.

ON WRITER'S CRAMP AND OTHER OCCUPATION NEUROSES.

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IN a previous communication the subject of training was considered, and the deduction made that a trained act differed from an untrained act in respect of the composition of the excitation processes mediating the act (1). That is to say, though the formula $H + L = T$ can be applied to both the trained and the untrained act, the trained act contains more L and less H than the untrained act. In other words, training adds L and diminishes H (1).

When next we consider the various trained acts we daily perform, it becomes obvious that some of these require more conscious effort than others. Walking, for example, is entirely an unconscious act for a normal person, though it can come back to consciousness when the L in the excitation processes mediating the act has been diminished by fatigue, disease, or senility. On the other hand, the trained act of writing is never normally unconscious, which implies that the excitation processes mediating the act must always contain adequate H .

Co-ordinating, then, the simple facts that I can walk and think of something else, but cannot write and think of something else, with my fundamental equation—

$$H + L = T,$$

we find that, so long as the sum of the two factors H and L falls within the limits of T , the trained act of writing must always contain more H and less L than the trained act of walking.

But training implies an addition of L to excitation processes, and so the next inference is that the excitation processes mediating the act of writing cannot normally possess as much L as those of walking, simply because they contain more H . If, however, training and use imply the development and maintenance of the factor L , it would follow that excessive use would develop an abnormal amount of L .

The amount of L which could be considered excessive would be the amount which, when normal H were added to it, would give a sum greater than the value T . And we have to appreciate two possible danger-points where they are most likely to be in excess. The first danger-point is at the inception of the act, for even with such a highly automatic action as walking we give conscious attention, or extra H , to the action when it is initiated. Then, having initiated the process, the extra H of attention is withdrawn elsewhere, and the act left to be carried on more automatically, or with less H .

The consequences of the sum of H and L being in excess, or greater than T , were previously examined and found to be the production of spasm (2). We appreciate, therefore, that when spasm follows an attempted initiation of an act, the sum of the factors H and L in the excitation processes mediating the act must be greater than the value T . The factors favouring this spasm are :

(1) That it should be an act requiring conscious attention—much H .

(2) That it should be highly trained—much L .

A second danger-point would seem possible to be reached some little time after an act has been in action. In this case the start out is made near the danger-line, and the line itself reached when the L developed by the exercise has become large enough as the patient warms up to his work. Also when working near the danger-line, *i.e.*, when the machine is running approximately all out, a little extra conscious attention, or added H , would precipitate the crisis, or spasm.

Exercise, or training, do not, however, form the only means of adding L to the excitation processes mediating an act. Emotional tone, or L , can also be added by sepsis, or hysteria, or simply by emotion (2). But in all cases the spasm signifies that the sum of H and L is greater than T (2).

As regards treatment, it should be noted that rest alone should suffice to cure the case which has arisen through excessive use of the neuro-muscular system concerned, the rest, as the "Monday effect" in industry, or forgetting, shows, sufficing to allow some L to subside (3). On the other hand, when the excessive L is due to some septic, emotional or other process, while rest may ameliorate, it obviously does not touch the cause of the trouble.

There are also skilled movements made in sport and industry, in which the skill or judgment implies the possibility of applying adequate H to adequate L . If these movements be overtrained, the

content of their excitation processes in the factor L will become so large as to leave no room for the adequate H for judgment.

The affected individual will then be considered "off his game," or "off his work"—a state of affairs unfortunately hitherto confounded with fatigue, a quite different phenomenon. And when the condition has been brought about solely by overtraining the cure lies in rest until the excessive L has subsided.

This state of affairs may also be considered in terms of memory (3), or seeing (4).

The content of the excitation processes in the factor L then emerges as the memory trace, or the data for judging, which, when excessive, makes good judgment, or adequate H , impossible. The subsidence of L is, thus, equivalent to forgetting (3).

Again, as with writer's cramp, the content of these excitation processes in the factor L may be increased not only by overtraining itself, but also by any general emotional disturbance, in its turn produced by sepsis, or any other cause. In other words, "going off one's work" may represent an early stage of what, in more developed form, we term "mental disease."

References.—(1) Burrige, *Journ. Ment. Sci.*, 1929, lxxv, p. 371.—(2) *Idem, ibid.*, 1929, lxxv, p. 395.—(3) *Idem, ibid.*, 1930, lxxvi, p. 96.—(4) *Idem, ibid.*, 1930, lxxvi, p. 103.

ON DREAMS AND THEORIES.

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IN previous communications made to this Journal I have pointed out that the cerebral excitation processes mediating an idea, or judgment, are produced by the interaction of two factors which I term *H* and *L* respectively, and that, in the case of judgment, the factor *L* constitutes the material to be judged and the factor *H* judging capacity. When the judge has interacted with the material brought for judging, there results a judgment (1, 2, 3, 4, 5). So long also as we avoid some form of fit (2) or spasm (4), the sum of the two factors *H* and *L* must fall within the limits of another factor, *T*, the capacity of the responding organ (1).

These conceptions may now be applied to the neural mechanisms of theories and dreams. The application is made through two premises, *viz.*

(1) The data for a scientific theory are supplied by the facts which it co-ordinates.

(2) The factor *L* constitutes the neural datum of the theory considered as a judgment.

I deduce therefrom that the factor *L* in the neural excitation processes mediating the theory-thought is formed by an integration of parts derived from the factor *L* of each individual fact-thought. The relation of a theory to its facts thus seems to be somewhat similar to the relation between the individual muscle-fibre and the muscle. Each fact, or muscle-fibre, can act as an independent unit, and in the theory, or co-ordinated contractile result, each unit contributes its little bit towards the common end.

In the mechanism just outlined, next, there are only two factors determining that nerve-cells should join, or integrate, their forces, or *L*, to provide the data, or *L*, for the new idea. Those factors are—

(1) That they should possess enough *L* to be able to give some away.

(2) That the amount given away should be adequate to provide the data, or *L*, for the new idea.

If such be the case we could anticipate that cells overcharged

with the factor L would automatically give some away; also that cells with abundance of L would more easily yield some L for integration than would cells with little L . These anticipations seem verified. For overcharged cells belong to the ultra-cognoscible mind (5), which Freud finds a fertile source of new ideas. And old age and youth furnish examples of a differing content of cells in the factor L being associated with a differing capacity to generate new ideas (1).

When, however, a group of facts is integrated by, or into, a scientific theory, the factor H , or judging capacity is, or should be, adequately applied throughout. The result of such adequate application of the factor H throughout is a reasonable theory which we believe corresponds with reality; in other words, H , the judge, mediates reality.

But there are people who frame theories, or ideas of conduct, which they themselves know not to be reasonable, in that the facts at their disposal do not warrant the conclusion which they reach. And although they realize that the facts do not warrant the conclusion, they yet must reach that conclusion. Such theories the psychoanalyst classifies as neuroses, and he traces their origin to the ultra-cognoscible mind. He also traces over-enthusiasm in respect of otherwise reasonable theories to the same source.

It would appear, therefore, that one essential difference between a reasonable, or a scientific, theory and a fantastic theory, or complex, is that in the former all the sources of the integrated data are open to introspection, whereas in the latter some of the sources of the integrated data, or theory L , are not so open to introspection because of their high content in L , this high L content making impossible adequate application of H or consciousness.

But suppose next that a man has been carefully observing a particular disease, say, over many years. We know that as a result he can give a fairly accurate opinion concerning any new case of that disease. We know also that though his opinion or theory is based on long experience, it is most unlikely that he remembers accurately every case of it he ever met. Indeed, nothing is on the whole more certain than that he has been keeping careful written records throughout because he himself does forget. Moreover, he would probably be regarded as a curious person if, before expressing an opinion on any new case, he regularly searched his stock of written data. He would be expected rather to be able to give from his mental records an opinion on the spot. But although he cannot remember the details of many of his cases, yet at the time he met those cases they were cognoscible data for his

ideas of the disease, and as such were linked as cognoscible facts to his theory. If, then, that linkage persisted in spite of the diminution of the *L* content of these "facts" to the infra-cognoscible level, such forgotten "facts" could still furnish some data, or *L*, for an opinion of value. It thus seems possible that one individual, A, through forgetting ten times as much as B ever knew, could, through that forgetting, acquire the data for framing a better judgment than B.

I suggest, then, that two kinds of "complex" should be recognized—the emotional and intellectual respectively. Their possessors can frame a judgment on visible evidence insufficient for others without the same complex. To the one judgment, however, the intellectual, these others will probably pay respect and think of the "ripe experience" behind it, or the "clinical acumen" which enables such a "shrewd guess" to be made, whereas the other judgment, the emotional, may well appear fantastic. Yet that emotional judgment is not necessarily wrong. The vast majority probably are wrong, but, just as anyone firing a gun enough times at random among birds must occasionally hit one, so also among these emotional judgments one must occasionally be correct, and so also, further, the material provided for speculations on "inspiration."

But though I have borrowed the term "complex" from Freud, it should be noted that in his philosophy the ultra- and infra-cognoscible extensions of the "spectrum" of mind are confounded together by him under the term "unconscious" (5). My use of the term "complex" is also, I think, actually in accord with his use in that for me a complex is a "theory" with some of its data beyond the introspection of its possessor. Freud, however, presumes only one source of "data" beyond introspection, the unconscious, whereas in the ultra- and infra-cognoscible, respectively, I find two (5).

The basis of ideas and theories according to the above is an integration of the *L* factor from different sources. And, on the whole, the prime cause of this integration appears to be that groups of cells can afford to, or else are directed to, give away some of their *L* to others. The poet waiting for inspiration can, I think, be taken as an example of waiting for overflow, and the combination of "love" (3) and "a little alcohol" (6) as one that would readily yield the extra *L* required to permit overflow. The scientist, on the other hand, critically examining each fact, or applying adequate *H* to its data *L*, exemplifies a directed integration of *L*.

The statement may next be made that the "manifest content" of a theory is the theory itself, and its "latent content" the facts on which it is based. It may also be stated that the "manifest content" of an idea is its own proper content in L , and its "latent content" the sources whence that L is derived. This brings us, of course, to dreams.

Now dreams are fleeting things requiring for anything like recollection conscious attention immediately after awakening. Their memory traces are, thus, essentially unstable, and this instability may be due either to a very small content in L , or it may be that the L tends to revert to its sources unless held and fixed by attention (1, 5). This phrase, "held and fixed by attention," must next be interpreted biochemically as well as psychologically because, in the psycho-physical system outlined by me, the giving of attention implies an interaction of Ca with the colloids whose aggregation change is mediating the data of the idea (1). The resulting "calcification," as shown by the work of Höber (7) and Macdonald (9), gives a more stable colloidal system, which, in turn, gives more stable memory traces (1).

Now the chief sources of L within us seem to be—

- (1) The good, as well as evil, desires and wishes of our own hearts having their origin in our ductless glands and environment.
- (2) The ultra-cognoscible mind.

And, if these two sources supply the L for dream data, the dissolution of the dream should imply reversion of its L to the sources of its origin. If, however, dreams be regularly "fixed," by giving them attention on awaking and regularly recording, a regular drain of L from its two chief sources of origin should thereby be established. Such a drain probably matters little to the first group of sources, because the ductless glands and environment can as regularly renew the supply, but, in respect of this second source, if one possess it, such a regular drain should eventually so decrease the reservoir of L as to leave room to apply enough H to obtain consciousness of the event, or idea, mediated thereby.

If this view be correct, the regular recording of dreams would in time render possible consciousness of what Freud terms a "repressed complex," and such regular recording forms parts of psycho-analytic treatment. The recording, however, is done primarily to give the analyst material to analyse, and he naturally believes that his analysis is the all-essential part of the treatment, whereas

from the above we find that the mere regular recording may be "the" essential.

The next point concerning dreams is that our ordinary beliefs concerning them may be, in part, a sort of normal Korsakov phenomenon. They belong to our inner store of cognoscible data, all of which are normally met, on arrival as it were, by consciousness. When, then, consciousness wanders round that inner store of data, it presumes that any L then "met" had also been previously met.

Now if sleep means an entire withdrawal of consciousness, and if during it there be a ceaseless production of all types of kaleidoscopic patterns of L by integration and their equally ceaseless disintegration to their origins, then, at any moment of sleep, there will be a number of these patterns in being, in production, and in disintegration. The time occupied in disintegration, however, will vary, but not directly, with the size, or strength, of each integration, those of ordinary, or intellectual, size reverting to the infra-cognoscible level with the speed of an ordinary visual after-image, whereas those of large, or emotional, size take, like a sun after-image, some more easily sensed time (1, 2, 3, 4, 5).

If next, on awakening, this type of integration ceases, those patterns previously wrought, and of adequate size to take some little time to disintegrate, will still be in existence though disintegrating, and can be "met" by consciousness if it then turn to its inner store of data. We always infer, however, that anything "met" in that store has been previously "met." Accordingly even though these dream data may not previously have "met" consciousness, yet, because they are in that inner store, it would be inferred that they had been met, and the time of meeting placed somewhere in the previous period of sleep.

It should be clearly understood, however, that the psychophysical mechanism I have previously outlined makes equally possible contemporary consciousness of dream data, and that a decision between the two possibilities depends on knowing how much of the factor H , or consciousness, or "censorship," is available during sleep. We can certainly distinguish "light" and "deep" sleep, yet in both conditions the sleeper is unconscious, and the "light" and "deep" do not refer to consciousness, but instead to the strength of stimulus required to restore consciousness. The point being made here is that the universal belief that dreams possess contemporary consciousness is possibly a wrong inference, which we must automatically make so long as introspection is our

guide. That possibly wrong inference is next automatically incorporated into speculations concerning dreams and dream-states, and, of course, if wrong, makes these other speculations wrong. This hypothesis, then, if correct, might have quite a useful life in front of it.

According to the above, the essential difference between a scientific theory and a dream is that in the former the integrations are directed, whereas in the latter they are undirected, or at random. And just as at bridge some player, or even all four players, can be occasionally dealt the "straight flush" instead of the more usual haphazard collection of cards, so also these random cerebral combinations can be anticipated to give occasionally a regular and orderly result instead of the much more usual haphazard combination. When also that combination obtains registration by its possessor, the one to whom it has been delivered may well cry "Eureka" and perpend on the possible source of the inspiration. And when we do perpend we should, I think, consider the possibility that Nature may only be able to deal to us such cards as we with infinite toil make in ourselves. The straight flush, therefore, should be more readily attainable by definite selection than by waiting for the random deal. At the same time, however, it is possible for us to mislay, or forget, some one card which Nature may kindly find for us.

It may now be pointed out that if it be a wrong inference that "dreams" are conscious events of sleep, an intellectual dream would ordinarily not be recalled, because its data would subside with the speed of a visual after-image, and so sink below the cognoscible level before consciousness could be applied to it. If, however, our occupation be an emotional one, *e.g.*, the soldier in battle, or some change take place within us whereby all excitation processes obtain an accretion of L , we should, according to the above, be then able to dream occupational dreams—an obviously bad sign if our work be "intellectual," or at any rate "skilled," because it implies the L has become too great to permit adequate application of H for good judgment.

Finally we may consider the origin of dreams. Dreams, like theories, have their proper manifest content of L , and a latent content in the various sources of L , whence their L is integrated. If, next, it be a wrong inference that dreams are conscious events of sleep, the dreams normally capable of registration and remembrance would be those with such a content in L , that the subsidence of that L persists over from the sleeping to the waking state. That in turn means enough L to be emotional, or at any rate to

imply low judgment capacity or inferior censorship. The dreams we remember, therefore, must be derived from sources in us containing much *L*, the ultra-cognoscible and the para-critical divisions of mind, so that the sources of dreams should be in number at least equal to the number of emotions enumerated by McDougall. If, however, we do not appreciate that the *L* of dreams is an integration from many sources, and employ a psycho-analytic method that only tracks down, or precipitates as it were, one origin, whereas someone else, by using a different analytic agent, tracks down another, we obtain material for disputation. Hence, I suggest, the origin of the schools of Freud, Jung and Adler.

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CRIME AND INSANITY IN INDIA.

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MEDICAL men are often called upon to give evidence as to the mental condition of an individual, charged with crime, at the time of committing the crime. They are also expected to give an opinion as to whether by reason of insanity the accused was incapable of knowing the nature and consequences of his act, or did not know that what he was doing was either wrong or contrary to law. The question is frequently one of life and death for the accused, and therefore it is very necessary that medical men should understand the inner working of a criminal's mind before they venture an opinion regarding his mental condition. In India we have hitherto depended for our guidance on books written by learned authors who base their conclusions on conditions prevailing in their own countries, and cannot be expected to know the conditions of Indian life. I feel the time has come when we should begin to collect first-hand information regarding our criminals from our own observations. I am afraid very little work has been done in this field in India, and it is time that we compare our results with those obtained in the West. It is with this object that I venture to submit this paper, so that it may stimulate others in India also to work on these lines.

This paper is a study of 175 criminal patients in Madras Mental Hospital, including 6 juveniles. Of these, 156 are males and 19 are females.

Under conditions prevailing in India it is very difficult to get a satisfactory history in cases of mental disorder. The patients often do not help. The relatives, through ignorance or disinclination or false pride, are also unwilling to help, and it is no wonder that in the medical history sheet supplied by the police all the columns are often marked "unknown," including, in some cases, even the names of patients. In criminal cases the committing magistrates often do not even send a copy of the judgment.

In spite of these difficulties I have tried to give as much information as possible.

INCIDENCE OF INSANITY AMONGST CRIMINALS.

Of the 175 cases, 36 were acquitted on account of insanity at the time of the crime, and were sent here; 89 were under trial; and the remaining 50 were undergoing imprisonment when they were transferred here on account of their mental condition. The daily average of the criminal population in the various gaols of the Madras Presidency in 1929 was about 15,000. This gives a proportion of $89+50=139$ to 15,000, or '92%. (All the criminal insane in the Madras Presidency are admitted to this Hospital.)

AGE-INCIDENCE (*vide* Appendix I).

The age-incidence as shown in Appendix I is rather interesting. The youngest murderer at the time of his committing the crime was a boy of 7, and the oldest a man of about 60 years. It will be seen that amongst males there is a gradual increase in crime, which reaches a maximum between 26 and 30 years of age, and then gradually subsides, the largest number of crimes being committed between the ages of 21 and 40—the age-period when the brunt of life is at its height. Amongst women the maximum is reached between the ages of 16 and 20, for the reason that in India amongst the lower class this is the beginning of the child-bearing age, when there is a great deal of strain on the woman. This is, more or less, in accordance with the Madras Gaol figures, which show that the crime-incidence reaches its maximum about these ages.

DISTRICTS (*vide* Appendix II).

It will be noted that Malabar, Coimbatore, Tinnevely, South Kanara and Vizag Agency contribute the greatest number of criminal insane. Why should these districts contribute the greatest number of criminals? Is it that there is something in their environment which predisposes them to criminality? The Malabar Moplah, the Coimbatore Gownden, the Agency hillman are all types by themselves. They are all strong, sturdy and daring people, and the use of the knife is like play to them, while the Moplah, as far as his religion is concerned, is a fanatic.

OCCUPATION (*vide* Appendix III).

Practically all the patients are tillers of the soil and hewers of wood. They are illiterate, with no chance to be civilized, have no social

status, and lead a hand-to-mouth existence. It is no wonder, then, that their instincts get the upper hand. Cultivators and coolies predominate; unemployed form a good few; petty traders some; 5 from the police, toddy tappers 6, and all the occupations involving manual labour are represented.

HEREDITY.

Heredity is an important factor in the history of these cases. In 36 males and 6 females a definite family history of insanity could be got. In the majority of remaining cases the family history is stated to be unknown. I am sure that with a complete history, which is unfortunately lacking, in 50% at least of these people a hereditary taint could be got, as could be gleaned from a complete study of the case-records.

PREVIOUS HISTORY.

Of the 125 cases who were found to be insane at the time of crime, 73 males and 6 females had a definite history of previous insanity. It is unfortunate that a good history is lacking in many of these cases, but from a careful perusal of the judgment and other records it is possible to presume that in at least 80% of these cases the crime was directly the result of insanity.

The general health at the time of the crime was fair in 100 cases, and indifferent or poor in 75.

PRESENT MENTAL CONDITION.

There are 36 cases who have recovered, and are awaiting disposal, 36 are permanent demented, and the rest are still suffering from their ailments.

GANJA.

In 4 cases of murder, 1 of arson and 1 of theft the patients were definitely known to be addicted to ganja-smoking. In these cases the ganja habit appears to be more a symptom than a cause of insanity, being used as a means to drown the patient's miseries—a solution to his insoluble difficulties. At the same time a vicious circle is formed, the disease leading on to the ganja habit—the ganja occasionally giving rise to an acute confusion, when t

patient does not know what he is doing, and so resulting in crime. Ganja here is only a contributory factor.

ALCOHOL.

Alcohol plays a very minor rôle in the causation of insanity and consequent crime in this country. These people are poor and cannot afford the luxury of intoxicating beverages. Amongst the 175 cases there have not been more than 6 in whom a history of alcohol could be got. The common drink in this Province is toddy, and one has to consume a good quantity before one can get intoxicated. Moreover toddy drinking is no more than a secondary factor, as the cases all show other causes for their mental condition.

SYPHILIS.

Eight cases showed a syphilitic taint, 2 were G.P.I., and 1 cerebral syphilis, and in the rest syphilis was only an additional factor in the causation of insanity.

NATURE OF CRIME (*vide* Appendix IV).

As many as 101 out of 175 are murder cases. The forms of insanity in murder cases are given in Appendix V. In a number of these there has been a murder of more than one person or an attempt to murder or cause grievous hurt to one or more persons, or an attempt to commit suicide. In almost all these cases there was little or no premeditation, the motive was slight, there were no accomplices, there was no attempt to hide, and there was more violence used than was necessary to kill the victim. It is very characteristic that in as many as 56 cases out of 90 males and 10 out of 11 females the murdered person was a close relative of the patient (*vide* Appendix VI). Murder of wife, children or parents seems to be the commonest amongst males, and amongst females murder of their own children. There have been 6 cases of attempted murder and 11 cases of hurt among men. It is only accidental that in these cases the victims were not actually killed.

Theft is the next commonest crime. This had often been done clumsily, in broad daylight, without premeditation or attempt at concealment; they were petty thefts too.

There are 9 cases of *arson* and one of *rape*, and the rest are minor crimes.

FORMS OF MENTAL DISORDER AMONG CRIMINALS (*vide*
Appendix VII). *Dementia Præcox.*

This is the predominant disease (75 males and 5 females). In 15 cases dementia præcox was superimposed on a previous mental defect (high grade). In the majority of dementia præcox cases there is a certain amount of irresponsibility. They know their crime, but take up a "don't-care" attitude about it. Some of them, though now demented, have a good memory for their crime, and show a complete lack of emotional reaction. They give varying reasons for their crimes, but when confronted with a straight question they either evade, or answer irrelevantly. They are neither pleased nor sorry for what they did.

A few of them have no knowledge of the crimes committed, and their case-records as well as their condition before and after the criminal act show a definite superimposed confusional state.

Some of these cases have definite delusions, but there are no cases of true paranoia. The delusions are neither fixed nor systematized, though they seem to have played an important part in determining their crimes. These are really cases of dementia paranoides.

Appendix VIII gives the nature of crimes in dementia præcox cases.

Manic-Depressive Insanity.

Appendix IX gives the nature of the crime in this type of insanity. It is rather surprising at first sight to find that such cases should commit crime, especially murder. But in some a superimposed confusional state seems to be the determining factor. In a few an underlying mental defect accounts for the irresponsible act. In a few others insanity developed after the crime.

These cases are emotionally unstable, being easily upset on the slightest provocation. They explain away their crime by the excuse that there was provocation (trivial to an ordinary individual). In some, definite delusions led to the crime. In a few cases pure mischief was the motive for minor offences.

Epilepsy.

There are 13 cases of epilepsy. Of these, 8 had committed murder, and the others minor offences; 6 are still suffering from fits, and are more or less demented. In a few there is a history of

epilepsy, but they have had no fits since admission to hospital. There are two cases of epileptic equivalents. In all these cases the history and the character of the patients, the amnesia for the crime, the circumstances of the crime and present condition all point to their being epileptics. One of these was a case of epileptic equivalent in a man of 42, who murdered his wife, whom he loved, and attempted to murder his aged father and some others. There was a history of his having suffered from attacks of giddiness and having been queer for a few days after the attacks, when he was sleepless and used to wander about. He has complete amnesia for all the events of his crime. There was neither motive nor attempt at hiding, and he had no accomplices. He had practically butchered his wife, and would have killed his father and others too if he had not been prevented. Throughout there was no attempt at malingering. He has had no fits since admission, and is practically normal now. Though convicted in the lower court, he was acquitted on appeal.

Mental Deficiency.

There are 12 cases, exclusive of those who had a trace of defect in association with some other disease. Nearly all these patients were known to be of unsound mind before the crime and there is a family history of insanity. Unconcern seems to be the characteristic feature, and the crime, to them, is only a trivial incident. All of them remember their crime.

Senile and Presenile Psychoses.

There are 9 cases of this type, all in men, of which 6 are of murder. All of them are above 45; some of them are prematurely old. The majority of them have a poor memory and cannot give a proper account of themselves, and are more or less demented.

Confusional States.

There are 8 cases of confusion, all charged with murder; 4 of these are women who committed the crime during or soon after the puerperium. In all these cases delusions and hallucinations were important factors.

These are exclusive of the cases where confusion was superimposed on a pre-existing disease.

Neuroses.

There are 2 cases, both of anxiety hysteria. In one of them hysteria has been the direct outcome of murder and gaol life.

Organic Diseases.

Organic diseases amongst these patients have either a direct or an indirect influence on their mental condition, leading to crime. Encephalitis, beri-beri, relapsing fever, pituitary disease, tuberculosis, dysentery, heart disease, fistula-in-ano, middle-ear disease, cataract and various other conditions are found in these patients.

In women, pregnancy or childbirth is the starting-point of the disease which leads to the crime.

There are 15 cases where the crime was definitely not due to insanity, but insanity developed as a direct sequence of the crime and its aftermath. In all these cases the previous history and the family history are clear. Only in 4 cases could an unstable mental equilibrium be traced, and in these the crime, sentence and gaol life hastened the onset of insanity.

There are one or two instances where the shock of crime has led to the recovery of the patient from his mental disorder.

No Appreciable Disease.

There are 6 cases—5 males and 1 female—where the case-records show a crime committed by a normal person. There is neither previous history nor hereditary taint. The conduct of the individual before and after the crime is that of a normal person. No definite symptoms of insanity could be made out, either in their gaol or hospital life. Some of these are habitual criminals and very intractable to discipline. It looks as though the gaol authorities were tired of them. I would not call them malingerers, nor would I call them mental defectives. They are all of unstable mental equilibrium, and I would classify them as border-line cases.

The Rôle of Delusions and Hallucinations (vide Appendix X).

There are 28 cases of murder showing definite hallucinations and delusions which influenced their crime. Probably with a fuller history we might be able to trace more crimes to delusions. In some there was a divine command to kill, which could not be resisted; 2 performed human sacrifice; a few killed to obtain salvation for themselves or their victims; some killed those who

they imagined were practising sorcery on them ; a few " saw murders being committed and came to the rescue of the victim " ; some of them killed giants, wild animals, etc., while others killed their enemies because they could no longer suffer persecution at their hands.

In conclusion, I have to express my indebtedness to Dr. Hensman, the Superintendent of this Hospital, for the very valuable help and advice he has given me throughout the preparation of this paper. I have also to thank my colleagues in this Hospital for their valuable assistance.

APPENDIX I.—*Age-Incidence.*

Age at crime.	Number of males.	Number of females.	Age at crime.	Number of males.	Number of females.
1 to 5 years . . .	..	..	46 to 50 years . . .	6	1
6 " 10 " . . .	1	..	51 " 55 " . . .	1	..
11 " 15 " . . .	3	1	56 " 60 " . . .	2	..
16 " 20 " . . .	7	5	Above 60 " . . .	..	..
21 " 25 " . . .	31	3			
26 " 30 " . . .	46	4			
31 " 35 " . . .	33	3			
36 " 40 " . . .	17	1			
41 " 45 " . . .	9	1			
			Total . . .	156	19
				175	

APPENDIX II.—*Districts.*

District.	Males.	Females.	District.	Males.	Females.
Ganjam	4	..	Salem	8	..
Vizagapatam and Agency	8	..	Coimbatore	14	1
Godavari	4	2	Malabar	27	3
Krishna	2	1	Nilgiris . . . . .	..	1
Guntur	4	..	South Kanara	10	1
Nellore	5	..	Trichinopoly	7	1
Madras	5	2	Madura	6	1
Chingleput	2	..	Tanjore	7	2
North Arcot	2	..	Tinnevely	10	1
South Arcot	2	..	Ramnad	3	..
Chittoor	4	1	Cuddapah	6	..
Kurnool	2	1	Coorg	2	..
Bellary	6	1	Mysore	2	..
Anantapur	3	..	Jeypore Agency	1	..

APPENDIX III.—*Previous Occupation in Males.*

Occupation.	Number.	Occupation.	Number.
Cultivators	58	Police constables	5
Toddy tappers	6	Petty traders	14
Unemployed	16	Coolies	18
Cooks	3	Beggars	3
Goldsmith	1	Dhobies	2
Cowherd	1	Masons	4
Barbers	3	Coolie maistries	3
Weavers	5	Carpenters	4
Chuckler	1	Oilmonger	1
Clerks	3	Petty officials	3
Student	1	Postman	1

APPENDIX IV.—*Nature of Crime.*

Crime.	Number of males.	Number of females.	Crime.	Number of males.	Number of females.
Murder	90	11	Attempted murder	6	..
Attempted suicide	1	3	Theft	26	3
Hurt	11	..	Arson	8	1
Dacoity	4	..	House-breaking	3	..
Assault	2	..	Trespass	3	..
Waging war	1	..	Abduction and rape	1	..
Not furnishing security	..	1			

APPENDIX V.—*Form of Mental Disorder in Murder Cases (101).*

Disease.	Number of males.	Number of females.	Disease.	Number of males.	Number of females.
Dementia præcox	42	4	G.P.I.	1	..
Manic-depressive insanity	20	2	Confusion	4	4
Senile and presenile psychoses	6	..	Neuroses	2	..
Epilepsy	8	..	Mental deficiency	3	1
			No appreciable disease	3	1

APPENDIX VI.—*Relationship of Patient to Murdered Person.*

Males.		Females.	
Murder of—	Number.	Murder of—	Number.
Children	11	Own babies	5
Wife	18	Children	3
Father	3	Brother	1
Mother	9	Nephew	1
Uncle	1	Others	1
Cousin	4		
Brother	3		
Brother-in law	2		
Sister-in-law	2		
Aunt	2		
Nephew	1		
Friend	1		
Others	33		
	90		11

APPENDIX VII.—*Nature of Mental Disorder.*

Disease.	Number of males.	Number of females.	Disease.	Number of males.	Number of females.
Dementia præcox	75	5	Confusional insanity	4	4
Manic-depressive insanity	34	7	G.P.I.	2	..
Epilepsy	13	..	Cerebral syphilis	1	..
Mental deficiency	10	2	Encephalitis	1	..
Senile and presenile psychoses	9	..	Neuroses	2	..
			No appreciable disease	5	1
				156	19

APPENDIX VIII.—*Nature of Crime in Dementia Præcox.*

Crime.	Number of males.	Number of females.	Crime.	Number of males.	Number of females.
Murder	44	4	Trespass	2	..
Attempted murder	5	..	Hurt	5	..
Theft	8	..	Dacoity	1	..
Attempted suicide	1	1	Waging war	1	..
Arson	6	..		—	—
Assault	2	..		75	5

APPENDIX IX.—*Nature of Crime in Manic-depressive Insanity.*

Crime.	Number of males.	Number of females.	Crime.	Number of males.	Number of females.
Murder	18	2	Arson	1	1
Theft	8	1	Attempted suicide . . . . .	..	2
Hurt	5	..	Failure to furnish security ..	..	1
Dacoity	2	..			

APPENDIX X.—*Nature of Delusions and Hallucinations in Murder Cases.*

Divine command which could not be resisted	7
Seeing attempted murder and going to help the victim	4
Performing human sacrifice	2
Sorcery on themselves	2
Salvation by killing	1
Sending to Heaven	1
Seeing giant, wild animal or serpent	3
Cock fight	1
Persecution, killing in self-defence	7

THE SIGNIFICANCE OF A NEUROTIC REACTION AS A PRECURSOR OF SCHIZOPHRENIAS.

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INTRODUCTORY.

THE title of this thesis is, to some extent, self-explanatory. It is not an attempt to establish a new set of concepts, but rather an endeavour to combine in a grouping, which has not been sufficiently recognized, a set of existent formulations.

To put this in another way, the aim of the following pages is to indicate to what extent there may be a connection between the psycho-neuroses (for brevity hereinafter called the neuroses) and the psychoses.

Dementia præcox (or schizophrenia) has been chosen for discussion for various reasons. It is exceedingly common ; and has received perhaps more attention than any of the other psychoses. This is perhaps due to the fact that schizophrenia presents such a marked ideational alteration, such a mass of bizarre thoughts, and such a change in the patient's mental make-up. These have not been obscured by the rapidity of the irresistible rush, as in maniacal states, or by barren repetitions, as in the depressive psychoses. Almost from the outset of the recognition of the syndrome of schizophrenia, attempts have been made to understand and make sense of the symptoms of these cases.

The work of two eminent psychiatrists and their followers has been closely associated with the problems both of the neuroses and the psychosis in question. Freud and Adolf Meyer have shown the connection between the two conditions in a number of ways to be considered.

Jung, in his now famous *Psychology of Dementia Præcox*, drew a close parallel between the psychosis and certain neuroses and, using the discoveries of Freud, established the bond between them.

Meyer, with a full realization of the scope, importance and significance of Freud's work, has elaborated a conception of all mental disease as a definite reaction on the part of the patient to the demands which life is imposing on him.

The separation of the neuroses from the psychoses has been growing less sharp, and the tendency to-day is to recognize that the distinction is no hard and fast one, but that there is a long and gradual series of intermediate stages.

This does not mean that an attempt is being made to deny the existence of each neurosis or psychosis as a clinical entity. Far from it. The majority of the hundred cases reviewed showed no evidence to disprove the fact that a case of schizophrenia may exist recognizably as such from the first, and the reports of the Cassell Hospital for Functional Mental Disorders indicate clearly that many neuroses never show any indication of psychotic tainting. This last, however, has a bearing on what is to come, for we do not know how many psychotics would never have reached a psychotic stage, had it not been that they were neglected during a prodromal phase in which they were reacting in a neurotic way.

In the following pages it is demonstrated that we do see from time to time cases where there has been a neurosis which has subsequently gone on to the development of a psychosis. This is already well recognized, but the more interesting point of their common ætiology has been overlooked, and the recognizable working of the same cause in producing the neurosis and later psychosis in the same patient has not been clearly seen.

No attempt has been made to subscribe wholly to any one psychiatric doctrine. The ætiological factors have seldom been traced to their ultimate origin in the Freudian sense, and this is held to be an advantage, for the symptoms have been taken at their face value, both in the neurotic and the psychotic phases, using, of course, well substantiated mechanisms of symptom interpretation (1).

THE DEFINITION OF THE TERM "DEMENTIA PRÆCOX" OR "SCHIZOPHRENIA."

Dementia præcox has been defined by Kraepelin (1) as "a series of states, the common characteristic of which is a peculiar destruction of the internal connections of the psychic personality. The effects of this injury predominate in the emotional and volitional spheres of mental life." He divided the condition

into four sub-groups—the simple, the paranoid, the katatonic and the hebephrenic—and these still form a useful set of descriptive subdivisions. The simple type consists essentially of a slow, undramatic withdrawal from close contact with reality. Kraepelin (2) describes an “impoverishment and devastation of the whole psychic life.” The patient gradually reaches a level at which he can no longer act as a functioning social unit.

In the paranoid type there is much less “devastation.” The personality is maintained to a greater, sometimes a considerable degree. A delusional system is evolved, of a fantastic, widespread nature, and it may be persecutory, depressive, or grandiose. The age-incidence is commonly later than in the other types.

The katatonic sub-group is the most obvious and dramatic of all, and is characterized by the presence of the katatonic stupor with *flexibilitas cerea*, mannerisms, perseveration, negativism and bursts of apparently causeless excitement, often with suicidal impulses.

Hebephrenia is the most definitely age-bound of the four groups. It appears at an early age, often at puberty, and in it are seen “incoherence in the train of thought, marked emotional disturbance, periods of wild excitement alternating with periods of tearfulness and depression, and frequently illusions and hallucinations” (3).

All four groups show the general symptomatology of schizophrenia, and the above sketch is inserted merely to define the terms to be employed.

The position is put in this less rigid way by Bleuler (4): “. . . schizophrenia does not appear to us as a disease in the narrower sense, but as a disease group, about analogous with the group of organic dementias . . . one should, therefore, really speak of schizophrenias in the plural. The disease at times runs a chronic course, at times in shifts [or episodes], it may become stationary at any stage, or may regress a certain distance, but probably does not permit of a complete *restitutio ad integrum*. It is characterized by a specific kind of alteration of thinking and feeling, and of the relations with the outer world, which occurs nowhere else. Moreover, accessory symptoms, with a specific colouring in part, are very common.”

Out of these delimitations has come, modified in a way to be described later, the modern view of the condition, defined thus: “Schizophrenia, in its typical form, consists in a slow, steady deterioration of the entire personality, usually showing itself at

the period of adolescence. It involves principally the affective life, and expresses itself in disorder of feeling, of conduct, and of thought, and in an increasing withdrawal of interest from the environment" (5).

In the two authorities last quoted, the term "schizophrenia" is used rather than the alternative "dementia præcox," for schizophrenia, in its sense of "mind-split," is more aptly descriptive for a condition of which Kraepelin (6) has said "a certain number of cases of dementia præcox attain to complete and permanent recovery, and also the relations to the period of youth do not appear to be without exception."

Cases of this type constitute from 15 to 16% of total admissions to mental hospitals in this country, and, moreover, 50 to 60% of the permanent population of mental hospitals are schizophrenics (7). Kraepelin (8) describes 10-15% of his admissions as being schizophrenics.

THE HISTORY OF DEMENTIA PRÆCOX.

The evolution of the conception of dementia præcox as a definite disease with characteristic features, has been a gradual one, and it has been said with truth that "the history of dementia præcox is really that of psychiatry as a whole" (9).

In the article from which the above quotation is taken Meyer gives an historical sketch which illustrates sufficiently how the disease gradually came to be recognized. In brief, the history of the condition is as follows:

In 1674 the dementia type of deterioration was described by Willis (*De Anima Brutorum*), who recognized a progressive descent into hebetude dating from adolescence. Pinel described similar cases, and called them "idiotism," and Esquirol used the term "accidental or acquired idiocy" (*Des Maladies Mentales*). Later, however, idiocy became limited to early and congenital defects, while dementia was confined to acquired deteriorations, and these non-organic deteriorations began to be divided into partial and total insanities, into which were incorporated mania, melancholia and confusion. About the middle of the nineteenth century Morel first used the term "Démence Précoce," and described in it a "stupidité," making of his concept the picture of a familial degeneracy.

Later came the use of the term "vesania," or total insanity, first used by Sauvages and Cullen. Under this heading were included melancholia, mania, confusion or paranoia and dementia, to which was later added neurasthenia as a prodromal symptom, the term being used as descriptive of a fatigue syndrome.

At this time there appeared, described by Magnan, a "Délire chronique à évolution systématique"—the equivalent of a paranoid type of dementia præcox—in which the degeneration was not marked.

Meantime, in Austria and Germany there was a sorting out, whereby the affective psychoses—the manias and melancholias—were separated as recoverable from a group where the prognosis was less clear.

Morel, in his formulation of the "démence précoce" entity, had in mind unity of cause, course and outcome in cases of this disease; and in 1863 Kahlbaum made a considerable advance along these same lines. He attempted a much more complete attitude to the patient, in which there was both comprehensiveness and comprehension. In his conception, the general clinical findings of whatever kind were given equal value with the psychic symptoms, and it is here that we find the first frank and declared attempt to regard the patient's illness as a dysfunction of a psychobiological unit—that is to say, a disorder of the entire organism. He described four groups of disorder:

- (1) Vesania, equivalent to dementia præcox, but including in it a progress of the type already mentioned.
- (2) The *vecordias* (wrong-heartedness), the affective psychoses of the manic-depressive type.
- (3) The *dysphrenias*, equal to our toxic exhaustive reactions,
- (4) The *paraphrenias*, psychoses determined by age: *neophrenia*, in infancy; *hebephrenia*, in youth; *presbyophrenia*, in old age.

This classification was criticized as being impossible to square with clinical evidence.

Hecker described as *hebephrenia* one of Kahlbaum's *paraphrenias*, the age-bound disorder. At about the same time Kahlbaum described *katatonia* as a *vesania* similar to *paresis* with motor symptoms. In this way the grouping that he had set up was rendered less firm.

Thereafter for some time Kahlbaum was lost sight of in what Meyer calls a "paranoification of psychiatry" by Westphal,

Krafft-Ebing and Schüle, during which paranoias of various types came to occupy the place of dementia præcox. This was in response to a psychology of emotion, which tended to create a separation between affective and intellectual disorder. The manic-depressive group was included in the affective series, and under the paranoias were included part of the older vesania with paranoia as a primary state. At the same time, in America, Spitzka, Hammond and Pick began to describe a progressive primary dementia. About this time began Kraepelin's work in this connection.

In 1893 he described dementia præcox as synonymous with hebephrenia (Hecker), and also included katatonia and dementia paranoides; and in a review of Ziehen's work, which was full of a series of paranoias, he grouped all primary and secondary dementias in a progressive deteriorative dementing process. Thus dementia præcox made its *début* at the hands of Kraepelin in 1898 as a result, to some extent, of the work of Morel, Kahlbaum and Hecker. The aim of Kraepelin, as of the others was to show a uniformity of cause, course and outcome. At the time the description met practically none of these requirements, but at any rate a definite concept had been brought forward.

THE DEVELOPMENT OF THE MODERN VIEWS.

Up to this point the object had been to secure a disease entity but, from now on, attention began to be directed to attempting an understanding of the condition. In 1896, Meyer, working at the Worcester Hospital, developed a general analytic-synthetic principle, which was gradually expanded into "a conception of dementia præcox as depending on a special personality and constitution, on habit disorganization; leaving the internal working and development of the functional and structural deficit as possibly incidental, still to be worked out." In 1907 Jung and Bleuler entered the field. Jung developed the determination of symptoms by complexes (pathogenic groups of ideas endowed with a strong emotional tone), and hinted at special personality types. Bleuler looked to a disease process, generalized as a toxæmia or localized as a gliosis, causing associative disorders, but later he abandoned this narrow view, and stated: "The term schizoid designates a type of mental nature and reaction which is more or less

present in everybody, and in its morbid exaggerations constitute schizophrenia."

About this time many contributions from various points of view were made. Stransky developed the conception of an "intrapyschic ataxia" as an explanation of the affect dysharmony, and in 1914 Berze suggested a primary insufficiency of mental activity—another way of stating the case for a constitutional defect.

Long before this, however, Freud had described a case of hallucinatory paranoia, and in 1912, he published a paranoia study. His dynamic attitude was followed by Kempf, who, in 1920, introduced a classification based not so much on formal grouping as on the ætiological process, problems of repression, regression to more primitive thought processes, and fixation. In Germany, during the period of Kempf's work, investigation was being carried out along unimaginative and almost purely descriptive lines, but, at the same time, Kretschmer took up, in a new and stimulating way, the constitutional factor; and Kahn developed the heredity factor to the point of postulating two inheritable factors—first a disposition to the disease, and second the actual progressive process. These are only two of a large series of lines of investigation that have been, and are being, pursued. The most important have been the Abderhalden tests, Mott's work on gonadal influences, which is still a subject of controversy, Von Monakow's suggestions as to lesions of the choroid plexus, and the work of Bruce and Cotton on focal sepsis as an ætiological factor.

At the same time advances were being made along other and probably more fruitful lines by Meyer and Kirby in America, and by Hoch in Germany. The lines of discussion and theory pursued by these workers led to the recognition of schizophrenia as a condition in which the ætiology was, if not uniform in quality or quantity, yet constant in its method of activity, so that it produced a group of recognizably similar cases. And now began to be formulated the principle of mental illness as a definite purposive reaction to stresses of a very varying nature. To some extent Kahlbaum had hinted at this, and the principle was accepted by Kraepelin. So it was that the present-day attitude to the problem of schizophrenia became established.

The development of schizophrenia as an entity has followed a course typical of the elucidation of many disease problems. First a recognition of certain symptoms, then an attempt at establishing a uniformity from the ætiological, progressional and prognostic

standpoint, then guesses at ætiology, and now, at the present, a position where "reaction types, the factors entering into them, the prognosis and the therapeutic assets are given equal and relatively independent consideration" (10).

This attitude is being more widely accepted, and its essentially dynamic, purposeful nature gains a further assurance from the tendency freely to accept a hormic psychology along the lines laid down by McDougall.

In the field of psychiatry, however, there can still be felt the influence of older authoritative formulations, and it is not clearly recognized to what extent many of them may be integrated into the reaction type concept save as descriptive patterns.

The striking contributions of Kraepelin, clearing up a confused situation, and establishing the place of dementia præcox as a nosological unit, has had a profound effect, even although, as has been stated, he later subscribed to a less rigid doctrine. This effect has been along the lines of insistence upon dementia præcox as a distinct condition with no shading-off into other types of psychosis, and still less with any association with the neuroses.

Recently, however, two tendencies are noted. Of these, the growing spread of the reaction-type attitude is the first, and the second, its logical outcome, is a growing willingness to recognize the existence of the borderline case (11). In support of this we have Meyer's statement that we must admit the existence of an unclassified residuum in our case-material.

In a group of schizophrenias certain of these borderline cases emerge in which the schizophrenia syndrome is complicated by the presence of neurotic symptoms, either in the prodrome, during the psychosis, or during remissions in the psychosis.

Tainting with other types of psychotic reaction must, of course, be admitted into the unclassified residuum.

The neurotic symptoms seen are those which, by themselves, would constitute any of the well-defined groups of the psychoneuroses—that is to say, neurasthenia, hysteria, the obsessive compulsive states and the anxiety states.

In terms of a "reaction type" psychiatry as evolved by Meyer, the neuroses and the psychoses are described as "part" and "total" reactions respectively. The development of a neurosis leaves the patient the same individual objectively, while the psychotic patient undergoes a marked objective change from the personality aspect. From the subjective point of view, the world in

which the neurotic lives is still the world of reality, while the psychotic lives in a world of his own to a greater or lesser extent, and this is especially true of the schizophrenic, where disintegration of the personality is so marked a feature. The difference is one which embraces all the aspects of the individual as a psycho-biological unit, and it must be combined with the conception of a long range of gradations from the normal level of mental activity, along lines of reasoning, differentiation and abstraction, back to the more primitive one of feeling, concreteness and perceptual thinking seen in the regression of the psychotic.

The essential point is the patient's relation to reality; and it is in terms of this that the use of "partial reaction," to indicate a neurosis, and "total reaction," to indicate a psychosis, becomes justified. "In a psychosis reality is changed qualitatively . . . in the psychoneurosis reality remains unchanged qualitatively, although its value may be quantitatively altered (diminished)" (12).

THE HISTORY OF THE NEUROSES.

The neuroses have a lengthy history. Charcot, with his neurological bias, was amongst the first to attempt a sorting out of the confusion regarding these types of reaction. He discovered the power of hypnosis to reproduce the lesions of hysteria, and thereby indicated their psychogenic origin. But he believed that hypnosis could be induced only in hysterics, and regarded hysteria as a degenerative phenomenon.

Next came Janet, who used the analogy of internal tension holding the stream of conscious activity together, and by the lowering of this tension, with consequent disintegration, he explained the mechanism of hysteria and of neurasthenia.

Freud's doctrines of repressed memories in the unconscious, for the most part of sex traumata, or frustrated sex activities, reaching consciousness disguised and with an emotional component or as a physical stigma, are so well known and so elaborate that they cannot be gone over fully in a sketch of the history of the neuroses, but they are of paramount importance, and they are herein taken as understood.

Déjerine, whose work suffered from its temporal contiguity to the dramatic theories of Freud, postulated a mechanism in which emotion reverberates throughout the whole psyche, and attaches itself to organs, and groups of organs, producing a

series of functional nervous disorders, tachycardias, anorexias, respiratory tics and so on, but he found his ætiological factors in the recent past and in the conscious mind.

It is to Freud, and later to Jung, that we owe the conception of complex formation, in which ideas, or groups of ideas, repugnant to the ego, operate unconsciously to produce the various neurotic symptoms, with the affective component added as a result of the internal conflict between the pathogenic ideas and the ego. This view, with modifications, is now widely accepted, and its part in the ætiology of both psychotic and neurotic symptoms is recognized. Here is the first real recognized point of contact between the neurosis and the psychosis, and the elaboration of it is due to Jung, who demonstrated the striking similarity between neurotic and psychotic types of reaction in *The Psychology of Dementia Præcox*.

The work of Adler must be given a place by itself. He suggests that the neurosis is in all cases a failure to meet life's demands, due to the inferiority of some organ or organs. He indicates also that the neurotic reaction may be an over-compensation for such an inferiority, and that the neurotic patient shows in his symptoms the attempt to overcome his handicap. That this is true in some cases is evident, but its universal application is still in doubt.

The classification of the neuroses now generally accepted is that of four main groups:

Hysteria, clinically distinguished by physical manifestations, such as paralyses, seizures, fugues, somnambulisms, accompanied by the mental calm, the *belle indifférence* of Janet, and the condition as a whole is regarded as the operation of a partially autonomous complex which has become split off, dissociated, from the total personality.

The anxiety states: These were separated by Freud into anxiety neurosis and anxiety hysteria. In the former the affect of fear has a physical component, such as tremor or palpitation, and in the latter the affect is linked with some external object. It is claimed that this distinction is not possible clinically, and that it is better to refer to this group as the anxiety states, which correspond to the anxiety neurosis of Freud. The hypochondriacs may be regarded as a sub-group, in which the pre-occupation is of somatic dysfunction, although Freud suggests a connection with the obsessional states.

Neurasthenia has been described by Meyer as a condition with

"mental and physical fatigue associated with sensations of pressure in the head, poor memory, inability to concentrate, irritability of temper, increased reflexes, poor sleep and various aches and pains."

Freud, of course, unhesitatingly ascribes the condition to masturbation, but more weight is now being given to the rôle of continuous emotion, induced by whatever cause, in producing neurasthenia as a fatigue syndrome.

The obsessive ruminative and the obsessive compulsive states, where the patient's content of thought is constantly pre-occupied by some thought, or the thought of some action, apparently indifferent and meaningless, endowed with affective significance which is disproportionate. The affect may be anxiety, shame, or a hypochondriacal depression. The obsessive thought is merely a meaningless substitute for some repugnant memory.

This brief description has been made merely with a view to defining terms to be frequently employed.

THE REACTION TYPE THEORY.

The Meyerian concept, essentially common sense, is one in which, to use Meyer's own words again (13), "reaction types, the factors entering into them, the prognosis and the therapeutic assets are given equal and relatively independent consideration."

The term "reaction type" is self-explanatory. It indicates that the disease is looked upon, not so much as a pathological process with a definite lesion, but as a maladaptation, a malreaction of the individual to his environment. The individual here is taken to indicate the entire organism as a psycho-biological unit. And it is here that a frankly pluralistic outlook is preventive of a narrow view, for, by adopting a dynamic and psycho-biological standpoint, the valuable and suggestive findings of workers along physiological lines may still be incorporated in the concept.

Man's whole life is a reaction to his environment, which latter must, in the nature of things, be constantly changing. If he reacts improperly, or fails to adapt, he ceases to be a functioning social and economic unit, and his orientation towards reality is altered.

The handicaps against proper reaction and adaptation are

legion. "The individual may be loaded in various ways—by inheritance, by physical defects of an endocrine disorder or some grosser kind, by intellectual deficiency or what not—but none of them is in itself a sufficient cause of schizophrenia. It is only when the subject, whether handicapped or not, has to face the usual concrete problems in his journey through life, that reactions can appear which cumulatively lead to one of the numerous conditions which have been included under the designation of dementia præcox or schizophrenia. It was from a careful study of patients, and especially of their history before any breakdown was recognized by friends or relatives—a line of investigation commonly neglected—that Meyer concluded that schizophrenia is the end-result of an accumulation of faulty habits of reaction" (14).

As Jung has said, the complexes which cause the neurotic to break down are those which the normal individual has successfully faced.

The reaction type theory has been purposely stressed, as what follows depends to a great measure on a clear conception of what it means.

It is the idea of a cumulative and progressive series of faulty responses that leads naturally to the search for a gradual onset, and this is not a fruitless one. But the period during which the patient is noted to be "queer," and before he develops a declared psychosis, the prodromal period, is one in which a multitude of trends are seen.

In the review of cases of schizophrenia the presence of neurotic symptoms can frequently be seen during the prodromal period, in remissions, or during the psychosis. It is held that this period is of the utmost importance, and that at present its significance is not given the attention it deserves from the point of view of mental hygiene and therapy.

THE RECOGNITION OF NEUROTIC SYMPTOMS.

The recognition of this neurotic colouring dates as far back as the time of Cowles in 1885, who added to the *vesania* group *neurasthenia*, as an initial stage, and later authors have confirmed this. Bianchi (15), who did not subscribe to the *dementia præcox* classification, although including it in his group of sensory insanities, mentions it in a paragraph where he says, "*Dementia præcox*, as was remarked in a recent and interesting monograph

by Jahrmarker, of the clinique of Tuczeck, is met with in many well-defined maladies, including even hysteria." Kraepelin describes a hypochondriasis in the prodrome.

Bleuler (16) puts it thus: "The beginning of schizophrenia is in reality usually furtive. Even though the disease becomes obvious to the relatives first through an acute attack, a good anamnesis usually reveals certain previous changes of character or other schizophrenic signs. Whether the inclination to retirement, often noticeable even in childhood, combined with a certain degree of irritability, is an expression of a disposition or the actual beginning of the disease cannot be decided. In many cases . . . neurasthenic, hysteric or compulsive neurotic symptoms are for years mistaken for the disease and treated unsuccessfully."

These authoritative statements, with the clinical evidence, make the existence of neurotic symptoms clear, and the point has been further investigated along other lines. Hutchings, Cheney and Wright (17), investigating far back into the life-history of the patient along Freudian lines, claim to have discovered a constitutional loading along lines of improper sex development. They suggest that œdipus mechanisms, with homosexual and narcissistic trends, persist, and that they appear in response to situations demanding adult reactions, and manifest themselves as a progressive disintegration along regressive and schizophrenic lines. It is a commonplace to say that Freudian symbolism and regressive sexual phenomena are very often seen in schizophrenia, but the implication is important when we consider the existence of these same mechanisms in the neuroses.

This naturally suggests that some added factor, endogenous or exogenous, may determine the development of a schizophrenia as an epiphenomenon, upon what began as a neurosis.

The converse of the general proposition, namely, the presence of schizoid manifestations in the neuroses, recognized some time ago by Jahrmarker, has also been expounded by Brill (18). He says, "I thus discovered any number of patients who were neither clear-cut schizophrenics nor psychoneurotics," and he adds "These cases . . . represented all sorts of transitions from the præcox to the psychoneurotic."

He, too, like Hutchings, Cheney and Wright, looks back to homosexual and narcissistic trends, early established, but with a constitutional tendency to an affective holding up as the schizoid component; and, of course, affective rigidity is a very frequent finding

in the schizoid or schizothymic personality (*i.e.*, the type of personality which tends to become schizophrenic).

To some extent, insistence on a constitutional, or personality factor, is merely the importation of the diathesis theory, so well known in general medicine, into the field of psychiatry.

An interesting aspect is seen in the statement made by Stack Sullivan (19) with reference to "periods of depression, anxiety or apprehensiveness occurring during enforced pauses in the compensatory programme." This is more than a hint at a mechanism. It is more than likely that many of these neurotic symptoms of the anxiety type in the prodrome, arise from the unpleasant effect thrown up by frustration of instinctive drives, or by falling short of these, especially where they are drives not appropriate to the level of general psychic, or more especially, psycho-sexual development. But this is merely a corroboration of Freud's doctrines. Sullivan, however, adds: "It is a study in itself to make out the forces which push the psychopathic individual in some instances into schizophrenic psychoses of a major variety, in yet others into brief episodes of excitement uncomplicated by the schizophrenic phenomena," and he also says, "Patients often report that they have been unhappy for a long time before the appearance of a frank D.P. experience." Clinically, one hears again and again of "perplexity," "indecision," "lack of confidence" in the prodromata of all types of psychosis.

We cannot as yet make out these forces. We can avoid the difficulty by calling it constitutional schizoidism or schizothymia, and in this we have the support of Kretschmer (20), as well as a large mass of evidence to show that schizophrenias in siblings breed true, and that there is such a thing as an inborn tendency to the schizophrenic reaction, or we may look in a more common-sense way at the whole problem, and assess all the factors entering into the reaction.

None would deny the essentially dynamic nature of the neurosis. A careful survey of the personal equation will soon reveal what the patient is trying to do with himself, and, in the present-day attitude to schizophrenia, we see the same attempt on the patient's part to solve a problem, to build a life structure with imperfect tools, on a bad foundation, or with an improper conception of what the edifice should be.

In the neurosis the process is active, and the neurotic patient is in proper perspective to reality. In the schizophrenias the reality perspective becomes lost; instinctive drives become disintegrated

within the total; there is the striking affective change which has been given so much value as a diagnostic point.

Wherein lies the factor determining the progress in the one case to a schizophrenia, and in the other to a neurosis, with intermediate states between? Is it, once more, constitutional schizoidism, or must we look merely to the difficulties the patient is up against?

CLINICAL EXAMPLES.

The following case, observed personally over a period of years, illustrates the type of transition which may take place.

Nothing could be more definitely a dynamic neurotic solution of a problem than the symptoms which marked the onset of the illness in the first patient, and which persisted over a period of four years before schizophrenic symptoms manifested themselves.

CASE I.—A woman, *æt.* 32. She was an L.R.A.M., a pianist of high executive ability, and one of a professional pianists' team. A marked fixation had taken place on her employer, who was much older than she. On the eve of a recital he asked her to stand down in favour of another artist, and she did so without demur, without scene or argument, with him or at home. This response is noteworthy, as it is an example of an affective holding back. Within a few days she developed a hysterical palsy of her right hand and arm. At the same time a personality change of a type was seen along the following lines:

Delicate as a child, she lost school contacts through illness, and soon showed herself, at the age of about eight, as emotional and a very poor "mixer." As she grew up this persisted. She had little emotional outlet in reality. She had no heterosexual adventures of any kind; the family described her as being apart from them, reserved, different, snobbish, haughty; and she showed the "proud distance" of Kretschmer's schizoid personality. She worked tirelessly at her music; her physical frailty seemed only to increase her determination to practise assiduously, and she would do eight or nine hours a day. This is, of course, very significant of a schizoid trend.

The personality picture, however, changed somewhat with the appearance of her hysteria. She became less reserved, and more friendly; her family felt that she was nearer to them than she had ever been. The palsy which she developed involved the whole of her right arm from the shoulder downward. It was associated with an unappreciated anæsthesia to all stimuli, and did not correspond to any of the true nerve palsies. For example, she could shrug her shoulder, but could not operate the deltoid. On one occasion while crossing a stream she fell rather than use her arm to grasp at a support. At the same time she had periods of partial dissociation, and during these she would go upstairs to the drawing-room and play the piano with vigour and zest for an hour on end. After such a period she would deny that she had been playing, or would say she had been using her left hand only. It should be noted that the palsy could easily come under any of the types suggested by Freud. In the right arm of a pianist we cannot deny the existence of a "somatic preparedness," or the phallic symbolism of a rigid arm, while the third possibility of masturbatory acts carried out by that hand cannot be ignored.

Her rationalization of the condition was that she had a neuritis of her arm due to excessive playing. She said that she would have had to give up in any case. She never complained of pain in the arm, and she never blamed her employer.

After four years of this condition, she began to show symptoms of a more ominous type. The first of these was a tendency to tire to bed and remain there for days—a retreat from reality—and at times she had spasmodic affective

releases in outbursts of crying and screaming. She also showed signs of a fixation on the family doctor.

But it was not until seven years after the appearance of these, the first definite psychotic symptoms, that she broke down so utterly that life outside an institution was no longer possible. People talked through their feet to her, her brother had given syphilis to the maid, and the maid had given it to her; she began to use obscene language, and at the same time the palsy began to disappear.

The further development of the psychosis was along typical lines. She had periodical outbursts of violent grief, internally determined, her conduct was impulsive, incongruous and bizarre. She wrote to the family physician and told him not to come and see her, as he reminded her of someone whom she had loved and over whom she had been disappointed.

Her stream of talk was along these lines: Q. "What are you complaining of?" A. "I'm not complaining of anything. I've had a strain. I've built my mind on what I thought I ought to have built it on. . . . I had the slights there. . . . He has totally misguided us. I think I've hurt myself. It's my flesh I'm blethering through . . . some hole up here in my shoulder . . . I think I've built a glamour round myself."

"There's a hole in my shoulder, but I've put determination in." "I'm all muddled up, and I'm not going to try to get out of it." "There's something pushed up through my body. It's a gift—a horrible gift. Most unhealthy." "My imagination is working very vividly. It keeps me alive. It's all very nice and perfect. It keeps me from going absolutely blank."

She has continued in this way for over four years, and the most marked feature of her illness is the haptic hallucinosis of an obvious sex type—pains shoot up the centre of her body and people stick things into her, especially the pianist with whom she had worked. Her affective loss is marked, and her family have no claim whatever on her emotions.

The hysterical palsy has now disappeared, but she constantly refers to her music master, in connection with her symbolized sexual experiences. Her psychosis is a grave one, and has all the signs of an acute schizophrenia. Her reality setting is entirely altered, and her affective responses exaggerated, dramatic and dissonant, with violent outbursts of tears or laughter, are all internally determined, and show a marked disintegration of her personality.

Here, then, is a case where a life difficulty was met by a neurotic reaction. Frustrated in her wish to go on working near to the object of her affections, she ceased to be able to work at all.

This reaction took place in a personality of a definitely schizothymic type, described by Krestchmer (21) as "unsociable, quiet, reserved," furthermore showing the proud distance and haughty intensesness which, he argues, is a manifestation of this type.

It is noteworthy that, at the onset of the hysteria, a personality change was seen. She became more tractable and pleasant, and is described as being "nearer" to her family. In this we can see the *belle indifférence* so characteristic of hysteria, and the picture of a neurosis is made even more complete. She had, temporarily, solved the chief difficulty of her life.

Finally, out of the hysteria there emerged a full-blown schizophrenia, which has continued up till the present. It is a process of this kind which illustrates so well the meaning of the terms "partial reaction," applied to the neuroses, and "total reaction," applied to the psychoses. During the neurotic phase of her illness this patient was reacting to a life difficulty in an improper way,

but still a way which enabled her to maintain to some extent her grip on reality, and to live in a world resembling that of the normal individual. Now, in the psychotic stage, she has nothing to do with reality, and her conduct is all modified in response to phantasy and the activity of a complex.

This case has been quoted at some length, because it illustrates in a very definite way several points which may be summarized as follows :

- (1) It shows the existence of a border-line type of case.
- (2) It demonstrates (here with the most clear-cut of all neuroses—a hysterical palsy) the existence of a neurosis as a stage in the evolution of a schizophrenia.
- (3) It indicates the dynamic nature of the schizophrenic process as a definite response to a life situation.
- (4) It vindicates the use of the terms “partial” and “total” reaction.
- (5) Finally, it is most suggestive, for in the personality we can trace the schizoid tendency far back, and can hazard a guess at this as being the determining factor in the end-result, since a neurotic solution to a problem is not satisfactory to a schizophrenic personality.

Here the existence of a long-standing pre-existent neurosis has been of bad prognostic import.

In *The Psychology of Dementia Præcox*, by Jung, the following passage occurs : “ As far back as 1893 Freud showed preliminarily that a hallucinatory delirium originates from an unfulfilled wish, and that this delirium is a compensation for unsatisfied yearnings, that the person takes refuge, as it were, in the psychosis in order to find, in the dream-like delirium of the disease, that which was refused to him in reality. In 1896 Freud analysed a paranoid condition, Kraepelin's paranoid form of dementia præcox, and showed how the symptoms were accurately determined according to the scheme of the transformation mechanism of hysteria. Freud then stated that the group of cases belonging to paranoia form a defensive neuropsychosis—that is to say, that just like hysteria and obsessions, they, too, originate from the repression of painful memories, and that the form of symptoms is determined by the content of the repression.”

This finds striking corroboration in the case just quoted. It should not be forgotten, however, that when Jung refers to hysteria, he includes in it what has been defined as the group of anxiety states.

The next case is of a less definite type, but it illustrates a similar mechanism in the advance of a neurosis to a schizophrenia with paranoid features, and it is quoted here to show once more the existence of a definite neurosis of long duration followed by a schizophrenia. Here we are dealing with an obsessional neurosis.

CASE 2.—A woman, æt. 30. The patient did not develop her psychosis until she was thirty, and the breakdown took place quite suddenly. She was playing in the final round of a tennis tournament at a crowded seaside resort, when she suddenly stopped and walked off the court.

Thereafter, she felt that people were looking at and talking about her, and a voice accused her of laziness, of giving in to her obsession, and went on to suggest sex relations in the past.

The condition rapidly advanced, and now, two years after the onset, she is dominated by auditory hallucinations, which are the obvious expression of hitherto suppressed drives of a sex type, and her retreat from reality is marked.

It emerged in examination that at the age of seventeen a theft took place in her school, and she at that time experienced an affective disturbance of a marked "unpleasure" tone. This continued all her life until the onset of the psychosis, and she declared that it was growing more and more urgent. If she heard of some petty theft or, earlier, if the culprit's name was mentioned, she would be thrown into a state of anxiety and fear, or if the thought of a theft came into her mind the same thing would occur, and she said that she began to wish that people could read her mind, so that they could know how innocent she was. The anxiety was definite, and had the physical components of tremor and tachycardia. Ultimately she reached a stage at which the thought of theft in all forms came constantly to her mind, accompanied by anxiety and a feeling of guilt.

The naïve remark, that she wished people could read her thoughts, indicates both a return to the concrete, feeling, perception level of the schizophrenic thought processes, and an indication of the probable factors at work in the ætiology of the neurosis.

The attempt was unsuccessful to find the thought for which the theft idea had been substituted to carry the unhappy affect, but we cannot lightly discard the Freudian theory that obsessional thoughts arise from some sex experience; and this the more especially as in her hallucinosis the voices suggest that she has indulged in sex activities of all kinds.

The occasion of her breakdown was simply that her partner casually mentioned that in such a crowd small articles were easily stolen. This remark induced a panic, and she had to stop playing.

By the time she came to hospital she had already been psychotic for about two years, and her condition was recognized to be growing worse. Within a few weeks of coming to hospital she showed a progressive deterioration of a severe type. Her conduct was entirely complex-determined, by a response to hallucinosis, and she betrayed a marked falling off in social sense by wandering about nude in the hospital drawing-room. Her affective responses were not determined by her surroundings, and showed a dysharmony with her thought.

Here, again, is a neurosis lasting from the age of seventeen until the age of about twenty-eight, at which time a psychosis begins to show itself. There are several points to be considered.

Firstly, in connection with the ætiology of the obsessive compulsive neurosis there is a case showing a similar mechanism quoted by McDougall (22), where stealing and sex activity were linked up to produce an obsessional symptom grouping. He suggests that the furtiveness of both acts makes them an easily interchangeable

couple. It was not possible in this case to demonstrate the existence of guilty relations between the patient and the culprit in the theft, but it was known that they were great friends, and this is of importance in connection with the patient's known sex trends, for the thief was a girl. And secondly, though her personality did not suggest schizoid trends, yet there was an ominous factor. She had no men friends, she had never had a love affair, she expressed a repugnance to the male sex in general, and this, with a tendency to shyness, suggests a homosexual trend. This, with the narcissistic and maldeveloped components of such a trend, is suggestive from the ætiological point of view taken up by Hutchings, Cheney and Wright (23) and mentioned earlier.

The whole history of the case is easily analysed along the lines suggested by Jung (24). If we can accept the probability that some sex trauma, or at any rate, incident, determined her neurosis, then the connection becomes clear between her early neurotic symptoms and the later psychotic manifestations. These, as stated, showed a marked erotic content, which was significant. The voice, which she said was that of a commissioner of police, probably a symbol of authority and masculinity, ordered her to have done with her obsession, told her that she was innocent, and later commanded her to come to him as his mate. It is not too much to suggest that here is a complex-determined turning away from a homosexual to a heterosexual attitude on a fantasy level, especially in view of the absence of heterosexual activity noted before.

Here, once more, is an example of the partial and total nature of the personality change in the neurosis and the psychosis respectively. The two phases of her illness may be regarded as reactions to sex difficulties. In the first the personality in its reality setting is properly oriented; in the second there is the characteristic turning away from reality of the schizophrenic reaction.

An important consideration, the central point of the case, is that the psychosis grew in a connected sequence out of the neurosis, and during both phases the topic was the same.

The points brought out by Case I are here confirmed, with this proviso—that, with the exception of a homosexual trend, there is not the same evidence of a schizoid personality before the onset of the illnesses.

The foregoing two clear-cut examples show an ordered progression of a deepening disorder which has become more and more

ominous as the case has progressed, and where the neurosis has been a prodromal symptom. The next case shows a different progression of an equally important type:

CASE 3.—This patient, a woman, æt. 54, was admitted to hospital with a history of illness dating back for about ten years. Her life-story is essential to the proper evaluation of the details of her illness.

Abnormal trends were seen at a very early age. She had a normal birth and infancy, and her heredity is good, but she had to be taken away from school at about sixteen because she was being bullied, and her spirit was being broken. She was then kept at home and played a large part in the work of the house, and in looking after the other members of her family. At this time she is described as being better than she has ever been since, and this is interesting from the point of view of Adler's theories, for at that time she was, as the oldest of the family, in a position of superiority. The home atmosphere, however, was a stern one, she had little outlet in entertainment or social life, and she gradually began to show signs of an autistic tendency. She became shut away and dreamy, was much by herself, and was of the type that "communes with Nature."

She went to Canada to stay with a relative and remained a few months; then she went to Dresden with a friend who was studying music. She remained there only a few months and came home, finally leaving to go to London with no special object in view. At this point, in her early twenties, there is seen a disorder of personality integration evidenced by her constant shifting about from place to place. This became more marked in London. She became a Christian Scientist, she took up New Thought, Brighter Thinking, had an interest in Theosophy, and so on. She did no work, nor did she devote her energy to any useful charitable organization; she moved from boarding-house to boarding-house. She began to develop a "nervous breakdown"; she was intensely unhappy, and did not know what she wanted; her condition sent her seeking treatment by several psychiatrists, on one of whom she soon developed a strong fixation. The evidence is not clear, but it seems to indicate a part reaction of the anxiety type. The duration of this state was of at least two years.

She finally broke down so badly that she was admitted to the Cassell Hospital for Functional Nervous Disorders, and here an interesting episode took place. She went into a chemist's shop, and sought protection against the "spirits" that were annoying her. A few hours later she denied this and was free from similar episodes for some months. This is a clear example of a schizophrenic episode in a neurotic setting, and took place two years before she was seen by the author.

At the time she was in the Cassell Hospital there was no indication, save for this episode, that her condition was anything but a pure neurosis, and it was said definitely that no psychotic features were present except for this episode, which was suspected of being simulation.

Her condition progressed unfavourably, she was in various institutions for brief periods, and during the intervals she was well enough to live outside.

She was later admitted to the Edinburgh Royal Asylum in a state of acute excitement. She talked incessantly, was restless, sleepless, emotional and querulous. Later she became somewhat depressed, and just before discharge she complained of unhappiness, inability to concentrate, and of anxiety. In these we can see Janet's *sentiments d'incapacité* clearly illustrated. She was clear and co-operative at this time and went home, after three months in hospital.

She remained at home for a month and was, at the end of that time, admitted to the Glasgow Royal Asylum.

She showed an interesting picture at first highly suggestive of a hypomania. She manifested flight of ideas, distractibility, and affective lability, and she was surrounded by the profusion of laces, ribbons and odds and ends so typical of the hypomaniac. On closer examination, however, a more ominous trend was seen.

She told how she had been "spiritually wedded" to a "Harley Street physician," that, during a vaginal examination, "something had been broken which had never been broken before," and that she was increasing in girth. She also said her menses had stopped. All this, of course, indicated a wish-fulfilment phantasy of pregnancy, and she talked much of "the mother heart." She said, "A woman

is good for nothing unless she has been a mother," and added, "one does not need to bear children to have the mother heart."

In conjunction with this came, sharply clear, her manifest thought content in sex affairs. "I never contacted with a man in my life—I was too proud—never let a man see I cared. If they squeezed me at dances, I just finished with them."

The significance of this as the evidence of a cross current of sex repugnance and sex wishes is clear, and it is a characteristic schizophrenic attitude. It shows the ambivalence of Bleuler (25), and as well it shows the essentially purposive, comprehensible nature of the process. From the point of view of Jung we can see clearly the autonomy of the psychotic complexes with the corresponding diminution in the power and harmonious working of the ego complex hierarchy.

Her inclusion in the schizophrenic group is assured, and for the present purpose we must look to her subsequent progress.

She became ecstatic, and said that she was to be formally married one day soon. Following this she became dull, depressed, and began to show odd insight developments. She confessed to "day-dreaming," said there were times when she could not separate dream from reality; but in the same interview she expressed the opinion that the resident physician might be her mysterious lover.

At that time, too, she showed grandiosity. She said that she had appointed one of the nurses to be her lady-in-waiting, and hinted at future splendours. This was at a stage when she was returning to a better contact with reality. Now it is suggested by Freud that these grandiose episodes are due to a fixation of free libido on the ego complexes, and in this case the libido had been temporarily freed as a result of the lessened insistence of her pathogenic complexes. In such cases a stage of even greater libido freedom is the basis of the neurotic transference.

From now on, however, her reaction diminished progressively in totality, and finally she developed a frank neurosis, or "part reaction," in the shape of a hypochondria.

The picture was fairly complete, except that from the affective side she showed rather more querulousness and annoyance than Gillespie (26) would allow, indicating, as he does, "interest" as the affective component of this syndrome. She complained about the food, and the absence of proper constituents in her dietary. She had a good deal of "popular" dietetic information, and she spoke at length of the faulty elimination that her low residue diet was producing. She declared that she was obstinately constipated (this was true in part), that she felt ill and vaguely nauseated, that her colon was loaded and stagnant, and that her abdomen was becoming distended. The presence of anxiety was fairly definite. At this time, attempts to discuss her psychotic state met with a great resistance which could not be overcome.

As to the existence of hypochondria as an entity there is much dispute. Gillespie (27) states that it does exist as such, but the case for regarding it as a sub-group of the anxiety states, as already indicated, receives much clinical support. Gillespie speaks, however, in this connection of ". . . a hypochondriacal development of an abnormal personality; it is still hypochondria, and it is not correct to consider the hypochondriacal ideas in such instances as part of the larger syndrome. It is more accurate to speak of hypochondria in a schizoid personality, the additions of the pure hypochondriacal picture depending, not on a new concurrent development, but on pre-existing oddities of personality."

The case described illustrates this clearly, but more striking is the similarity of the patient's reaction to a situation at two different periods. During the phase of total reaction when her reality contact was diminished, or, to put it in another way, when her ego complexes had less control of the total psychic situation, the abdominal condition meant for her a pregnancy. Later it meant merely abdominal stasis, but the idea had a disproportionate affect tone.

Her personality was clearly a schizoid one from an early date. For a period before the development of psychotic symptoms we have evidence, unfortunately lacking in detail, of an anxiety state; then we have a psychosis in which, as so often happens, we can see the mechanism at work and, during a remission, a partial reaction is seen with neurotic symptoms, having an obvious relationship to the psychotic complexes.

From Jung's (28) point of view it would be said that the ego complex was beginning to reassert itself; Meyer would indicate stronger reality contacts; it would be agreed that a redintegrative process was at work.

This hypochondriacal reaction lessened gradually for some months, and the patient finally left the hospital, having made a readjustment which seemed fairly secure, and has since enabled her to live outside with success.

The three instances given have been quoted at length in order clearly to illustrate the process under discussion.

The point which emerges is the similarity of the neurotic and psychotic symptoms as a means of escaping from a difficulty.

Macfie Campbell (29) justifies the conception of personality and psychosis as being made of the same stuff. Here evidence is shown which justifies personality, neurosis and psychosis being regarded as factors and stages in the same process of mal-reaction, and, to continue the simile, made of the same materials.

The behaviour of the patient, the sum of his activities, show clearly the working of the same complexes, but with, in the neurotic periods, a less degree of power on the part of the pathogenic complex over the total personality. It becomes very evident that the essential difference between the neurotic and the psychotic stages is one of degree and quantity rather than a pure difference of quality.

Jung (30) indicates that in schizophrenia and other reaction types, the most bizarre and apparently meaningless behaviour has a meaning for the patient, obscured from the observer by the condensation and symbolization which is so typical of complex-determined thinking. In many cases this obscurity is impenetrable, and only occasionally are we so lucky as to get information such as enabled Jung to explain the mysterious hand-rubbing of his old schizophrenic woman in Bürghölzli who had had an unhappy love affair with a shoemaker, whose movements she had ever since imitated. The cases quoted, however, do not offer any difficulty, and they all show clearly what has been going on in the patient's mind.

The first case, disappointed by a person on whom she had a considerable fixation, developed a palsy affecting that bodily activity which was an integral part of the constellation of ideas grouped round the person on whom she was fixed. This, only a partial curbing of the function of the real, did not solve her problem, and she diminished still further her dependence on reality by a further retreat, and found "in the dream-like delirium of the disease that which was refused to her" in reality" (Jung).

The second case escaped from an obsession on a homosexual basis into a phantastic world of strong heterosexual contents.

The third case manifested an early anxiety state. We are

entitled, in view of the whole case, to lay this at the door of ungratified sex wishes. In this she developed a fixation; from it she passed into a delirium of the most obvious wish-fulfilment, and later on, when the function of the real became greater, she utilized the same bodily symptoms to support another contention. It cannot be denied that nausea, constipation and increase in the size of the abdomen are associated in the lay mind with pregnancy. It is very striking that she brought them forward frankly as symptoms of an abdominal hypochondria shortly after she had evidenced abdominal distension as a sign of pregnancy, and had in addition mentioned the cessation of her menses.

A second point of equal significance is the personality of these three cases. Two of them give justification for its inclusion in Kretschmer's (31) group of schizothymes—personalities out of which a schizophrenia may easily develop. Bleuler (32), it will be remembered, says that he can see schizoid traits in everybody, but in the personality of the patients here considered there is more than merely a schizoid trait. The personality picture obtained in two of the three was that of the "unsociable, quiet, reserved type" (Kretschmer), and Case 3, in addition, shows the Kretschmerian type, "timid, shy with fine feelings, sensitive, nervous, excitable, fond of nature and books" in a very marked degree. In Case 1 we can detect, if not a definitely schizoid trend, at least an ominous type of sex development.

Ætiologically we are faced with a more suggestive set of factors. In Case 1 there is definite evidence that a single trauma produced that hysteria which subsequently took so ominous a turn. In Case 2 there is evidence of a long-standing obsessional state, which culminated in a schizophrenia, where the "disease-complex" (33) seems fairly definitely to have been a battle-ground of homo- and heterosexual impulses. In Case 3, however, we know of no trauma; environmentally the patient was, in a way, better off than the other two, for she was allowed to live her own life, which she had done, as has been shown, on a low social-demand level. She had little to live up to and could go her own way. Her responsibilities and duties had been *nil*. Now, this third case shows at the beginning what we may judge to be an anxiety state, and later, as a remission, a hypochondriasis associated with some anxiety. While the other two cases show no signs of readjustment, she has made a recovery which, if partial, is yet sufficiently good to recreate a relationship between self and environment and allow her to live outside hospital. Cases 1 and 2, on the other hand, had definite tasks

to perform and considerable social duty. Case 1 had found her "occupation gone," while Case 2, it will be remembered, was urged by her complex, acting as a hallucinosis, to go back to work.

We can therefore trace here, in the two graver cases, a common factor, *viz.*, the presence of higher occupational demands not imposed on the third.

The case now to be quoted shows a complete and maintained recovery in a schizophrenia with neurotic symptoms in the prodrome.

CASE 4.—A young man, *æt.* 21, a medical student, took suddenly ill and was admitted to hospital in a state of katatonic excitement.

It was said that he had shown no signs or symptoms of illness up to four days before admission, but it was discovered that for over four months pathological trends had been present. He had become silent in company, where before he had been lively; he began to go "off his game" at tennis; he did not take his food well, he was excited and "nervous." He felt that he could not go on with his studies. He developed headaches, his head buzzed, he was tired, he could not concentrate, and he was unable to comprehend the lectures. Thereupon, without further ado, he gave up medicine.

A neurasthenic syndrome was here, fairly obvious. There was causal factor, in the breaking off of a love affair, just before the session began. Besides this, he had been informed by an insurance examiner that he had a defective heart valve, and he developed a severe insomnia, which lasted until his final breakdown.

These are traumata which we cannot disregard.

Having been forced thus to give up medicine, he declared that he was fit only to be a tramp. However he managed to get work in an office in town, where he remained until his breakdown.

Further investigation of his love affair showed that he had broken it off through jealousy. The girl had "encouraged him out of pity for his solitariness." He had further declared that he was not fit to marry because of his heredity. His father had Parkinson's disease, and a maternal aunt had been psychotic. All this, combined with a possible degree of dissatisfaction with his medical studies, had made a situation out of which a neurasthenic reaction had arisen as a mode of escape.

At this point we have to consider, in view of the events, what sort of personality formed the soil on which this growth took place. The evidence is essentially negative. He was described as cool, not easily irritated, he played golf and tennis sufficiently well, he was a good average scholar, he was not moody, he was not hypochondriacal, in behaviour he was typical of his age and position, though he was rather easily led. Only in the statement that a girl tolerated his advances out of pity for his loneliness is there any evidence of abnormality.

His insomnia became more severe, and he had to take bromide. One morning he swayed and seemed about to faint, but recovered himself and said, "I have been a revivalist for a few minutes." That day he was confused, forgot what he had to do, and said that he had felt muddled for the past few days. Thereafter he rapidly developed a typical katatonic excitement.

The particular significance of the case was that, during the excited phase, his stream of talk and his mental trend revealed preoccupations which appeared to have operated in the production of his neurasthenic syndrome.

He said he had no heart, and repeatedly asked confirmation of this. He talked of his own powers, intellectual and otherwise, of his will-power, and of his wish to succeed, to earn money, and to marry the girl already mentioned. Shortly afterwards, when he had retreated sufficiently from reality to place his thinking on a frank phantasy basis, he described himself as the possessor of a car, married to his girl, and qualified as a doctor. He said he had qualified at the age of twenty-one.

This was an obvious wish-fulfilment mechanism of a schizophrenic type. He was, as Jung (34) puts it, dreaming with his eyes open. The dream

simile goes further, for he showed phenomena of condensation and symbolism of the dream-thinking type. He had a vision of a skeleton wearing a helmet decked with a rose, and he interpreted this to mean that one ought to make the best of things.

He showed *flexibilitas cerea*, perseveration of the phrase "It's all right," and of actions, and his thinking was so complex-determined that he became incoherent because of the accompanying association defect. A sample of his talk is as follows: "Colour—till—alp—Wm. O'Brien—student of—myself—pin—I can—bit—anybody—name."

These points indicate how severe a schizophrenia was present.

There is, in this case, ample evidence to show what had taken place. Life, and its demands, had proved too much for this young man. He had been unable to live on reality a level sufficiently to face sex difficulties and the strain of his studies; as a faulty response he developed a neurasthenic syndrome along the dynamic lines which Adler (35) suggests, as an excuse, as it were, for his incapacity. But the process went a step further. The neurotic reaction did not solve his equation. Why, we do not know. Perhaps it was because in the Meyerian term it was only a part reaction, and tending always to be unstable. Perhaps his *amour propre*, his self-regarding sentiment, would not tolerate such an avenue of escape. At any rate he fled from reality into a total reaction of a schizophrenic type, where the whole situation was made smooth by the development of suitable phantasies with regressive phenomena in his thinking.

Gradually the katatonic excitement, with its push of talk, attitudinizing, hallucinations (not marked), *flexibilitas* and perseveration died down. He became dull, automatic, foolish. The prognosis appeared bad. He was discharged somewhat better, but obviously disintegrated, apathetic, and with autonomous complexes still in existence. His "*fonction du réel*" had been much disturbed; his talk was as follows on leaving hospital: "Where are you going?" "I don't know." "How long have you been here?" "About a year" (six months actually). "Why did you come here?" "To strengthen myself." "What was the matter?" "Weak heart." "What are you thinking of?" "Nothing in particular." "Where are you going?" "I don't know." "Are you glad?" "Yes" (unemotionally). The typical affect loss is well shown.

At home, however, he gradually recovered. He is now, seven years later, working as an engineer, and taking a normal place socially and economically.

The case shows the development of a neurosis followed by the appearance of acute psychotic symptoms, which, although of an ominous type, yet went on to a recovery and not merely a temporary readjustment. As in the first three cases quoted, the ætiology is clear enough, and there is evidence of the same preoccupations running through the neurotic and psychotic periods. As in the other examples, we have to review the sequence of events in the light of our knowledge of the patient's make-up. Granting the truth of Bleuler's statement, quoted earlier, that schizoid trends exist in everyone, there is not, in the personality of this patient, a sufficient preponderance of such trends to justify the label of schizothyme. He was a fairly good "mixer," played games, and was a healthy fellow who had been successful in his studies up till his final year as a medical student. The single reference to a tendency to solitude may therefore be given little weight.

Thus there are some grounds for supposing that the readjustive factor has in this case been the negative one of absence of a definite schizoid personality, reaction of a schizoid type, and even in spite

of his "katatonic jolt" (36) this factor has been sufficient for the purpose.

It must not be thought that the cases quoted are an envisaging of casual neurotic manifestations in a psychotic setting. This occurs so constantly that it needs only to be mentioned, and the implication of the incidence of such trends has been recently taken up by Suttie (37). His point, however, is the insistence on the value of these neurotic trends as a therapeutic *point d'appui* where a frontal attack on psychotic structures is hopeless. At the same time, in his series of three cases, one feels that the various trends were epi-phenomena on a basis of an essentially schizophrenic reaction type, and that, in such instances, anxiety, obsession, paranoid trends and so forth occupy an analogous position, in relation to the underlying schizophrenia, to fever and tachycardia in a multitude of bodily diseases. We should remember here the distinction between a temporary symptom-complex and the actual underlying disease, noted by Kahlbaum.

It is only when we have, at a given time, a sufficiently clear picture of neurosis alone, or psychosis alone, that we can envisage a genuine, though gradual, change in reaction from "part" to "total." Suttie suggests a difference in "tension," which he says may be "neurotic rather than psychotic in nature." It is difficult to see what he means by this, and the only interpretation which allows of the conception of a progressive increase in ominousness is by taking "tension" to indicate the endopsychic coherence à la Janet (38). It would seem better to regard the change from neurosis to psychosis in terms of a personality disintegration, where the disease complex gains a gradually increasing degree of governance over the total organism at the expense of the ego complex with the consequent production of a "total" (psychotic) reaction.

The therapeutic point which Suttie does not mention is the fixation of libido. At a neurotic level there is sufficient free libido to allow of a transference and endow the physician with a large measure of therapeutic power. Later, when the libido has been entirely pre-empted by the pathogenic complex, this transference and consequent therapy is not possible.

ANALYSIS OF 100 CASES.

In order to ascertain the incidence of the type of case under discussion, a series of over 100 schizophrenic reaction types were carefully gone over.

The series was divided into two groups: (A) Readjusted socially and recovered, and (B) non-recovered cases.

The cases already quoted emerged from the total material, which was taken without selection from the records, so as to give as true a percentage as possible. Besides these, a series of cases of a similar, though less clear-cut type, appeared. One of these illustrates the type of mechanism suggested by Suttie, in his paper on neurotic superstructures, already quoted.

CASE 5.—The patient was a girl, *æt.* 26, an office worker, who had, all her life, shown evidence of a degree of "shut-in" tendencies sufficient to justify her inclusion in the group of schizothymes. She had manifested also a lack of normal sex development at a heterosexual level. As a result of very mild "attentions" from a man in her office, she developed a paranoid syndrome as a "situation psychosis," but in the prodromal period she showed for some weeks a marked affective response with anxiety, which was sufficiently definite to be commented upon at the time, and may accordingly be regarded as an anxiety state. The condition progressed steadily, however, and deepened into a severe schizophrenia with features of katatonia, regression and complete divorce from reality contact, which has lasted eight years.

Suttie suggests that if, at the time of the neurotic reaction, a push is made to treat the neurotic symptoms, the progression may be arrested. These cases are, however, not common, and the transitoriness of the different stages is such that one feels that therapy directed to the neurotic element would need to be powerful and rapid to break the sequence.

Of the total cases, 29 made readjustments, which have been maintained in 22, who have therefore recovered; while 7 have made a partial readjustment only, and are not functioning members of society, although they do not require to be in hospital.

Out of this group of 29 it was found that 9 cases showed sufficiently marked symptoms of a neurotic type in the prodrome as to justify their inclusion in the variety of case under consideration. Although these cases are not so arresting as the first 4 described, and were not all examined with the present point in view, yet the principle of the neurosis-psychosis progression is clearly illustrated.

Briefly these cases were as follows:

CASE 6.—A man, *æt.* 36, of somewhat schizothymic personality, started a business of his own. He was a novice, and competition was keen. There was a good deal of worry and he developed an anxiety state. He showed sleeplessness, anorexia and anxiety for about a week. He then developed a paranoid syndrome: he became suspicious, and felt he was being watched. In a few days he lapsed into a stupor, from which he emerged in a month, to make a complete recovery in six weeks.

CASE 7.—A man, also *æt.* 36, who had no signs of a schizothymic personality, developed a series of colds, and then showed a neurasthenic syndrome with headaches, irritability and lack of energy. This condition lasted two years without any evidence of a psychosis, and he continued his work. At the end of

this time he began to show apathy and to have visual hallucinations. Later he developed a katatonic excitement. Six months from the onset of the psychotic symptoms he recovered completely.

CASE 8.—A man, æt. 23, of schizothymic personality, had depression, loss of concentration and loss of weight without any psychotic manifestations for some weeks. Suddenly he declared that he was ruined as a result of masturbation; God had deserted him. He made a series of determined suicidal attempts, and became stuporose. He recovered in under a year.

CASE 9.—A woman, æt. 40, with no positive personality points, feared pregnancy after illicit intercourse, and developed a typical neurasthenic syndrome with headache and fatiguability, which lasted for some weeks. She then became confused, suicidal, and heard accusatory voices. Four months later she recovered, and was well for ten years. Then she had an exactly similar attack, from which she again recovered.

This case is especially interesting. She first condemned herself for her moral laxity, and while the pathogenic complex (*i.e.*, the associations of her illicit sex relations) was still in consciousness, she was able to react on a partial or neurotic level; a process of repression, however, it would seem, endowed the complex with a greater degree of autonomy, and it emerges as an accusatory hallucinosis. The important point, however, is that ten years later, although the length of the interval, in the light of our knowledge of complex duration, does not matter, she showed exactly the same progression. From a constitutional point of view this is significant.

CASE 10.—A man, æt. 28, not schizothymic, developed hypochondria with associated anxiety. The hypochondriasis became fixed as a delusion of physical disease, and he began to show evidences of schizophrenia. He made a complete recovery.

CASE 11.—A woman, æt. 32, of a schizothymic personality, developed a simple depression which lasted about ten days. She then became paranoid, and had katatonic periods, but at the same time she showed a marked degree of anxiety. She recovered after eighteen months.

This case is quoted as evidence of the overflow of part reaction into a total setting. There is always some degree of this, but it is strikingly illustrated here, where in a paranoid setting a strong affective reaction is seen. It should be noted in this connection that suspiciousness has been declared not to be an affect. This is debatable, and Bianchi and others definitely describe it as an affect.

CASE 12.—A woman, æt. 26, of schizothymic personality, developed depression of the anxiety type, which lasted, uncomplicated, for four months. Paranoia then developed, with apathy and withdrawal from reality, which only held for two months, when she recovered.

From the non-recovered cases the following examples emerge :

CASE 13.—A man, æt. 43, of a schizothymic personality, after an anxiety state which lasted for some months, became stuporose and developed a katatonic type of schizophrenia which has lasted for thirteen years.

CASE 14.—A man, æt. 28, of a psychopathic trend, developed a fatigue syndrome of neurasthenic type, which gave place after some weeks to a severe schizophrenia with negativism and other regressive phenomena, from which he has not recovered.

CASE 15.—This case, like Case 9, illustrates the recurrence of a breakdown of the same type. The patient was a gunner, R.G.A., aged about 35, and on two occasions, while in France, he developed an anxiety neurosis, for which he was treated in hospital. He was discharged in 1918, and resumed his civilian occupation, but only for a few weeks, when he again fell ill. His symptoms were "weakness, sweating and anxiety." After a month of this he developed a paranoia, the delusions being directed chiefly against his wife. Later he had auditory hallucinations and was incoherent and impulsive. From this severe attack he recovered, but a few months later disappeared from home in an automatic state, which was authentically an hysterical fugue. After this he developed psychotic symptoms of the same type as before, which have continued for six years.

There was no evidence of any abnormality in his personality, nor could he be described as a schizothyme.

CASE 16.—A woman, æt. 27, not abnormal or schizothymic, developed a hypochondria which lasted six weeks. She then became mute, negativistic and katatonic, and has not recovered.

CASE 17.—A man in the early twenties, of a schizothymic trend, had three schizophrenic episodes characterized by negativism and katatonic excitement. The last attack has not been recovered from. The first attack lasted four months, the second attack, four years later, lasted six months, and the last attack began three years later. Between the attacks and before the first one he had an anxiety syndrome, but the psychotic episodes were not marked by any affect of that type.

Here, again, is an example of the same progression taking place on several occasions.

CASE 18.—A man, *æt.* 25, not a schizothyme, nor of psychopathic trends, developed a respiratory neurosis of the type described by Déjerine (39). He had a respiratory irregularity, choking sensations, he was sleepless, had anorexia, and was irritable and excitable for two years. The picture is one of a functional nervous disorder of the neurasthenia type.

At the end of two years psychotic symptoms began to develop. He had meanwhile lost his mother; and he now refused medicine on the grounds that it had been used to poison her.

A few months later he became incoherent and katatonic, and has remained so now for over nine years.

CASE 19.—A man, *æt.* 28, a psychopath, but not definitely schizothymic, developed a neurasthenia. This lasted a month. Then he became mute, and hallucinated, and expressed ideas of domination. He made a slight degree of readjustment.

CASE 20.—A woman, who broke down at the age of 32, showed, for a year before the onset of her psychosis, a hypochondriasis fixed on her abdominal organs. She became faddy about her food and took a great interest in vegetarianism. At the end of this period she became paranoid, in a few months was hallucinated, and is now, four years later, seclusive and regressed, so that her speech is incoherent and fantastic. Her personality showed no unfavourable trends.

CASE 21.—A woman, *æt.* 45, with a normal personality, developed a neurasthenic syndrome as a result of stress in her work, and this lasted for about eighteen months. Then followed a psychosis with delusions and haptic hallucinations, which has since persisted.

CASE 22.—A woman, *æt.* 32, who had shown no psychopathic trends in previous life and had been happily married for eleven years, developed an anxiety state in the third month of her second pregnancy. She was sure something dreadful would happen at the labour (the first had been quite easy), and that she and the baby would die. She became depressed, fearful and agitated, and remained so for the next six months. Her child was born after an easy labour, and she was well for eighteen days. Then she imagined that the nurse was trying to poison the baby, and she tried to cut her own throat. The child became ill, and she made him worse by foolish and frantic attempts to make him eat. She neglected all else, and became shut in, negativistic and careless of her appearance; later she became katatonic, and showed marked stereotypy and perseveration, the content of which was constantly her baby. "Baby George X. . . . is now 14 months old. He is living with his grandmother at No. X, Y Street, Z . . ." She would repeat this over and over again. She has now been ill for about two years; her condition has been deteriorating steadily, and has an ominous appearance.

Here again, even on the surface, it is obvious that the preoccupations or thought content have been the same during the neurotic and the psychotic phases of her illness, and that each phase has been a reaction to the same factor.

CASE 23.—A man, *æt.* 22, who had shown no psychopathic or schizothymic trends, developed nasal trouble. He had an operation for this, and thereafter became hypochondriacal. The anxiety component of this was not marked, and the affective part seems to have been the "interest" which Gillespie stresses in his paper.

The hypochondria lasted for a year, and then merged into a delusional system. He stated that he had two hearts and could cause others to die and come to life. He became more disintegrated, laughed and smiled to himself, and in this way lapsed into a severe schizophrenia, which has continued itself ever since.

CASE 24.—A man, *æt.* 40, who had been of a rather solitary disposition, but who had done well along social-economic lines, broke down in the army and was in hospital with an anxiety state. He recovered and continued to serve in the army for three years. On coming home he gradually developed a schizophrenic reaction

in which the chief feature was a hallucinosis. He has become more and more demented during the past ten years.

CASE 25.—A man, æt. 28, of normal personality, had a war neurosis of the anxiety type, and recovered. Six months later a schizophrenia developed, from which he has never recovered.

CASE 26.—A man, æt. 28. This case is of interest in that his schizophrenia might be called a "prison psychosis." The patient was of an exceptionally good all-round character, and showed no abnormalities whatever. He was a good worker in civilian life, and made a success of all his activities, both work and play. He joined a Guards' Regiment, and was captured in December, 1914. He had a hard time as a prisoner, having begun his captivity with three weeks' solitary confinement on bread and water, as a reward for what he described as "giving lip to Prince Rupprecht" when that personage was interrogating him.

When he came home he was thin, "jumpy," easily tired, suffered from palpitation, could not stand noise of any kind. He had lost his power of concentration and could not carry on his work. About six months later, he became dominated by his pathogenic complexes and showed homicidal trends.

To-day, over ten years later, his personality is well retained, and he is usually on parole. Every four or five weeks he becomes hallucinated, and at these times he is dangerous to others.

ANALYSIS OF FIGURES.

This group of cases from Nos. 13 to 26, with Cases 1, 2, 3 and 5, make a total of 18. The figures, analysed, yield the following results:

Out of a total of 100 cases of schizophrenia it was possible to demonstrate 26 examples in which the reaction had been neurotic at first and later psychotic.

Twenty-nine cases recovered or readjusted from the schizophrenia, and of these a neurotic syndrome appeared in 9, giving a percentage of 31.

The 71 non-recovered cases showed a neurotic syndrome in 17 of the series, giving a percentage of 24.

It is not possible to argue from such a small series of cases, but the figures at least indicate that the presence of an early neurotic syndrome is not necessarily of grave prognostic import, even though there is a progression from a lesser to a more serious type of reaction.

It should be noted that out of the total case-material a much larger number of cases emerged showing isolated neurotic symptoms. The existence of such is a commonplace of psychiatry, and an affect of perplexity and worry is often present prodromally in all the psychotic reactions. Here cases have only been quoted in which there was such a sufficiency of symptoms or such a grouping as to justify the use of the term "syndrome."

An attempt to estimate the "make-up" of the patient has likewise been inconclusive. Out of the recovered group of 9 cases, 5 are recognized as having unfavourable personality traits; while of

the 17 cases from the non-recovered group, only 6 were recognized as being of a disposition out of which we are accustomed to see a schizophrenia arising. Here, again, we are not entitled to dogmatize. It is possible that some of these cases have only reached a schizophrenic reaction, for them not an obvious way of escape, as in the definitely schizothymic, through the intermediate stage of a neurotic reaction, paving the way, as it were, for the full-blown complex autonomy of the schizophrenia. The proportion of the neuroses appeared as follows :

In the recovered group : Hypochondriasis, 2 ; neurasthenic syndrome, 3 ; anxiety state, 4.

In the non-recovered group : Hysteria, 1 ; obsessional neurosis, 1 ; hypochondriasis, 4 ; neurasthenic syndrome, 4 ; anxiety state, 7.

CONCLUSION.

If we accept hypochondriasis as a sub-group of the anxiety states, it will be seen that the anxiety group forms by far the largest proportion of the neuroses found. It is not too much to suppose that this affective response is the expression of conflict, and the inhibition, or frustration, of certain " drives " or instinctive urges. At a later stage these instinctive urges become autonomous in the appropriate complex setting. The psychosis becomes declared, the affect, as Jung (40) has pointed out, becomes fixed in the appropriate psychic sphere, and no longer reverberates into other activities as the free floating body of anxiety which is seen in the anxiety state.

The psychological process is analogous to that suggested by McDougall (41). One or more instinctive urges may be integrated to give power to some constellation of ideas, and this is called a sentiment. Here we are dealing with an abnormal constellation of ideas, not in harmony with the aims or needs of the individual in his relations with his environment, and called a complex. The complex becomes a separate state which takes complete control of the personality either permanently or temporarily.

McDougall's hormic psychology can in this way be seen to fit in with the process of psychosis formation. It is possible to regard the anxiety state as a sort of half-way house in the process.

The other neuroses also evidence the process of complex formation, and the step from neurosis to psychosis can be regarded as a progressive increase in the autonomy of the group of ideas originally operating to produce an abnormal reaction.

The age and sex-incidence of the condition are not significant. Both in the recovered and non-recovered group the average age of incidence of the psychosis works out at 30. Of the 17 non-recovered, 10 were males and 7 females, while of the 9 recovered, 5 were males and 4 females.

In the type of psychosis we find what would be expected. Hebephrenia, the most definitely age-bound of the schizophrenias, is not seen. Of the 18 non-recovered cases, 7 were paranoid, 5 showed a prominent katatonic phase, and 4 were of the simplex type. In the recovered group, on the other hand, 6 were paranoid, 1 of the 6 having a katatonic and 1 a simplex trend, while the other 3 were predominatingly katatonic. There is, therefore, little inference to be drawn.

The points of importance are that a progression from a neurotic to a psychotic reaction not uncommonly takes place. The neurosis may be clear cut, and may exist as a condition in its own right, without psychotic features, for a considerable period of time. The pre-occupations or content of thought can be shown to be the same during the neurotic and the psychotic phase. It is suggested, therefore, that the difference between neurosis and psychosis is in a large measure, one of degree in the same process of mal-reaction to some psychic difficulty. The findings give grounds for a more cautious view of neurotic reactions, and a less pessimistic attitude to the schizophrenic.

The study of these cases in detail, and as a whole, yields little information as to the significance for prognosis of the fact that a large number of schizophrenics begin as neurotics. Certain of the cases indicate that a long-established initial neurosis is of bad prognostic import. Cases 1 and 2 show this especially clearly. Others of the case material, however, point in a direction which seems more likely to lead to the truth. These are Cases 3, 9, 15, 17. Case 9 certainly, and Case 3, to a less extent, have recovered, while Cases 15 and 17 have not done so. These cases, it will be remembered, showed the neurosis-psychosis progression more than once in their history, and this can only point towards a constitutional reaction. There is no universally applicable formula with which we can solve the problem, and we are forced to realize the truth of what Wernicke (42) said, when he pointed out that fifty totally different reactions could be described and then another fifty just as different. Put in another way, it is Jung's (43) dictum that the mechanism of the psychosis is essentially an individual psychological process.

It may well be in the future that factors of endowment and environment will emerge, and help us to some greater measure of prognostic power.

By the creation of organizations in closer touch with, and part of, general hospital groups, treatment could be brought to bear at an earlier stage. We are at present better able to help the neurotic than the psychotic, whether or not available libido for transference to the therapist be the reason for this. It may be that in future we shall more often be able to prevent the neurotic from finding his neurosis an inadequate solution to his difficulties, and thus drifting into psychosis and becoming a dead loss to society.

The cases are from the records of Glasgow Royal Mental Hospital. The opportunity for, and inception of, this work are due to Dr. D. K. Henderson, Superintendent of that institution, to whom the author is deeply indebted.

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Works consulted, not referred to in the text.—Adler, *Study of Organ Inferiority and its Psychological Compensation*.—Bleuler, *Theory of Schizophrenic Negativism*.—Clouston, *Mental Diseases*.—Dercum, *A Clinical Manual of Mental Diseases*.—Freud, *Introductory Lectures on Psycho-Analysis*.—Hart, *Psychopathology*.—Hitschmann, *Freud's Theories of the Neuroses*.—Ross, *The Common Neuroses*.—Stoddart, *Mind and its Disorders*.

Part II.—Reviews.

The Treatment of Schizophrenia. By LELAND E. HINSIE, M.D.
 London: Baillière, Tindall & Cox, 1930. 5½ in. by 8½ in.
 Pp. xv + 206. Price 13s. 6d.

Besides being an exceptionally vivid and intimate picture of the "pre-asylum" phases of schizophrenia, this book deals in the most admirable way with certain aspects of psycho-therapeutic practice that are neglected by some writers and taken as matters of course by others. It should, therefore, be an excellent text-book for the junior A.M.O.

Any conception of schizophrenia arrived at from an exclusive study of certified cases is apt to be misleading when we attempt to recognize the disease in its prodromal state. The profound and protracted disturbance of dementia præcox induces secondary changes which confuse and conceal the personality of the patient and the essential nature of the disease. In this book the earliest pathognomonic symptoms of schizophrenia and the subtle nature of these early changes are clearly dealt with. The social anxiety and sense of inferiority, the uncanny ætiological insight of the patient, the labile character and primary purposefulness of the early delusions and hallucinations are exceedingly well brought out, as is also the crucially important fact that the emotional disturbance in this illness is not a real deterioration at all, but merely a displacement of interest. This fact differentiates schizophrenia from emotional deteriorations of organic origin.

The author shows well how inapplicable is the ordinary, clinical "hospital" method of approach in mental disease. Systematic searching questionnaires, summary diagnosis, brilliant argument and authoritative judgments are quite out of place if a psycho-therapeutic relationship is aimed at. Case-taking in schizophrenia may easily become case-spoiling, involving the sacrifice of the most favourable chance of helping the patient, for the sake of making a prompt and sure prognosis.

The chapters on the approach to the case, the attitude and personality of the physician and the preservation of the therapeutic "rapport," form an excellent corrective to the rather impersonal and positive attitude to patients often cultivated in general hospitals. There it is excusable on the score of pressure of work and the ability to employ some positive therapy without regard to the patient's co-operation. Even in somatic medicine, however, the experienced physician is aware of the importance of the personal relationship to the patient. In psycho-therapeutic practice this becomes of pre-eminent importance; without a suitable "rapport" the

greatest professional knowledge, aided by the most intimate acquaintance with the facts of the patient's life, are of little avail in the understanding of his point of view or in helping him to modify it. The patient cannot be hustled or dominated, and is not favourably affected by any awe he may have of the physician. The author's remarks on this and related points form a real introduction to the practice of psychotherapy—much more valuable than the study of a few theoretical mental mechanisms.

A book that should be in the library of every mental hospital.

IAN D. SUTTIE.

Principles of Experimental Psychology. By HENRI PIÉRON. Translated by J. B. MINER. London: Kegan Paul, Trench, Trübner & Co., 1929. Pp. viii + 190. Price 10s. 6d.

A book by Prof. Piéron is sure to be interesting and instructive, and this one fulfils expectations. The title is somewhat misleading, for although the results of experimental psychology have been fully utilized, they are presented in the elucidation of a modified behaviourism. Piéron defines psychology as the science of "*comportement*," in agreement with Pierre Janet. He does not go the full length of Watson, Bechterew or Pavlov, since consciousness is not entirely eliminated in his presentation. Of course, one can never experience any psychic processes but one's own, yet the description to me by my observer of his psychic experience is more than a mere "verbal response." His record is a series of symbols for his psychic processes which make me understand those processes in terms of my own and so, as an experimentalist, I am not dealing with "verbal responses," but with psychic processes.

Three orders of reactions—reflex, affective and perceptive, corresponding respectively to the bulbo-medullary, the thalamic-striate and the cortical levels—are discussed. Although the terms "pleasure-unpleasure" are used for the affective elements, they are not used consistently, and we repeatedly find the terms "pleasure-pain" instead, which tends to give rise to some misunderstanding. A point upon which most psychologists will not agree with Piéron is that he throws together feeling (pleasure-unpleasure) and conation, and treats them as "affects." A source of confusion is the translation of the French "*sentiment*" as "sentiment," where one may gather from the context that "feeling-tone" is probably meant.

After the sections on "Reaction Processes and Forms of Behaviour," and "Affective Reactions and the Orientation of Conduct," we come to the third section on "Perceptive Reactions and the Acquisition of Experience." The treatment of attention and sensory accommodation is excellent. Psychic experience is, to begin with, syncretic (in Renan's and Claparède's sense), and from the global and confused mass details are analysed and subsequently synthesized. Thus experience is acquired. Attention and sensory

accommodation, perceptive reactions and the laws of sensation are given in outline. Space and time are given a chapter; but in discussing the perception of the former Piéron seems to have overlooked mentioning the kinæsthetic sensations. A chapter on the congenital equipment and mnemonic acquisition, the fixation of memories, concludes the third part of the book.

The part on Association and Memory is exceedingly interesting, but the attempt to confine the term "memory" to the recall of events which it is not possible to repeat or pass through again, and to regard all acquisitions which are perfected by repetition as "habits," cannot, in our view, be recommended. The degrees of mental efficiency, incitement and fatigue, voluntary activity and social behaviour are succinctly, yet adequately discussed.

The concluding part of the book is entitled "Mental Stages and Types," and the author describes mental evolution and levels of development, the differentiation of natural types, sex and race, the hierarchic arrangement of individuals and judgments of value, will and intelligence, the analytic classification of individuals—type, character, mental profile.

The treatment of so vast a subject in so small a compass has necessarily to be dogmatic, but no one will complain of this when it comes from so undogmatic a pen as that of Prof. Piéron. It is difficult to say for whom the book is most suitable. The psychologist will find in a nutshell an indication of the author's views, and the general reader will gather a fair and reliable idea of the extent of the field and of the results and aims of psychology.

A. WOHLGEMUTH.

Eidetic Imagery and Typological Methods of Investigation. By E. R. JAENSCH. Translated by OSCAR OESER. London: Kegan Paul, Trench, Trübner & Co., Ltd., 1930. Medium 8vo. Pp. 136. Price 7s. 6d.

It is claimed for this book that it is the first authoritative statement on the methods and results of investigating eidetic (subjective optical) images that has appeared in English. An eidetic image is a psychical experience intermediate between an after-image and a memory image; it is positive, and resembles an optical perception without being liable to be confounded with it. Such images are frequent in early childhood growing rarer with the approach of puberty; they are scarce in adults, but are sometimes met with in later years. It has been claimed that from an eidetic image of a picture a child has been able to count the number of buttons on a man's coat or spell out a long word of a foreign language. Eidetic images play an important part in the development of space perception. In some cases they are more rigid, in others more labile, and this difference corresponds to somatic characteristics. Jaensch, therefore, distinguishes two distinct types, which he terms the T or

tetanoid and the B or Basedow types respectively. The eidetic images of the pure T-type show closer resemblance to after-images, and those of the pure B-type to memory images. But they are also optical phenomena, and are literally visible.

The perceptual world and the world of images and ideas point to the eidetic sphere, and the younger the individual the closer they are to it. The limiting case would be one in which both existed together as one "eidetic unity," with the characteristics of both worlds. This is called the "unitary type." Further types are the "disintegrates," who receive the structure of their perceptual world as a completed heritage, and the "integrates," who develop it during their life; but the theory about the integrate and disintegrate types does not invalidate the B and T type theory. The difference between integrate and disintegrate types corresponds to the distinction between northern and southern types which has been drawn by race biologists.

A great part of the book is taken up with philosophical, especially epistemological discussions, which tend to divert the attention from the main subject of the book. There are a number of verbal mistakes, e.g., "deficients" for "defectives," "innate" for "congenital," "sibling" for "suckling," "emotional tone" for "mood," etc., but these do not detract from an otherwise excellent translation.

Jaensch's work has not met with unopposed acceptance, and the appearance of this book, although it gives no experimental details, will give English readers an opportunity of becoming acquainted with his theories.

A. WOHLGEMUTH.

Text-book of Logic. By A. WOLF. London: Allen & Unwin, 1930. Pp. 407. Price 10s. net.

Students of science and of medicine doubtless have already a very full curriculum, but if room for a study of logic and methodology could be found, it is more than probable that much mis-spent time and energy on the part of original investigators and their supporters and critics might be saved. As, however, this is likely to remain but a pious wish, a private study of the subject is certainly to be recommended to all scientific workers, and Prof. Wolf's book is eminently suitable for this purpose.

The treatment of inductive, or, as the author prefers to call it, formal logic, is thorough though concise, since much of the scholastic lumber has been discarded. It seems to us, however, that our author might, with advantage, have referred to symbolic logic and mentioned and explained Euler's (or Lambert's or, still better, Venn's) diagrams, and referred also to the "quantification of the predicate," etc. These omissions might be remedied in a new edition with benefit to the student. The example of the complex destructive dilemma on p. 139 does not seem to us a very

happy one. "Passing" and "rejecting" a candidate are contradictory terms, since they are mutually exclusive and collectively exhaustive. Therefore the dilemma may also be written thus: If A_1 then C , and if A_2 then C , but either C or \bar{C} . This would be an affirmation of the consequent, which, of course, is a fallacy.

The treatment of "inductive logic" in the second part of the book is terse and excellent. Inductive inference and associated cognitive activities, circumstantial evidence, classification and description, evolutionary and comparative methods, the canons or methods of induction, the statistical method, the deductive-inductive method, probability, order in nature and laws of nature, scientific explanation and much more are adequately discussed and illustrated.

A. WOHLGEMUTH.

The Laws of Feeling. By F. PAULHAN. Translated by C. K. OGDEN. London: Kegan Paul, Trench, Trübner & Co., Ltd., 1930. Medium 8vo. Pp. xiv + 213. Price 10s. 6d. net.

Psychologists ought to be acquainted with Prof. Paulhan's book, and for those who are not sufficiently conversant with French this translation is to be welcomed. There is, however, one great drawback. The terminology of French writers on psychology was formerly very indefinite, many terms being used with varying connotations, thus giving rise to confusion. *Conscience, connaissance, sentiment*, are some examples. The translator has, therefore, a very thankless task to perform, which is rendered still more difficult by the fact that the same word may have yet another meaning in English. In fact the very title of the book is misleading. "The Laws of Emotions" would have conveyed a more accurate idea of its contents, for Paulhan is more occupied with the conative than with the affective (in the modern technical sense, *i.e.*, pleasure-unpleasure). Otherwise the translation is excellent.

The book was first published in 1887. There is, therefore, no experimental evidence to be found in it. Paulhan's arguments are drawn from everyday observations and illustrated by imaginary examples. "Imagine a man" being in such and such a position then he will probably act in such and such a way. "Suppose" this or that takes place, then so and so is likely to happen. Paulhan's statement of the law governing the production of emotions is as follows: "An affect (*i.e.*, an emotion) is the expression of a more or less profound disturbance of the organism, due to the fact that a relatively considerable quantity of nervous energy is released without being able to be used in a systematic manner. An arrest of the tendencies aroused and a number of physical or psychical phenomena of various kinds are produced. At the same time, one or all of the following phenomena always appear: Persistence of tendencies, relative lack of co-ordination and sudden appearance of the phenomena produced (*sic*), and the tendency of the awakened impulse to monopolize the field of consciousness."

The uncertainties of the author and the difficulties of the translator are evident in the following passages: "A feeling differs from passion in that its phenomena are less intense; the mind is a little more free; psychical energy is less absorbed; consciousness is less invaded; psychical phenomena are weakened and not as a rule very pronounced. Here it is necessary to distinguish from other affective phenomena. . . . In the course of this study I have myself often used the words *emotion* or *feeling* in order to avoid verbal repetitions in designating affective phenomena as a whole. . . . By feelings (*sentiments*), therefore, I understand those fairly durable affective phenomena such as ambition, love, fear, hatred, etc., which are less violent than passion and are generally, though not invariably, accompanied by a more or less clear consciousness of the object." The psychologist will see how hopelessly the author's concepts are muddled and the general reader will be unable to follow him.

Another statement to which many will take exception is that "pleasure is the result of a growing systematization; pain (*i.e.*, unpleasure) is the result of a decreasing systematization." And again: "An affective phenomena (*sic*) is the sign of a disturbance which may sometimes accompany an extension of systematization about to be effected in the organism, but it is always the sign of an imperfection and disorder of activity."

There follow two supplementary essays on "Feeling, Intelligence and Will in General Psychology" and "The Nature of Feeling, Intelligence, and Will," which are clever and suggestive.

A. WOHLGEMUTH.

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1. *The Reward Value of a Conditioned Stimulus.* Williams, K. A.
 2. *The Genetics of Learning Ability in Rats.* Tryon, R. C.
 3. *The Effect of the Introduction of Reward upon the Maze Performance of Rats.* Blodgett, H. C.
 4. *A Further Study in Discrimination of Maze Patterns by Rats.* Yoshioka, J. G.
 5. *Weber's Law in the Discrimination of Maze Distance by the White Rat.* Yoshioka, J. G.
 6. *The Effect of Change of "Drive" on Maze Performance.* Elliott, M. H.

(University of California. *Publications in Psychology*, Vol. 4, Nos. 3, 5, 8, 9, 10, 11.)

These are accounts of experiments with rats carried out in the Psychological Laboratory of the University of California and

published during 1929. The experiments appear to have been carefully planned and to have been executed in a thoroughly scientific manner. The results may be summarized as follows :

(1) The conditioned stimulus retains for some time a reward value equal to that of the unconditioned stimulus itself, but it soon loses this value in a given setting if it is not reinforced by the unconditioned stimulus. This loss of reward value, however, is concomitant with a loss of, or change in, its character as a conditioned stimulus.

(2) Mental ability (maze learning in rats) is inherited, in part at least, and there is reason to believe that pure lines of bright and dull individuals may be obtained. The results so far obtained are consistent with what would be anticipated if this trait were produced by multiple genetic factors.

(3) Rats run under a non-reward condition learned much more slowly than rats run under a reward condition. This held for both errors and time. Rats previously run under a non-reward condition, when suddenly rewarded made a great improvement. On the first day after the introduction of the reward their drop in mean error was greater than that made by the control group on any single day. This fact seems to indicate that, during the non-reward period, the rats were developing a latent learning of the maze, which they were able to utilize as soon as reward was introduced. The author seems, however, to overlook the fact that there was no special drive for the rat before the introduction of the reward.

(4) Rats preferred a pentagon-maze and still more complicated mazes to a triangular one, but there was no preference between the various mazes of five or more angles.

(5) With different absolute distances the same relative difference of distance yields the same proportion of correct choices. Therefore, it is concluded that Weber's law holds in the discrimination of maze distances by the white rat within the limits of distance investigated in this experiment.

(6) Rewards may be changed without materially affecting the learning curve, provided that the drive is changed so as to maintain an "appropriate" relationship between drive and reward.

A. WOHLGEMUTH.

Identity and Reality. By EMILE MEYERSON. Authorized translation by K. LOEWENBERG. London: Geo. Allen and Unwin, Ltd. Demy 8vo. Pp. 495. Price 16s. net.

This is a massive study, a standard work alike for physicist, psychologist and philosopher. First published in 1908, it has now been made available in English. It is based on pre-electron conceptions of science; but Meyerson's close scrutiny of the gems of thought of Newton, Leibnitz, Kant, Descartes, Carnot, Bergson, Poincaré, Duhem, and countless others, his critical brilliancy

and great erudition, and his own philosophy, are all freshly significant.

The author begins on a psychological note. He observes that psychological processes accompanying visual perception are the same as those of thought. He aims to penetrate the functioning of thought through an analysis of its action in science; and turns for his material to the collective thought of science as shown in its history.

A brief outline of the work is as follows: Comte and Mach have stated that science is utilitarian, serving for pre-vision. Meyerson shows that such a system of "lawfulness" is inadequate. Science tries to *explain* phenomena. Its method is causality. Mechanism, atomic theories, the principles of inertia, and of conservation of matter and energy are shown to be derived *via* the principle of causality; this creates the concept of the unity of matter, ultimately assimilates matter with space, and so continues logically to the very annihilation of the external world. Through mechanism, reality becomes nonentity when this principle of identity of antecedent and consequent is built upon. And yet how readily have the mechanical theories and identities been grasped by the human mind! The principle of identity is indeed the essential form of our thought; only those explanations affirming identity satisfy us as perfect knowledge. Thus it is we ourselves who try to establish identity in nature; we bestow identity upon Nature and suppose it to be hers. We call this understanding and explaining nature.

Now, however, Meyerson asks us to contrast this logical result with the principle of change, of irreversibility, that only made its appearance with Carnot's principle. This, entropy, the end-result a dead thermal uniformity, was given a tardy welcome by science: the principle seemed incomprehensible, for there was here a total absence of identity. Yet Sadi Carnot's principle is a fact, the most important of all science. It saves the real world for science; it shows that the reversibility of mechanism is purely ideal. Causality is only a limiting condition of real phenomena, which are all irreversible at bottom.

Similarly in sensations there is irrationality; mechanism can never explain sensations. Even within the mechanical system there is irrationality, the action of one body on another being ultimately as unintelligible as its action on the senses. So, too, the concepts of common sense are shown to be fashioned as are scientific theories, the causal tendency predominating. Common sense is an expression of the tendency to see our sensations persist in time; the sensations vary unceasingly, and this seems unreasonable to us; they *must* remain, and since they cannot remain in us, we place them outside. Generalized experience (conformity to law) and causality, from the beginning of the operations of our understanding, collaborate; their operations become inextricably entangled.

In a final chapter on conclusions Meyerson returns to review his field. He sees atomism as a concept with its root in our very spirit; our faith in the theory was prior to experimental support for

it. Deductive reasoning has been largely sterile in the past, but the principle of identity has been fecundity itself, and is the vastest principle that we can formulate. It follows that phenomena can never be completely explainable. Kant shows us the true position that agreement between reality and understanding is only partial, scientific knowledge being an admixture of *a priori* and *a posteriori* elements. The admixture is served by the criterion of plausibility—we have a right to speak of things as “explained” in proportion as the mind’s predetermination for rationality is satisfied. Mechanism can thus continue to be a guiding principle, for science has never accomplished finite progress except in the direction of mechanistic explanation, and will always remain separated by an infinite distance from the logical conception towards which it tends (annihilation).

Finally, the author returns to examine the two principles of causality and of “lawfulness.” Each must be considered as functioning separately, although their action is complexly intermingled.

In the above sentences we have scantily reviewed Meyerson’s work. The book has to be read for the depths of its learning and the lucidity of its style to be appreciated. It is not possible to attempt an apportioning of what psychology itself has to say of Meyerson’s theory of knowledge. In some respects the best of modern psychology has rather clarified Meyerson’s theory in its general aspects; but there is a very important lesson to be learned by inference from Meyerson, namely, that our qualitative principles of cognition are themselves based upon the principle of identity, for is not the infallibility of knowing logically reducible to such a principle? So far as Meyerson’s treatment of sensation is concerned, the stark facts are found to be those accepted by psychology; we see sensation many times barred from being reality just as it is. Again, as in physics, so in psychology, the causal untruth in respect of reality does not interfere with rationality—causal relation has been taken to come to awareness eductively.

W. STEPHENSON.

The Nature of Knowing. By R. I. AARON. London: Williams & Norgate, Ltd. Demy 8vo. Pp. 154. Price 7s. 6d. net.

This work is a shortened thesis which embodies results of six years’ epistemological research.

The criterion of knowing of a real world is taken to be infallibility. A search is made for a pure sample of “knowing.” First, in the sensory experiences, naïvism, realism, phenomenalism, idealism are reviewed; in one sentence Aaron doubts that sensation is even one amongst many outlets to reality; in another he finds infallible knowing in even the lowest sensory experiences,

namely, in the conviction of "awareness." This latter conclusion, however, "throws little light upon the character of knowing," and the search is continued in the fields of discursive reasoning. Here are raised the problems of (1) prior knowledge of logical principles subserving the reasoning, and (2) prior knowledge of the "stuff," the experiences, with which the reasoning functions. The three laws of thought (non-contradiction, identity, and principle of excluded middle) comprise (1), and these principles are *immediately* apprehended; they are "known" spontaneously. Concerning (2), nominalism, scientific thinking, conceptualizing and pragmatism are discussed; the conclusion that scientific thinking cannot generate new knowledge is dismissed, and "knowing" is exemplified in conceptualizing. The line of argument is *via* consideration of the nature of mediate knowledge; there is observed a core of *immediacy* in the syllogism, in inductive reasoning, etc. The outcome is that conceptualizing is shown to be based on knowledge of the real world that is first known in sensation (we find ourselves a little puzzled by the author's previous mention of sensation as *no* outlet to reality!); and that discursive reasoning is the systematization of concepts. Now the latter leads at best only to probability, not to infallibility; but the face of infallibility is saved by the theory that the probable is "part of a vast mediate process towards full and complete knowledge of the real."

Dr. Aaron has now a clear result—the "knowing act," characterized by immediacy, known without question. (The reader will perhaps conclude that the infallibility criterion has had to receive an apologia, but, in very truth, the infallibility must be admitted, for otherwise we are concerned with no real world.) The *immediacy* has been shown in the awareness of sensory experience, in the three logical laws, in reasoning.

But, Aaron continues, what of transcendent knowing, that of the poet, artist, mystic, saint, or genius? The knowing act found in the mundane fields is considered to be essentially the same as that in the transcendental.

The main facts described are valuable, but Aaron fails to abstract the essential laws from his facts. How near a finding is his *immediacy* to Spearman's first great law of cognition—"that every lived experience tends to evoke immediately a knowing of its character and experienter"! This qualitative law gives the "stuff" for Aaron to buttress his logical laws of thought. "Awareness," however, would not generate new knowledge as considered in reasoning. Here should function the three so-called laws of thought. The reader cannot but observe how little is the contact made with these laws and the items of reasoning considered; it seems that they could be altogether omitted from consideration without affecting Aaron's treatment of reasoning. We would suggest that the further Spearman laws of eduction of relations and correlates would add a new breath of life to Aaron's description of knowing. Finally, it is noteworthy that Aaron sees that memory (reproduction in general) is the source of fallible knowledge.

For the psychiatrist interested in the qualitative laws of

psychology Aaron's work will repay study, especially as an exercise in scientific law formulation, if it is studied together with Spearman's work on the principles of cognition. W. STEPHENSON.

The Nature of Consciousness. By E. R. ROSE. London: Williams & Norgate, Ltd. Demy 8vo. Pp. 158. Price 12s. 6d.

It is a disadvantage that scientific psychology is being conceived at a time when other sciences are well developed. For, by some novice or amateur, the findings of the physical sciences are projected upon psychology, and analogies and speculations are mistaken for scientific theory and facts.

This work on the nature of consciousness, said by the author to be an attempt to "bring the study of psychology within the range of science," is perhaps best described as a mistaken act of devotion. The author is convinced that Buddhism is in absolute agreement with modern science. The first 30 pages give a synopsis of quite irrelevant scientific findings in physics, mathematics and biology, and thereafter (when the physical sciences are outplayed, and the "cyto-architectonics of the human cerebral cortex" are redrawn to a subjective scale) the book becomes largely an introduction to Buddhism. Of scientific treatment of the nature of consciousness there is not one iota.

The author mirrors the vastnesses of astronomy in the Buddhist "Thirty-one Stages of Existence," ranging from Purgatory to the Arupaloka "state of neither perception nor yet non-perception." A two-page table is given, showing "range of variance of the continuity of energy in space-time." Here, at about 10^{-18} metres, following X-rays and γ -rays, are found consciousness-rays. We should be grateful indeed to the author for information concerning the "physical proof" of this enticing speculation, especially the proof "by means of a metallic substance that is influenced in a similar way to the influence of selenium by light," and for details of the photographic experiment hinted at, in which the wave-length of consciousness is measured "by means of rock crystal lenses."

W. STEPHENSON.

The Meaning of Sacrifice. By R. MONEY-KYRLE, M.A., Ph.D. The Hogarth Press. (The International Psycho-Analytical Library, No. 16.) Medium 8vo. Pp. 273. Price 18s.

In *Totem and Taboo* Freud takes the sacrifice of the totem animal to be the unconscious repetition of a primeval crime, the killing of the fat her by his sons. The totem is killed, eaten, and mourned for, as a "repetition and commemoration" of the primeval crime. Money-Kyrle holds this view to be a neglect of the hedonic principle: it postulates a racial memory which blindly repeats the past, whereas

Money-Kyrle wishes to stress the new arousal of sacrificial desires, as satisfaction to the individual for his lived (largely unconscious) experiences, *i.e.*, for his active motives. Freud's theory only partly covers the facts, for deicide would not be the mere repetition and commemoration of parricide unless the same motives were operative in any particular generation. The totem sacrifice is not merely a blind impulse to repeat the past, but is a result of the individual's hates, fears, and loves: it is symbolic of the (mainly) unconscious hatred of fathers that psycho-analysts observe in all of us. Money-Kyrle's contribution is thus a redressing and expansion of Freud's admittedly condensed theory of sacrifice, a theory which requires and implies the elaboration that has been given in this book. As Money-Kyrle observes, Freud suggested that there is an innate disposition to incest, which led to parricide (say) in primeval days, and so, ultimately, to the repressed form shown in totemic sacrifice. This innate disposition brings in the hedonic bias required by Money-Kyrle. Viewed from principles of causality, Freud's is perhaps the more ultimate position, perhaps too bluntly stated, while Money-Kyrle's undoubtedly has the greater present utility and intimacy with facts.

The work commences with a welcome introduction to the œdipus complex (Part 1). Chapter I of Part 2 is perhaps a too lengthy, although admirable, account of the sacrificial rites among some of the peoples of the world; whilst Chapter II discusses the various theories of sacrifice—those of Tylor, Frazer, Robertson Smith, etc., and that of Freud. The author's own elaboration of Freud's theory then follows (Chapter III, "The Essence of Sacrifice," and Chapter IV, "Modes of Sacrifice"). In the final chapter on "Rationalization and Overdetermination," Money-Kyrle perhaps insufficiently delimits what appear to be largely progressive steps in causal explanation.

W. STEPHENSON.

The Nature of Life. By EUGENIO RIGNANO. Kegan Paul, Trench, Trübner & Co. Medium 8vo. Pp. 168. Price 7s. 6d.

Prof. Rignano places on record his "vitalistico-energetic solution" of the old vital *v.* mechanistic dispute concerning the nature of life. He assumes at the basis of life a form of energy which is "endowed with a special, essentially elementary and well-defined property, such as that of specific accumulation, from which can be deduced all the purposive manifestations of life."

The purposiveness of vital phenomena is first described (Part 1). Rapidly, almost in note form, Rignano reviews facts and theories of elementary physiological phenomena, passes to reflexes and instincts, to affective tendencies, and so through the whole gamut of life activity, showing that there is purposiveness everywhere. In Part 2 the "vitalistico-energetic" theory is formulated, with emphasis on the fundamental mnemonic accumulation which

characterizes vital energy. The hypothesis explains purposiveness, and, like all satisfactory scientific formulations, it suggests numerous experiments, each bearing in some way upon the theory: that is, Rignano would have the hypothesis tried out in fundamental experiments in biology, physiology and psychology.

The general theory, however, is not Rignano's alone, and is scarcely new. Though of interest to the deductive philosopher, it can only be of superficial (although broad) value to experimentalists in the vital sciences. While the general theory will, no doubt, be increasingly held, special theories of energy, each specifically adapted to the experimentalist's requirements, will, we think, be the *modus vivendi* of the progress in these sciences. Later perhaps some philosopher will achieve a synthesis of these special theories.

W. STEPHENSON.

Part III.—Epitome of Current Literature.

I. Neurology.

Cephalogyric and Oculogyric Crises with Opisthotonos in a Case of Chronic Epidemic Encephalitis. (*Journ. of Nerv. and Ment. Dis.*, December, 1930.) Notkin, J.

The author comments on the rarity of epilepsy after epidemic encephalitis. He presents a case of a 20-year-old girl who had first a generalized convulsion, and later similar attacks produced by emotional states not unlike those seen in so-called affect epilepsy. The patient had cephalogyric and oculogyric fits with opisthotonos, sometimes as many as twenty in an hour.

G. W. T. H. FLEMING.

The Migraine-Epilepsy Syndrome. (*Arch. of Neur. and Psychiat.*, November, 1930.) Ely, F. A.

The author considered the clinical histories of 104 persons suffering from typical migraine, 171 patients with idiopathic epilepsy and 100 normal persons. He found that a constitutional tendency to migraine is transmissible from parent to offspring, and that a migrainous ancestral trend predisposes the offspring to epilepsy. Ancestral epilepsy is a less important predisposing factor of epilepsy in the offspring than has hitherto been believed. Only 14% of epileptic patients had an epileptic heredity compared with 7% in normal persons. A migrainous heredity occurred in 60% of epileptics and 17% normal persons. There is obviously a definite relationship between migraine and epilepsy.

G. W. T. H. FLEMING.

Electrical Skin Resistance during Hypnosis. (*Arch. of Neur. and Psychiat.*, November, 1930.) Levine, W.

The author compared the skin resistance during the waking state with that during hypnosis in six subjects. He found that the induction of hypnosis does not materially alter the electrical skin resistance. Changes in skin resistance cannot be used as criteria of the presence or depth of hypnosis. From the point of view of skin resistance, hypnosis resembles mild narcoleptic attacks and the after-dinner naps of normal persons, and differs from sleep, catatonic stupor and other states. The palmar electrical skin resistance is an index of alertness and responsiveness rather than of gross muscular tension and relaxation.

G. W. T. H. FLEMING.

A Statistical Review of Convulsive Disorders in the United States. (Amer. Journ. Psychiat., January, 1931.) Pollock, H. M.

The rate of prevalence of epilepsy is moderately estimated as 62 per 100,000. The number of epileptics in institutions is 23.2 per 100,000 of population; and of these, 54% are males and 46% females (but there are marked local variations in these figures for the sexes). Epilepsy is not markedly more prevalent in urban than in rural districts. There has been a recent increase in institutional cases, but not in the total number of cases.

M. HAMBLIN SMITH.

Some Observations on Experimentally Produced Convulsions. (Amer. Journ. Psychiat., January, 1931.) Pike, F. H., Elsberg, C. A., McCulloch, W. S., and Chappell, M. N.

This paper describes the type of convulsions elicitable after lesions of the rubro-spinal system, and is a continuation of the paper published by the same authors in 1929.

M. HAMBLIN SMITH.

The Central Mechanism of Generalized Epileptic Fits. (Amer. Journ. Psychiat., January, 1931.) Spiegel, E.

There exist several paths for the conduction of the cortical impulse from one side to the motor area of the opposite side. Under normal conditions, generalized epileptic fits may develop along two groups of fibres—either those which cross the midline in the rhombencephalon, or those which cross in the pons. Pathological symptoms are produced only by changes of pre-existent mechanisms.

M. HAMBLIN SMITH.

2. Psychology and Psycho-Pathology.

Internationale Zeitschrift für Individual-Psychologie, September-October, 1930.

This number contains the following articles:

Talks with Parents and Children [Gespräche mit Eltern und Kindern]. Holub, M.

The author claims that a single talk with a child may be enough to bring out the faulty "style of life" and to recognize that the child suffers from an asocial attitude. The symptom is but an expression of this attitude, and it is a mistake to occupy oneself with the symptom instead of with the "style of life." The child ought to be given courage without talking about it. Consultations in public are considered an advantage, and it is often advisable to point out the imperfection of adults. A number of "talks" are reported *in extenso*.

Talks with Children [Gespräche mit Kindern]. Katz, D.

Prof. Katz holds that talks between parents and young children have the advantage over talks between the children themselves in that they assume more easily the form of a dialogue. The reason that the dialogue and the process of socialization of child-language have been so completely neglected in child psychology he attributes to the anatomizing tendency of early psychology, and to its having been essentially individualistic. Prof. Katz and his wife have for a number of years written down short dialogues they had with their two sons, now 8 and 6 years of age respectively. A number of these dialogues are reproduced here, ably discussed, and useful pedagogic conclusions drawn from them.

A Case of Enuresis Diurna [Ein Fall von Enuresis Diurna]. Adler, A.

A verbatim report of the talk between the mother of the patient, a boy æt. 12, and Dr. Adler, and of that between the patient and the doctor.

Stupidity as an Excuse [Dummheit als Enthebungsmittel]. Löwy, I.

In a 14-year-old boy and an 11-year-old girl the community-feeling had been stifled by the inferiority complex produced by wrong upbringing. In both cases stupidity has been exposed as an excuse, as a fixation of psychic infantilism, as the renunciation of their life-tasks by two despairing children.

Manners and Ways of the Elder among Brothers and Sisters or among Other Companions [Wesen und Wege der älteren unter Geschwistern oder anderen Vergleichspartnern]. Sumpf, E.

Five case-histories, three of them human, one feline and one canine, where an inferiority complex had been developed in the elder of two partners after the arrival of the younger.

*The Brother or Sister of the Difficult Child [Das Geschwister des schwererziehbaren Kindes]. Bader, H., and Fritz, V.**Pædiatrics and Individual Psychology [Kinderheilkunde und Individualpsychologie]. Zanker, A.*

This is an examination from the individual-psychological point of view of 150 cases of child-neuroses which came under observation in the course of two years. The material is considered in three ways, namely, according to individual-psychological types, to age-groups and to neurotic stigmata. As to age-groups, there were about 15% of pre-school age, 60% of school age and 25% of pre-puberty and puberty age. In the classification by different neurotic symptoms it was attempted to divide the material into four groups according to the predominance of the endogenous or exogenous, the psychical or somatic factors. Types were continually kept in mind, but the various classifications, such as

Kretschmer's body-build types, Jaensch's character-types, Jung's introvert and extrovert types, etc., were found superficial and unsatisfactory. In the second part of the paper "somatoneuroses" and "psychoneuroses" are considered in conjunction with case-histories, and it is contended that there is seldom a case in which the various factors are not mixed in varying proportions.

Education to Fellowship by Means of the School [Erziehung zur Gemeinschaft durch die Schule]. Hoppe, F.

Stories of fellowship in school-children.

The Understanding of the Personality of the School-Child [Die Erfassung der Schülerpersönlichkeit]. Seidler, R.

Examination of children's compositions, and attempts to draw inferences therefrom as to personality. A. WOHLGEMUTH.

Psyche, No. 42, October, 1930.

This number contains the following articles :

Editorial: Aspects Suspect—Basic for the Far East—For India.

The Orthological Institute : The Syncropick.

Announcement of the invention of an apparatus for recording and synchronizing speech.

Interpretation and Analysis. Wisdom, F.

This is a paper of philological and philosophical interest, and forms the first portion of the author's forthcoming book, *Bentham on Definition*.

Shyness. Wright, M. B.

"The problem of the shy man, as it is presented to himself, is to make objective relationships with his own kind without painful subjective disturbances in his individual life," says the author. The paper is illustrated by extracts from the autobiographies of Compton Leith, Jean Jacques Rousseau and Henri Beyle (Stendhal).

Modern Anthropology and the Theory of Cultural Compulsives. Calverton, V. F.

The author points out how closely the growth of the science of anthropology is bound up with the development of the theory of evolution. The anthropologists of the evolutionary school contended that society had passed through certain stages of slow but constant progression, from the lower to the higher, culminating in our present state of civilization. They traced, for instance, the development of marriage from states of sexual promiscuity to the monogamous marriage of western civilization of the present day. Morgan particularly stressed the important part that property had played in this evolution, and his doctrine was seized by radical political economists as proof of Marxian philosophy. In a similar

manner, when in 1891 Westermarck's *History of Human Marriage* appeared it took the academic world by storm. Westermarck contended that monogamy existed already among a number of mammalian animals, as, for instance, whales, seals, hippopotami, anthropoid apes, etc., that monogamy was instinctive and the highest and final form of human sexual relations. The *History of Human Marriage* became the bible of the social sciences until assailed and annihilated some years ago by Robert Briffault's *The Mothers*. Westermarck's doctrine remained ensconced for so long a time because it represented the bourgeois, middle-class ideal. The author's theory, as elucidated by this conflict between Morgan and Westermarck, is that anthropological hypotheses are not conceived or envisaged objectively; they engender social forces which tend to develop what he calls *cultural compulsives*—or a vested interest in a cultural complex. This theory is then further developed.

Movement and Types in Children. Burns, C. L. C.

The author endeavours to correlate certain kinds of movement, jerky, excessive, graceful, etc., with certain psychopathological types, and suggests rhythm for the maintenance of mental health.

Physiological Behaviour-Reactions in the Individual and the Community. Burrow, T.

The author distinguishes a physiology that one looks at and a physiology that one feels, and discourses upon the latter and its expressions, both "intra-individually and inter-individually."

Is there a Time-Sense? Jones, A. O.

The author appears to presume that he possesses a "time-sense." He asserts that he can wake exactly at any hour determined before going to sleep, and that he can tell the time when asked, within one or two minutes.

The Psychology of Sea-sickness. Claremont, C. A.

The theory of the author is that sea-sickness is due to contending impressions from different sense-organs. "Our eyes tell us that we are stationary . . . but our sensations of support will have it that we are moving. . . . Some sense or other, it seems, must be misleading us. Our system concludes that we are seriously ill, poisoned probably; hence we vomit—the first precaution of nature's first-aid." Comment is superfluous.

A. WOHLGEMUTH.

Hermann Ebbinghaus. (*Amer. Journ. Psychol.*, October, 1930.)
Shakow, D.

This is a short appreciative account of Prof. Ebbinghaus's life and work. A bibliography of his writings and another of the bibliographical sources are appended.

A. WOHLGEMUTH.

The Dependence of Tonal Attributes upon Phase. (*Amer. Journ. Psychol.*, October, 1930.) Gundlach, R., and Bentley, M.

This is an account of a carefully planned and well-conducted investigation. The observers were first trained to report, in terms of pitch, volume, brightness and intensity, on tones of various frequencies. They were then presented binaurally with successive pairs of tonal stimuli which differed only in their phase-relations, and were instructed to compare the tones with respect to one or other attribute. A short history of the study of auditory localization is given, and Ogden's list of the attributes of sound as pitch, volume, brightness and intensity were provisionally accepted, but the authors became doubtful, from the results of their experiments, about this assumption. In the comparison of unlike tones in terms of a single attribute, pitch and intensity are most unequivocal; brightness and volume are more equivocal and less capable of independent variation. The difficulties of attributive comparison of tones are greatly increased when phase-difference and consequent shifts of localization are introduced. Brightness decreases as the phase-difference rises from zero and approaches one-half wavelength, and as the localization of the tone moves right or left from the median plane of the head. No regular or consistent change of pitch, intensity or volume was observed under the given experimental conditions.

A. WOHLGEMUTH.

An Experimental Study of Visual and Auditory "Thickness." (*Amer. Journ. Psychol.*, October, 1930.) Moul, E. R.

By "thickness" the author understands visual depth or auditory depth, magnitude or volume. The results are stated as follows: There is a pre-spatial attribute of thickness in vision and audition which is clear-cut in observation, and the descriptive terms of the observers for this "pre-perception" is practically identical for the two modalities. The "pre-perception" is simple, *i.e.*, not further analysable, and possesses a common character in vision and audition.

A. WOHLGEMUTH.

The Range and Modifiability of Consonance in Certain Musical Intervals. (*Amer. Journ. Psychol.*, October, 1930.) Peterson, J. H., and Smith, F. W.

Two groups each of 18 college students, one group trained in music and the other not so trained, were individually taken through experiments in which they were to indicate which of four musical intervals (fifth, fourth, major third and major sixth) was "slightly changed or unnatural." In every experiment one interval was either increased or decreased to the extent of 1 to 10 d.v. in a chance order. Occasionally as a "control" no interval was changed. Each of the 36 observers made 380 judgments. In the musically trained group the ranges of unnoticed change varied from 4.70 ± 0.60 to 5.74 ± 0.76 d.v., while for the untrained group they were all over 10 d.v. on all intervals.

A. WOHLGEMUTH.

The Effect of Attitude upon Feeling. (*Amer. Journ. Psychol.*, October, 1930.) Wells, E. F.

This paper is a *résumé* of "an extensive study of affective experience." It is a great disappointment for those interested in the study of feeling to find that no details whatever are given. We are informed that "a detailed description of the experiments, with complete lists of the stimuli used, may be found in the original thesis, entitled 'An Experimental Study of Affective Experience,' which is deposited in the Library of the Cornell University." Criticism is under these circumstances impossible. The instructions to the observers are not given, so one wonders what is meant by a *critical* affective or a *critical* perceptive attitude. There is also a "common-sense attitude." Now this is exceedingly vague and hardly a scientific term, unless it be regarded as a generic one. The author states: "When feelings are stripped of the naïve common-sense attitude, in which they normally have their being, and are observed under a critical affective attitude they are reduced to modes of tactual experience, to pressure or something very much like pressure. Such pressures may be regarded as the laboratory equivalent of our normal feelings, but experientially they are far removed from the feelings of our everyday life; they are not feelings in the sense that that term is generally understood. Rather they are laboratory artefacts, products of a specific unnatural observational attitude, yet none the less psychologically genuine." What it all amounts to is probably this—that the feelings pleasure-unpleasure were destroyed by the attitudes adopted, for the somatic and visceral experiences of which the author speaks are certainly not feelings. One wonders whether he had sufficiently acquainted himself with work previously done in this field. Nothing useful can be learned from this succinct summary.

A. WOHLGEMUTH.

The Measurement of Tonus by Deformation of the Tendon. (*Amer. Journ. Psychol.*, October, 1930.) Freeman, G. L.

This paper describes a new method for measuring the tonus of the quadriceps by the deformation by pressure of the patellar tendon.

A. WOHLGEMUTH.

Whole and Part Methods with Unrelated Reactions. (*Amer. Journ. Psychol.*, October, 1930.) Crafts, L. W.

In previous work on the "whole" and the "parts" methods it had been found that the "whole method" showed some advantages, which have been ascribed to the fact that in that method a meaning of the whole was obtained which was not the case with the "parts method." In these experiments the author investigated the efficiency of these methods in massed and spaced practice with material which was serially and spatially unrelated. There were 281 subjects. They were given experimental sheets on which there was a code or key of twelve letters, to each of which a different number was

arbitrarily given. Below this code there were 16 rows of letters with a space beneath to fill in the corresponding number in the code. The total amount of practice, 20 minutes, was under the massed conditions approximately continuous, but under the spaced conditions was distributed over 3 days, separated by intervals of 48 hours. Under the massed conditions both methods were approximately equal. Under the spaced condition the whole method was consistently superior to the part methods, and, moreover, more efficient than any mode of learning had been under the massed condition.

A. WOHLGEMUTH.

Some Effects of Heterogeneity on the Theory of Factors. (*Amer. Journ. Psychol.*, October, 1930.) Cureton, E. E., and Dunlap, J. W.

The Relative Immediacy of Sensory, Perceptual and Affective Characteristics. (*Amer. Journ. Psychol.*, October, 1930.) Oberlin, K. W.

There are great individual differences in the observers as to what they can experience in colour stimuli without predetermination in the form of instructions. The difference in the attributes of hue, saturation and brilliance, or at least the finding of these differences, depends upon the familiarity of the observer with these attributes before coming to the experiment. From the results obtained the author concludes that there is no non-temporal difference between sensation and perception so far as immediacy is concerned. The affective judgment is more mediate than the other judgments.

A. WOHLGEMUTH.

Movements in Optic Images and the Optic Imagination of Movements. (*Journ. of Nerv. and Ment. Dis.*, November, 1930.) Kanner, L., and Schilder, P.

The authors studied the problem of movement in optic images. The subjects were all physicians trained in self-observation. They were asked to close their eyes, and to imagine certain objects either in a condition of rest or performing certain movements. In all the subjects examined, the optic images thus produced showed the following characteristics: Fading of the picture, breaking of a line into a number of fragments, diffusion of the light of the image, movements of the image chiefly of a waving and curling nature, scintillation of the image, tendency to multiplication of the image or its essential parts, difference in the type and direction of movements corresponding to the shape of the imagined object, occasional participation of the background in the changes, movements and scintillations, changes in the size of the object, increase of the movements with the duration of the imagination, marked individual differences in the single subjects, though many trends are common to all persons examined, occurrence of the changes independent of and uncontrolled by volition, and usually noticeably

correlated with the particular meaning or trend of the imagined object.

The authors from these findings, which they claim to be new, draw the following conclusions :

1. The act of imagining may effect transformations and transpositions within the entire visual field.

2. The processes of fading and irradiation apparently bear a close relation to similar occurrences in actual perception. It does not seem possible to draw a sharp line between perception and representation.

3. Since movements are almost regularly present in optic imagery, the authors assume that movement is one of the inherent qualities of the process of representation.

4. The phenomena observed show close relation to those occurring in optic perception.

5. The phenomena observed were not caused by after-images.

6. The alterations which take place in the optic representations of geometrical figures may be divided into two kinds—the more elementary primitive tendencies to motility, and others which seem to be determined by the particular shape of the figures.

The authors point out the similarity between the results of their observations and the findings in mescal intoxication. There was hardly a single phenomenon of mescal intoxication that did not occur in the authors' experiments. Jaensch has pointed out that mescal increases the eidetic phenomena. The multiplications, macropsias, micropsias and metamorphopsias seen in the experiments play an important part in hallucinations, especially those occurring in toxic psychoses. Schilder has pointed out that the experiences obtained with eidetic images are closely related to those observed in optic agnosias. Other authors have shown that irritation of the vestibular nerve produces a feeling of movement in the patient's body and the impression of motion in the visual field. Tonus and motility produce changes in the optic imagery as well as in actual perception. Kanner and Schilder think that there may be some relation between the vestibular impression of movement and the optic impression of movement. There is a close resemblance between the optic images and their movements on the one hand and the changes of optic images and perception under the influence of vestibular irritation on the other.

G. W. T. H. FLEMING.

A Quantitative Study of Behaviour Problems in Relation to Family Constellation. (Amer. Journ. Psychiat., January, 1931.) Levy, J.

The distribution of these problems in Chicago children appears to be independent of size of family. In a small rich community, single-child families produce problem children more frequently than larger family groups; but this is only true for boys. In a large city, boys come under notice more than twice as often as girls. The first-born is a problem child more frequently than any of the other children. The sex of the sibling nearest in age to the problem

child has a bearing upon incidence. Only children do not appear to be spoiled as frequently as in the case of two-children families, but delinquency is more common in the former than in the latter.

M. HAMBLIN SMITH.

Epilepsy as an Exaggerated Form of Normal Cerebral Inhibition.
(*Amer. Journ. Psychiat.*, January, 1931.) Rosett, J.

Normal consciousness is composed of elements which are known as states of attention. Each moment of attention embodies the complete series of the epileptic seizure. A diminished orientation is habitually accepted as the normal result of a small but intense amount of co-existing sensory activity. Different states of attention correspond to specific chemical changes in the body. The phenomena of an epileptic seizure are directly caused by the process known as inhibition. Any condition which disturbs the chemical, physical or mechanical balance of the nervous system may result in a facilitation of the normal process of cerebral inhibition, with the appearance of epileptic seizures as the consequence.

M. HAMBLIN SMITH.

3. Psychiatry.

Manic-Depressive Psychosis. The Relation of Hereditary Factors to the Clinical Course. (*Arch. of Neur. and Psychiat.*, December, 1930.) Paskind, H. A.

The author studied 485 extra-mural cases of manic-depressive insanity to find if there was any relation between familial neuropathic factors and the age of onset, the duration of the attacks and the length of the intervals. He states that the most benign course of the disease is found in cases in which the family history is entirely free from taint. Here the onset tends to be comparatively late. In cases where both parents have a neuropathic taint, the disease runs a more severe course. The onset is earlier, the attacks are longer and the intervals shorter. Cases in which migraine was detected in a parent had comparatively severe courses, the intervals were short and the age of onset two years below the median value for the whole group.

G. W. T. H. FLEMING.

Archaic Regressive Phenomena as a Defence Mechanism in Schizophrenia. (*Arch. of Neur. and Psychiat.*, November, 1930.) Levin, M.

Levin points out that recent work, particularly that of Störch, has shown that schizophrenia is a regression to a phylogenetically archaic type of behaviour. The behaviour and mode of thought of the schizophrenic is to some extent similar to that of primitive races. When regression serves as a protective mechanism it may indicate that a certain amount of adjustment is possible even if it is

on an inferior or primitive level. Levin describes in detail the case of a young man who protected himself against the fulfilment of bad thoughts by a magic ritual. A certain number of normal and neurotic persons resort to magic modes of thought when confronted with impending danger or unpleasantness.

G. W. T. H. FLEMING.

Psychotic and Emotional Phenomena Associated with Amyotrophic Lateral Sclerosis. (*Arch. of Neur. and Psychiat.*, November, 1930.) Ziegler, L. H.

In 3 out of 101 cases of amyotrophic lateral sclerosis the author found well-marked mental symptoms. The first two cases showed the essential features of a severe toxic psychosis. In the third patient the chief symptoms were psychoneurotic reactions of anger and rage as precursors of a psychosis. All three showed explosive laughing and weeping. The author points out that the psychosis and spasmodic emotional reactions probably bear a significant relation to the previous personality.

G. W. T. H. FLEMING.

Erythræmia (Polycythæmia) with a Psychosis. (*Amer. Journ. Psychiat.*, November, 1930.) Levin, M.

Characteristic neurological symptoms are found in erythræmia, but the occurrence of a psychosis is rare. This paper gives a short account of a man who developed erythræmia at 43, and a severe depression at 45 lasting until death two years later. It is possible that the erythræmia was one of the factors responsible for the psychosis.

M. HAMBLIN SMITH.

Unconditioned and Conditioned Reactions to Pain in Schizophrenia. (*Amer. Journ. Psychiat.*, November, 1930.) Bender, L., and Schilder, P.

Almost every text-book states that the reaction to pain in katatonics is slight or absent. The most striking feature is that the defence of the individual no longer seems to be integrated. The pain is not appreciated in the sense of the life situation, but as a local disagreement only. Disintegration is also evident in that the individual part is acting in an isolated way, and there is not so much a reaction of defence as an expression of attitude. The dissociation is connected with a change in the function of the brain, but there is not enough evidence to determine whether this altered brain function results from the general psychic attitude, or whether there are primary changes which coalesce with the changes coming from the general attitude.

M. HAMBLIN SMITH.

A Case of Biological Deviation. (*Medico-Legal Journ.*, November-December, 1930.) Erickson, M. H.

The patient, æt. 36, was admitted to a mental hospital following his third arrest for indecent exposure. He had been

kept at domestic tasks during boyhood. An ambivalence of interests had resulted in various forms of perversion. He found no pleasure in normal sex union. He had married, with a view to the cure of his perversion, and had, of course, not succeeded. He was aided by analysis to a better understanding of his condition. How far this will assist him on discharge remains to be seen. The utter inadequacy of ordinary punitive measures in a case of this kind is obvious.

M. HAMBLIN SMITH.

Mental Disorders and the Public Health. (Medico-Legal Journ., September-October, 1930.) Cumming, H. S.

During the past fifty years, the proportion of patients in American State hospitals has increased from 81 to 220 per 100,000 of the general population. The actual number of cases under care has increased nearly six times. The feeble-minded form about 5% of the general population. During the past year, 7 out of every 1,000 prospective immigrants were refused admission because of mental defect. The foreign-born population furnishes the highest proportion of admissions to State hospitals.

M. HAMBLIN SMITH.

Report of Committee on Drug Addiction. (Amer. Journ. Psychiat., November, 1930.) Lambert, A., and others.

The report is based on the study of 318 male patients at Bellevue Hospital, New York. Criminal records were admitted by 83%. Heroin was the drug most frequently used—263 cases. Morphine was taken by 31. Cocaine was recorded in only 4 cases. Physically there was no evidence of appreciable damage. More than half were classed as psychopathic. The quickest way of curing the addiction is that of abrupt withdrawal; the most humane way is gradual withdrawal, spread over 14 days, during which progressively smaller doses of morphine are given. None of the substances forming the basis of so-called specific cures are of any value in ameliorating the withdrawal symptoms. Depressants are ineffective as substitutes for opium derivatives. It is inadvisable to arrange for a course of reduction treatment to be so prolonged that no withdrawal symptoms occur. Criminal and non-criminal addicts should not be treated in the same institution. The prognosis as to ultimate rehabilitation depends upon the integrity of the personality, as well as on the environment to which the patient has to be discharged. Drug addiction is not to be looked upon as a sin, a vice, or a disease; it is, essentially, a response to a psychological necessity.

M. HAMBLIN SMITH.

Cerebral Trauma and its Relation to Mental Deficiency. (Amer. Journ. Psychiat., January, 1931.) Winkelman, N. W.

Cerebral trauma plays a part in the deteriorations of adults and the arrested cerebral development of infants. Subarachnoid hæmorrhage calls for repeated spinal drainage. Encephalography

provides visual proof of the atrophies, present mainly in the fronto-parietal area. Dehydration offers a means of improving the mental condition, both in adults and in children.

M. HAMBLIN SMITH.

4. Pathology.

The Effect of Dehydration on Parotid Secretion. (*Amer. Journ. Psychiat.*, October, 1930.) Winsor, A. L.

The beneficial effect of dehydration in preventing epileptic seizures in some cases studied suggested the need for an investigation of the influence of a low-water balance on mental behaviour. A method for determining the state of liquid exchange through a quantitative analysis of parotid secretion under different exciting situations was presented, and the normal progress of dehydration when the intake of fluid was materially reduced over a period of 70 hours was charted.

A. WOHLGEMUTH.

"Genuine Epilepsy": Studies of the Microscopic Changes in the Capillary System as a Probable Aetiological Factor. (*Journ. of Nerve and Ment. Dis.*, November, 1930.) Alkon, D. M.

The author considers that brain trauma with capillary hæmorrhages sustained during birth is in many instances sufficient to give rise to a metabolic imbalance in susceptible individuals and thus lead up to the convulsive state.

G. W. T. H. FLEMING.

Basal Metabolic Rate in Untreated and Treated Patients with Epilepsy. (*Arch. of Neur. and Psychiat.*, December, 1930.) Notkin, J.

In a group of 50 untreated epileptics, Notkin found that the basal metabolic rate was normal in a high percentage in both sexes. The group with a rate below -10 was smaller than some other workers have found. There was a higher percentage of below -10 in the female group than in the male group. There was no correlation between the age and the basal metabolic rate. The basal metabolic rate in a group of 16 epileptics treated with luminal showed a considerable decrease in the percentage of normal readings, and a three-fold increase of the percentage of readings below -10 . Luminal thus definitely decreases the basal metabolism. The basal metabolic rate in a group of patients treated with bromide showed similar changes.

G. W. T. H. FLEMING.

Studies in Epilepsy. XI. The Calcium Content of the Blood and of the Spinal Fluid. (*Arch. of Neur. and Psychiat.*, December, 1930.) Lennox, W. G., and Allen, M.B.

The authors investigated the serum and spinal fluid calcium of 77 unselected patients subject to recurring convulsions. Average

concentrations and average spinal fluid—serum ratios were within normal limits. There was an abnormally wide distribution of values, with a special tendency towards low spinal fluid measurements. In one-eighth of the patients the ratio of spinal fluid calcium to serum calcium was less than 45%. Only one of the patients had clinical tetany.

G. W. T. H. FLEMING.

Further Notes on Examination of Cerebro-spinal Fluid by Ultra-Violet Light. (*Journ. of Neur. and Psychopath.*, October, 1930.) Skinner, E. F.

The author made a spectroscopic examination of the spinal fluid, and found in meningitis a selective absorption with an interval between wave-lengths 3051 and 2764. The absorption appears to depend on some physical factor at present unknown. Possibly the colloidal reactions and the spectrograms are influenced by similar though not identical variations in the surface changes of particles of colloid.

G. W. T. H. FLEMING.

Further Experimental Work on Bacterially-produced Nervous Tissue Lesions. (*Journ. of Neur. and Psychopath.*, October, 1930.) Orr, D.

The author experimented on rabbits, introducing bacteria into the general circulation and then examining the brain. He found varying degrees of coagulation necrosis in the cortical nerve-cells. The morbid changes affected all the outer layers as far as the ganglionic layer (V). The cornu ammonis and fornix showed ischaemic softenings. All these areas are supplied by vessels derived from the pia-arachnoid. The author thinks that these vessels in the fornix and cornu ammonis are terminal arteries.

G. W. T. H. FLEMING.

Studies of the Biochemistry of the Brain Blood by Internal Jugular Puncture. (*Amer. Journ. Psychiat.*, November, 1930.) Myerson, A., and Halloran, R. D.

The study was combined with puncture of the carotid artery, and of the brachial artery and basilic vein. The technique is quite safe. The nitrogen, phosphate, calcium and chloride contents of the blood are the same in all four vessels. Brain consumption of sugar is greater than arm consumption of sugar. Consumption of oxygen and production of CO₂ show no significant difference in the brain and in the arm.

M. HAMBLIN SMITH.

A Pathologic Contribution to the Concept of Neurosomatic Deterioration in Epilepsy, with Record of Two Cases. (*Amer. Journ. Psychiat.*, January, 1931.) Hodskins, M. B., and Yakovlev, P. I.

In both cases there was evidence of a primary vascular cerebral lesion as the starting-point of a chronic degenerative process, affecting principally the frontal cortex and the basal ganglia. This

secondary process appears to be the most likely cause of the clinical symptoms of neuro-somatic deterioration. The localization of this process in the third layer of the cortex and in the pallidum is in agreement with the dementia and progressive rigidity which were the main features of the clinical syndrome.

M. HAMBLIN SMITH.

The Micro-reaction of Meinicke in the Cerebro-spinal Fluid. (Riv. di Pat. Nerv. e Ment., July-August, 1930.) Amaducci, G.

Amaducci examined 70 spinal fluids, 34 of which gave positive results and 36 negative ones. This agreed with the Wassermann and colloidal gold reactions. The method is simple and quicker than the Wassermann.

G. W. T. H. FLEMING.

The Boltz Reaction in the Cerebro-spinal Fluid. (Riv. di Pat. Nerv. e Ment., January-February, 1930.) De Giacomo, U.

The author examined 70 fluids from various neuro-psychiatric conditions. He found 100% of positive reactions in neuro-syphilitic conditions and 2% in non-syphilitic cases. The reaction is not a sign of increase in albumin in the fluid, nor does it correspond with any increase in lymphocytes or globulin or with changes in the colloidal curve. Giacomo concludes that the reaction is due to an increase in the fluid of some substance belonging to the tryptophane group.

G. W. T. H. FLEMING.

The Alkali Reserve and the Acid-base Equilibrium in Epileptics. (Riv. di Pat. Nerv. e Ment., January-February, 1930.) Massazza, A.

The author examined the blood, urine, spinal fluid and alveolar air. He was able to divide his cases into three groups: (1) A group of symptomatic epileptics in whom pH of the blood, alkali reserve, carbon dioxide tension and total calcium were all normal. (2) A more numerous group of essential epileptics showing a low total calcium in the blood, accompanied by signs of alkalosis, increased pH in the blood, normal or slightly increased alkali reserve and decreased carbon dioxide tension. (3) A small group of essential epileptics without alteration in the total calcium but with signs of alkalosis, normal blood pH, decreased alkali reserve and decreased carbon dioxide tension. In the spinal fluid the author frequently found alkalosis. In the urine there was an alkalinity before the fit and an increased acidity afterwards.

G. W. T. H. FLEMING.

The Acid-base Equilibrium in Epileptics. (Riv. di Pat. Nerv. e Ment., January-February, 1930.) Gozzano, M.

The author examined 14 epileptics. He found a tendency towards alkalosis, and sometimes a definite alkalosis, shown by a decrease in alveolar carbon dioxide with a normal alkali reserve. He

occasionally observed alkalosis without seizures, and seizures without any true alkalosis beforehand.

G. W. T. H. FLEMING.

The Confusional Syndrome with Changes in the Large Intestine.
(*Il Cervello*, November, 1930.) Grimaldi, L.

The author describes two cases of afebrile confusion, of which one showed at autopsy acute changes in the cæcum, and the other chronic changes in the colon. He points out that these intestinal changes, whilst not always present in confusional states or dementia præcox, play an important part in a susceptible individual in inducing such states.

G. W. T. H. FLEMING.

Inflammatory Changes in the Small Intestine in a Case of Confusion.
(*Riv. di Pat. Nerv. e Ment.*, January-February, 1930.) De Giacomo, U.

The author describes a case of mental confusion. At the autopsy he found cirrhosis of the liver, splenomegaly and ascites. There was a severe catarrhal inflammation of the pyloric end of the stomach and of the duodenum, a severe hyperæmia with hæmorrhages throughout the small intestine. Histologically there was an overgrowth of connective tissue in the duodenal wall, amounting in places to a true sclerosis. Large areas of gland tissue were destroyed.

G. W. T. H. FLEMING.

Investigation of Liver Function in Confusional Insanity and Dementia Præcox. (*Riv. di Pat. Nerv. e Ment.*, January-February, 1930.) Gullotta, S.

The author examined by the rose-bengal method the liver function in 12 cases of confusional insanity and 20 of dementia præcox. In all the cases of confusional insanity there was an increased retention of rose-bengal of from 3-7 mgrm. % (normal under 2 mgrm. %). In only 9 of the dementia præcox cases was there any retention, and that only in cases giving in the urine intense reactions of Millon, Buscaino, Weiss, etc. In all cases the increased retention corresponded to an increase in the indirect van den Bergh. The impairment in the conjugating power of the liver gives rise to both an aromatæmia and an aromaturia.

G. W. T. H. FLEMING.

Aromatæmia and Aromaturia from Tyrosin in Dementia Præcox.
(*Riv. di Pat. Nerv. e Ment.*, September-October, 1930.) Noto, G. G.

In 20 cases of dementia præcox and 10 normal controls, the author administered 5-1 grm. of tyrosin by the mouth and examined the urine and serum after 5-7 hours by means of Millon's reagent. The results were positive in the cases of dementia præcox but negative in the serum in the controls. This supports the theory of Buscaino. An abnormal flora in the intestine produces phenol

bodies such as paracumaric, hydroparacumaric and oxyphenylacetic acids which, owing to intestinal lesions, are absorbed, and are not detoxicated by the liver. These phenol bodies appear in the general circulation, and may be a factor in the production of confusion and dementia præcox.

G. W. T. H. FLEMING.

5. Treatment.

Spinal Drainage in Alcoholic Deliria. (Amer. Journ. Psychiat., September, 1930.) Goldsmith, H.

Since the advent of prohibition acute alcoholic psychoses have greatly increased, and grave toxic reactions tend to occur. Spinal drainage is an effective mode of treatment in these cases. It is attended by very slight sequelæ, and the period of detention in hospital has been materially reduced. The treatment is most effective when started within twenty-four hours of admission to hospital. In the great majority of cases no after-treatment is necessary.

M. HAMBLIN SMITH.

The Thyroid Factor in Dementia Præcox. (Amer. Journ. Psychiat., November, 1930.) Hoskins, R. G., and Sleeper, F. H.

Among 130 subjects of dementia præcox 18 were diagnosed as suffering from thyroid deficiency. Of these, 16 received thyroid treatment. There was marked improvement in 14, and 5 patients became well enough to return to their homes. Little success is to be anticipated from thyroid treatment in unselected cases.

M. HAMBLIN SMITH.

Convulsive Seizures: Their Production and Control. (Amer. Journ. Psychiat., January, 1931.) Fay, T.

The repeated acute intracranial pressure-waves, during and after a major convulsion, are responsible for prolonged periods of supracortical pressure, causing low-grade cerebral anæmia and ischæmia, with consequent atrophy and degeneration of the ganglion-cells. This secondary degeneration is responsible for the progressive mental deterioration. The hope for future progress lies in the early prevention of this fluid pressure. A balance and threshold for fluids within the capacity of the patient must be established. The best method is the strict limitation of total fluid intake to below 20 oz. daily, with a solid dry diet.

M. HAMBLIN SMITH.

The Mechanism of the Ketogenic Diet in Epilepsy. (Amer. Journ. Psychiat., January, 1931.) Bridge, E. M., and Iob, L. V.

Three children with frequent *petit mal* seizures were starved for five or six days. Two were rendered free from seizures. Fasting is a high fat diet (body fat and protein being utilized), and is also a salt starvation. It is believed that these two factors, together with an acidosis, account for the effect of fasting in stopping epileptic

seizures, the surplus extracellular fluid being removed from the body. A period of fasting should always precede the institution of the ketogenic diet.

M. HAMBLIN SMITH.

Epilepsy and its Rational Extra-institutional Treatment. (*Amer. Journ. Psychiat.*, January, 1931.) Thom, D. A.

A full clinical and laboratory examination must be made. Findings must be frankly discussed with the patient and his friends, as must also any plans for his future. Feelings of mystery and impending danger should, if possible, be eliminated. The patient's assistance in recording the data of his attacks should be enlisted. Many psychogenic factors operate very near to the level of consciousness, and these can be removed by methods short of full psycho-analysis. Emotional situations are of great importance in precipitating the convulsions.

M. HAMBLIN SMITH.

The So-called Recovery of Paresis. (*Medico-Legal Journ.*, January-February, 1931.) Bahr, M. A.

240 cases of paresis have been treated by malarial inoculation. Of these, 29% have been discharged recovered; 40% remain in hospital; 31% died, but their deaths were not attributable to the malaria. The treatment appears to produce a larger proportion of recovered and arrested cases than does any other measure, and involves no unusual risk; the earlier the treatment is started, the better are the results. Inoculated malaria is very sensitive to quinine; further, it cannot be transmitted by flies, or by the mosquito, and there is, consequently, no danger of spreading malaria to the community. The average period of incubation is ten days, and does not appear to alter with the number of passages of the parasite through the human body.

M. HAMBLIN SMITH.

A Contribution to Chemical Pyretotherapy in General Paralysis and Other Nervous Diseases. (*Riv. di Pat. Nerv. e Ment.*, May-June, 1930.) Armenise, P.

The author treated 12 general paralytics, 3 cases of cerebral syphilis and 7 of schizophrenia with a suspension of sublimed sulphur in oil by the method of Schröder. His results were complete remission in 6 of the general paralytics and in 1 case of cerebral syphilis. There was improvement in some of the cases of schizophrenia.

G. W. T. H. FLEMING.

6. Sociology and Criminology.

Racial Factors in Delinquency. (*Medico-Legal Journ.*, September-October, 1930.) Williams, T. A.

There is a very high percentage of delinquency among the children of foreign immigrants in the United States. This is almost wholly a result of city life. The parents are helpless in the face of a novel civilization: they are occupied during the day, and are unable to

control their children. The Jewish children compare favourably with those of German or Irish birth. In all these statistics the bias of the police officers must be allowed for, as their racial prejudices are very strong.

M. HAMBLIN SMITH.

The Environmental Background of Juvenile Delinquency. (*Arch. of Neur. and Psychiat.*, November, 1930.) Seif, L.

The author sees in the young delinquent the result of the action of bad environment on an easily moulded subject. He places a large share of the blame on the parents and teachers. The child naturally has an inferiority feeling, and the infliction by the parent of an "obey without question" attitude does not help matters. The child has to be treated in a firm, sympathetic manner, and shown that the adult understands it and treats it as a personality and not as a nonentity. The immediate problem of delinquency is to "educate the educators."

G. W. T. H. FLEMING.

The Criminal Feeble-minded. (*Medico-Legal Journ.*, January-February, 1931.) Richmond, F. C.

A survey of the admissions to five penal and reformatory institutions in the State of Wisconsin was made. In a total of 5,125 admissions, there were 1,737 mentally deficient, 1,438 being classed as high-grade morons, 292 as low-grade morons, and 7 as imbeciles. The percentages for males and females were practically identical. The proportion of feeble-minded increases as the age-scale ascends.

M. HAMBLIN SMITH.

Talking Motion Pictures as Evidence. (*Medico-Legal Journ.*, January-February, 1931.) Herzog, A. W.

In a Pennsylvania case talking motion pictures were taken for the purpose of showing that the confession of the accused was voluntarily made. The accused appealed on the question of the legality of the admission of such evidence. The State Supreme Court dismissed the appeal. It was held that the novelty of the talking motion picture was no reason for rejecting evidence so afforded. Photographs and phonographic reproductions had long been admissible as evidence, and there was no reason to reject a combination of the two methods.

M. HAMBLIN SMITH.

Medical Evidence. (*Med. Journ. of Australia*, February 14, 1931.) Perdriau, His Honour Judge.

It is always salutary to learn how we appear to others, and a criticism of medical evidence from the pen of an eminent member of the legal profession is of special value. Many of the author's illustrations are taken from the evidence given in compensation cases; but there is much in his article that can be digested with profit by those of us who are called upon to act as witnesses in criminal courts, or in civil cases when the question of a person's mental state is in dispute.

Evidence may be given of facts in issue, or of facts relevant to facts in issue. Shortly stated, a fact is relevant to a fact in issue when it can be shown to be one of its causes or effects. Subject to certain important exceptions, four classes of facts are excluded from the definition of relevancy: (1) Facts similar to, but not specially connected with each other; (2) hearsay; (3) certain instances of character, or reputation; (4) opinion. This last is of chief concern to us. The existence of a fact cannot be proved by showing that some person is of opinion that the fact exists. But where the fact is a question to which only persons of special knowledge or experience can speak, such persons may state their opinion on the matter, *e.g.*, medical practitioners, engineers, chemists and others. These persons are termed "experts." This term has never been precisely defined, and whether a proposed witness can be considered an expert is a preliminary question for the judge. In general, the appearance of a witness's name on the medical register is deemed sufficient qualification for a medical practitioner to give evidence as an expert. One eminent authority has stated that the expert "is in a relatively independent position, and can therefore easily divest his mind of bias, and approach the case in a judicial spirit." The expert witness should always remember that, although he may have been called by one of the parties, he is expected to assist the court in arriving at a just conclusion on the matters in dispute—matters upon which he is assumed to be specially qualified to express an opinion. It would be well if this were always kept in mind. Judge Perdriau, however, considers that while experts notoriously differ, in most cases they make a real attempt to be fair, and their evidence is generally of the utmost assistance to the court. Endeavours are occasionally made, in cross-examination, to shake the credit of a witness; but a competent witness who is honestly trying to express his views always has the sympathy and the protection of the court.

The expert witness should always bring into court his original notes and copies of his subsequent reports. He should relate the symptoms complained of, and the signs which he himself has observed. He can then give his interpretation of the symptoms and signs in the light of the evidence given as to the facts of the case.

It is rather curious to find a learned judge misquoting such a "leading case" as that of *Bardell v. Pickwick*. His Honour has not given the disallowed evidence of the witness Samuel Weller accurately.

M. HAMBLIN SMITH.

Part IV.—Notes and News.

THE ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.

QUARTERLY MEETING.

THE usual Quarterly Meeting of the Association was held at the British Medical Association House, Tavistock Square, London, on Wednesday, February 25, 1931, when the chair was occupied by the President, Dr. T. Saxty Good, *O.B.E.*, *M.A.*

MINUTES.

The minutes of the last meeting, having already appeared in the *Journal of Mental Science*, were taken as read and approved.

OBITUARY.

The Late Prof. Piltz, Cracow.

THE PRESIDENT said that he regretted to have to announce the death of Dr. Jan Piltz, who was made an Honorary Member of the Association at the Annual Meeting last July, at Oxford. He asked Dr. Lord to say a few words on this sad event.

Dr. LORD said it would be within the recollection of members that Dr. Piltz was a very breezy and enthusiastic personality; he was the Association's honoured guest at the Annual Meeting at Oxford last year, when it was the speaker's privilege to propose that Dr. Piltz be made an Honorary Member of the Association. Dr. Piltz was Professor of Neurology and Psychiatry in the University of Cracow, and Director of the University Clinic in those subjects. That clinic was one of the finest in Europe. One of Dr. Piltz's best works was that on manic-depressive insanity, and latterly he had been devoting himself to the biological approach in psychiatry, particularly to character formation. He was a great physician and a born administrator, and his talents had received recognition in his being made Dean of the Faculty of Medicine at the University, and President of the Neurological Society of Cracow. It was the pleasure of Dr. Worth and himself to be a good deal in the company of Dr. Piltz at the Oxford meeting; as he sat at their table he had tried to teach Dr. Worth and himself Polish; at the same time they tried to teach him English. The latter succeeded fairly well, because he already knew a good deal of English, and by the time he left Oxford he was fairly proficient in it. Dr. Piltz's instruction to Dr. Worth and the speaker was not so successful. It was with great regret that he heard, on November 28, of the passing of this great personality. It had been impossible to ascertain the manner of his passing, or what was the cause. At the time of making the inquiry the telegraph service to Central Europe was suspended, and there was no means of communicating with his relatives. Later, however, communication was established with his wife and daughter, and also with Dr. Hašcovec, another Corresponding Member, who was asked to attend the funeral on behalf of the Association. From conversations with Dr. Piltz when he was here, it was evident that he had created for himself a distinct place in a country which was one of the most promising in Europe. The magnificent clinic at Cracow, to which the speaker had referred, was created practically out of nothing, and must have sustained a great loss in the death of its distinguished head.

A vote of condolence was carried by members rising in their places.

MATTERS ARISING OUT OF THE COUNCIL MEETING.

The PRESIDENT remarked that there was not much to report to the members as a result of the meeting of the Council held that morning, except that it was proposed to hold a dinner commemorative of Sir James Crichton Browne's long and distinguished service to psychological medicine. Members had had notice of this from the General Secretary, and it was proposed to hold the dinner on May 21. It was felt that this would be an appropriate opportunity of presenting Sir James with a small token of the affection and esteem in which he was held by members of the Association. He hoped that all members who could possibly do so would attend, and whether they attended or not, it was asked that each member would send half-a-crown as a subscription towards the event, as it was the intention to invite certain people of position, whose dinner would be at the expense of the Association. He thought it would be agreed that Sir James was a worthy person to whom to give a dinner, and he hoped the General Secretary would receive a large number of half-crowns.

In reply to Dr. Percy Smith, he said a notification would be sent to every member.

Another matter he wished to mention was the fact that the National Council for Mental Hygiene had written asking the co-operation of the Association with the Council and the Royal Society of Medicine in an investigation concerning the ætiology, prevention and treatment of cyclothymias. The Council had appointed Dr. Helen Boyle to represent the Association.

There was also before the Council an invitation from Dr. Charpentier, Secretary of the Congress of French-Speaking Alienists and Neurologists, asking for a delegate to attend the meeting in Bordeaux on April 7. The Council recommended that the Association be represented by Dr. George W. Smith.

Dr. LORD suggested that Dr. Devine should join the Committee on the cyclothymias.

Dr. DONALD ROSS suggested the addition of Dr. J. Brander and Dr. G. W. B. James. *[Agreed.]*

ELECTION OF NEW MEMBERS.

The PRESIDENT nominated Dr. Rice and Dr. McRae to act as scrutineers for the ballot.

The following were unanimously elected :

HARRIS, HENRY, M.D.Lond., D.P.M., Assistant Medical Officer, Banstead Mental Hospital, Sutton, Surrey.

Proposed by Drs. J. R. Lord, A. A. W. Petrie and G. A. Lilly.

MACMILLAN, DONALD MACPHAIL, M.B., Ch.B.Glas., D.P.M., Medical Officer, Great Barr Park Colony Children's Hospital, Great Barr Hall, near Birmingham.

Proposed by Drs. Wm. Reid, A. L. Taylor and J. C. Mackenzie.

LOWENFELD, MARGARET FRANCES JANE, M.R.C.S.Eng., L.R.C.P.Lond., Hon. Medical Director, The Children's Clinic for the Treatment and Study of Nervous and Delicate Children; Consultant, Pioneer Health Centre; 46, Queen Anne Street, W.

Proposed by Drs. Doris W. Odium, Isabel G. H. Wilson and Noel H. M. Burke.

SAMUEL, HENRY CHARLES, M.R.C.S.Eng., L.R.C.P.Lond., 6, South Hill Mansions, N.W. 3.

Proposed by Drs. H. Crichton-Miller, Douglas I. O. Macaulay and William J. Coyne.

REID, BENJAMIN, M.B., Ch.B.Glasg., D.P.M., Senior Medical Officer, Whittingham Mental Hospital, Preston, Lancs.

Proposed by Drs. Ronald M. Clark, A. R. Grant and R. Worth.

MCDIARMID, NEIL, M.B., Ch.B.Glasg., Second Senior Medical Officer, Lancashire County Mental Hospital, Whittingham, Preston.

Proposed by Drs. R. M. Clark, A. R. Grant and R. Worth.

ALLAN, SAMUEL MILLER, M.B., Ch.B.Glasg., Assistant Medical Officer, Lancashire County Mental Hospital, Whittingham, Preston.

Proposed by Drs. R. M. Clark, A. R. Grant and R. Worth.

PRENTICE, DAVID, M.B., Ch.B.Glasg., Assistant Medical Officer, Lancashire County Mental Hospital, Whittingham, Preston.

Proposed by Drs. R. M. Clark, A. R. Grant and R. Worth.

MURRAY, HELEN SARA EUPHEMIA, M.B., Ch.B.Edin., Assistant Medical Officer, Lancashire County Mental Hospital, Whittingham, Preston.

Proposed by Drs. R. M. Clark, A. R. Grant and R. Worth.

JAMIESON-CRAIG, CATHERINE ISABELLA ANDERSON, M.A., M.B., Ch.B.Aberd., Assistant Medical Officer, Lancashire County Mental Hospital, Whittingham, Preston.

Proposed by Drs. R. M. Clark, A. R. Grant and R. Worth.

MCCONNELL, JOYCE, M.B., B.S.Lond., Assistant Medical Officer, Long Grove Mental Hospital, Epsom.

Proposed by Drs. Mary Barkas, A. Walk and J. Ernest Nicole.

MACARTHUR, MARY ELIZABETH, M.B., B.Ch.N.U.I., Assistant Medical Officer, The Retreat, York.

Proposed by Drs. William Fraser, H. L. Wilson and J. Ivison Russell.

MCLAUCHLIN, FRANCIS LEO, M.D., B.Ch.N.U.I., Assistant Medical Officer, Leicestershire and Rutland Mental Hospital, Narborough.

Proposed by Drs. K. K. Drury, J. Francis Dixon and T. W. Davidson.

PAPER.—“**The Utility of the Psychiatric Out-Patient Clinic,**” by IAN SKOTTOWE, M.D., D.P.M. (*vide* p. 311).

THE PRESIDENT said he was sure that all would wish him to thank Dr. Skottowe for his most carefully thought-out, practical and lucid paper. It was likely that members would have comments to make, or questions to ask.

SIR ROBERT ARMSTRONG-JONES said that on the previous evening he had heard a most convincing paper, most sincere and well-expressed, on “The History of Jordanburn,” by Prof. Robertson.

He would like to know more about the field officer, or social service worker. He spoke from some experience, as he had the privilege of starting the first psychiatric out-patient clinic at St. Bartholomew's, fifteen years ago, and had carried it on for two years, being succeeded by Dr. Porter Phillips. He found that many of these patients needed beds. It was very difficult to make inquiries about the patients and their home life; they resented it. There was no social service or field officer. He would like to know from Dr. Skottowe how this lady was received in the homes of the patients. It was clear that she was an efficient person.

Sir Robert was quite sure that many of these patients wanted rest. Being lecturer at St. Bartholomew's, he was on very happy terms with the physicians there, and the latter took his cases and allowed them to remain in their wards for a fortnight or three weeks. There had been occasions when, at the end of that time, or before, he had an urgent request to take the patient away, as he, or she, was disturbing everybody else. But now, with more knowledge and sympathetic feeling towards affliction of this kind, aided by the Mental Treatment Act of 1930, better things were seen.

Last week he had the privilege of reading a paper before the Chester and North Wales Medical Society on the Mental Treatment Act, and he was favourably impressed by the sympathy evinced by the general practitioner towards the establishment of these clinics.

He thanked Dr. Skottowe for his very intelligent, excellent and charmingly expressed paper.

DR. F. R. P. TAYLOR wished to say how much he agreed with the remarks of the reader of the paper as to the desirability of the medical officer from the local mental hospital being attached to the clinic. As Dr. Skottowe rightly said, it gave the patient confidence and ensured continuity of treatment for him if he came into the mental hospital.

With regard to the necessity of having beds available for these early cases, in Sussex the question of establishing mental clinics was now being discussed, and efforts were being made to get a certain number of beds allotted to the clinic for cases which required rest. At the clinic in connection with the Princess Alice Hospital at Eastbourne, there seemed a good prospect of having a ward set apart

for the purpose. If psychiatric clinics were to be carried on satisfactorily he was sure there must be provision of beds for the cases.

Dr. WILLIAM DAWSON said that, through the kindness of Dr. Skottowe, and that gentleman's chief, he had had the opportunity of attending one of the sessions of the psychiatric clinic at Cardiff, and he had been greatly impressed by the way in which it was carried on. Though he did not see any large number of cases, as he saw only those which came to the clinic on that occasion for the first time, they represented nearly all the leading forms of insanity and neurosis. Another point he wished to mention was that the accommodation provided at the clinic, though adequate, was not very elaborate; it was such as any large town possessing a public hospital should be able to provide.

For many years the speaker had been interested in this subject, indeed ever since it was his privilege to attend one of the late Dr. Rayner's clinics at St. Thomas's Hospital. He was at that time greatly impressed by the way in which the activities of that pioneer clinic were conducted, and realized how useful this kind of organization was likely to be in the future. Another man who was also a pioneer in this work in his own country, was Dr. Carswell, when he was certifying surgeon in Glasgow. Dr. Carswell ran two wards for these early cases, which closely resembled the ordinary medical wards of a hospital. Dr. Carswell did good work by that means, and saved a large number of people from having to go to the local mental hospitals.

He agreed with the reader on most of the points he had brought forward, and particularly as to the desirability of establishing these clinics, in the first instance at all events, in connection with general hospitals. In many cases it would be impossible to establish the clinics apart from public hospitals, where the services of the pathologist, the bio-chemist, the bacteriologist and other specialists could be secured.

He highly appreciated this most interesting paper, and hoped it would lead to a great extension of these clinics in the country now that public bodies were allowed to incur expenditure in establishing and running them. It was one of the most hopeful departures that had occurred for many years.

Dr. ELIZABETH CASSON asked whether the reader of the paper used occupational therapy for his patients. She had been at two such clinics, and found that occupational therapy was more useful than anything else. To those who cared for it, country dances did most good. For a girl who did not believe in using her legs, the speaker started bicycle lessons. Work sessions were held on several mornings each week.

Prof. GEORGE M. ROBERTSON said he wished to associate himself with the favourable expressions of opinion concerning Dr. Skottowe's paper. He, the speaker, had a broad view of what was taking place. This departure was one of the most hopeful and important that had occurred in the last generation. Dr. Skottowe had stated that the number of patients attending these clinics was not at present large; at Glasgow and Cardiff the numbers were 120 and 130. But every year the patients making use of these centres were increasing in number, and once the value of these clinics became recognized by the public, and the general practitioner came to know more about them and what they were doing, there would be large attendances at them, and the number of clinics would grow. In Edinburgh, where the clinic served a very much smaller area than those at Glasgow and Cardiff, double the number of patients attended, *i. e.*, there were 340 new patients last year.

He agreed with Dr. Skottowe that while subsequent visits of the patient could be of a private nature, the first visit of the patient and his examination was exceedingly useful to the medical student, and was one at which he could well be present. At Edinburgh University, all the students who had taken a course in psychiatry and medical psychology were required subsequently to attend the out-patient clinic, to take notes on the out-patients who came there, and to write a report and commentary on the cases they had seen. It was part of the course, and the students did not receive their certificates until it had been done. Moreover, this first visit of patients was exceedingly valuable to the students because these patients were of the type they were likely to see when they entered upon general practice; whether they were early cases or more serious ones, concerning whom they might be in doubt whether or not certification was required.

It was not only very desirable, but most important, that there should be a certain number of beds available. He calculated that the proportion of patients who required a bed was about one-fifth to one-sixth of the total; where there was a special hospital for this purpose the difficulty was solved. The new Mental Treatment Act gave great facilities. A large proportion of those who came to the out-patient clinic and who required bed or hospital treatment would be prepared to go into mental hospitals as voluntary patients. This was a very important advantage of the voluntary treatment; the out-patient clinic and the opportunity for voluntary hospital treatment went together, one reinforcing the other. There was no question, in his mind, that almost all the troubles encountered by the alienist in dealing with mental disorders rested with certification; in the past, no patients had been allowed to go into a mental hospital unless they had passed the test of certification; it was that which had brought in its train all the trouble about asylums. Now, however, that there was the opportunity of admitting people as voluntary patients, the reputation of these institutions would improve.

Dr. Skottowe had referred to the large number of patients at the Boston Psychopathic Hospital; but the Boston institution was a receiving asylum, not an ordinary psychiatric hospital. The Jordanburn Hospital, however, was exactly like a general hospital. Any patient could go there; it was not a matter of formally signing on as a voluntary patient; they came in and went out as in a general hospital. It was mainly reserved for nervous cases, and no person who was very insane, or would disturb the others by noise or rough behaviour, would be allowed to remain there, nor any who were obviously idiots. But every other class of nervous patient was admitted to the hospital.

He thought there could be no question that these out-patient clinics in connection with general hospitals should be run by psychiatrists attached to the neighbouring mental hospitals, and this was what was done in Edinburgh. There were two out-patient clinics there; one at the Jordanburn Hospital, the other in connection with the Royal Infirmary, and both were run by the physicians of the Royal Mental Hospital.

Again he congratulated Dr. Skottowe on his exceedingly interesting paper.

A MEMBER asked whether Dr. Skottowe could suggest a better term for these establishments than "psychiatric" out-patient clinic. The word was almost unpronounceable by the general practitioner, and certainly by patients of the class for whom they catered.

Sir HUBERT BOND said that he was pleased that the reader led off by giving due recognition to the first clinic of the kind in England, so far as was known, that founded many years ago by Dr. Rayner at St. Thomas's. After it there was a long pause, and he thought that the next clinic of the sort was that of the President, Dr. Good. He did not know whether Dr. Good imitated Dr. Rayner, whether in fact he knew anything about the latter's activity in this way.

One point he would have liked Dr. Skottowe to stress—and perhaps he would allow the speaker to do so—was this: He, Sir Hubert, did not think any public mental hospital in the Kingdom would get any voluntary patients at all, beyond a stray one now and then, except from the out-patient departments. No big mental hospital would, in his opinion, have any large number of voluntary patients without that. And he further thought that the medical staff of the mental hospital should be associated with the clinic. He was not saying that the mental hospital must be the dominant partner, as there might be already someone installed, perhaps as honorary physician, and there would be no desire to oust him. But the medical staff of the mental hospital must surely be associated with that out-patient department. He suggested that arrangements, such as he had heard of, whereby the occupant of the post of chief physician was selected by his colleagues at the general hospital, was wrong in principle; it might have to go on for a time, but the right way would have to come eventually.

He wished also to say that in the course of the meetings of that and the previous days he had heard of two new out-patient arrangements in association with county mental hospitals, at both of which the medical superintendent was the honorary physician in nervous and mental diseases, just as Dr. Good was at Oxford. He was delighted to hear of it, but, as he said to those who told him, he did not think the Board of Control knew a word about it. It was not like the law regarding new admissions, which must be notified to the Board. He asked that, as a matter

of courtesy, they at the Board of Control should be informed of these happenings direct, instead of allowing them to be accidentally found out. The Board would hear of them with delight and pleasure. He hoped this would not sound egotistical, but now and then the Board would like to hear of difficulties so that they might help to overcome them, as, now and again, they had been able to do in the past. If members would look round the country they would find that, with one or two exceptions, such as at Oxford, nearly all the psychiatric out-patients departments had been set up at the direct suggestion of the Commissioners in this country. This fact should not be forgotten. They at the Board would be glad to know these things, if only to have the opportunity of expressing their congratulations, and, if there were difficulties, to have the opportunity of helping.

Dr. PERCY SMITH said he had been hoping to hear some reference to mental out-patient efforts in connection with London hospitals, other than St. Thomas's. It was true that at the latter hospital Dr. Rayner started the first clinic of the kind in this country, a good many years ago. He did not know whether Dr. Skottowe had referred to the speaker's obituary notice of Dr. Rayner and obtained some of the facts in his paper from that source, but in the *Journal of Mental Science* for 1926 there was an account of how it started. Dr. Rayner, having been at Hanwell, and knowing a good deal about mental cases, and especially about the need for early treatment, persuaded the Governors of St. Thomas's Hospital, where he was lecturer, to start an out-patient department for early mental cases. After Dr. Rayner resigned his lectureship and the out-patient department, which, he thought, was in 1903, he, Dr. Percy Smith, succeeded him there, and he also started a similar department at Charing Cross Hospital. There one had the advantage of association of all the other members of the medical staff. Dr. Mott was at Charing Cross at that time, and everything necessary in the way of examination of patients brought to the department was at hand, whether medical or surgical.

Speaking for himself, when he was in charge of the out-patient department at St. Thomas's and at Charing Cross Hospitals, he always himself saw the patient first, heard the history and ascertained the clinical details, and whatever physical examination was required was carried out by the appropriate member of the hospital staff.

He, the speaker, was succeeded at St. Thomas's by Dr. Stoddart, and now the physician in charge was Dr. Yellowlees. Subsequently, similar out-patient departments were started at St. Bartholomew's, Guy's, Westminster, Middlesex and St. Mary's Hospitals, and, as members probably knew, there were now in the neurological ward at the Middlesex a small number of beds for mild mental cases. He believed that there was no special ward in any of the London hospitals for these cases, and it would be difficult to mix them up with the general run of other cases. Every now and then a case which was of doubtful type was admitted.

He was very interested to hear that these out-patient departments were being instituted all over the world, and was proud of the fact that the St. Thomas's clinic was the pioneer in this work, at least in this country. It was, he agreed, very desirable that these clinics should be in touch with some institution to which early mental cases could be admitted. Now that the voluntary patient was admissible to county and borough mental hospitals, no doubt many of these cases would go there at quite an early stage. In former days many of them were put in touch with the Mental After-Care Association, whose visitors were able to investigate the patient's home surroundings, and often were able to send a patient to a borderline home.

He congratulated Dr. Skottowe on his paper, and wished members of the Association would remember the pioneer work of that eminent member of the Association, Dr. Rayner.

Dr. SHAW said he did not notice Dr. Skottowe say how often he held these clinics. He would like to know that.

The PRESIDENT said that there were one or two points he wished to bring up. The first was that it did not much matter how the question was regarded so long as medicine was viewed as one great whole. Perhaps one of the greatest mistakes was that as members of the Association lived so far from each other they developed a sort of self-pity; they thought that other people did not care to hear their ideas. He urged that members should expand their work in all directions. The greatest fear mankind had was the fear of insanity, and he thought that if such a clinic

for early cases were called "Psychiatric Clinic," or "Clinic for Mental Diseases," many people would be deterred by the name from coming. But if it were called a "Clinic for Nervous Disorders," people would flock to it. Therefore as the object was to cure the patients, he advocated leaving out the awful word which brought to mind insanity.

His own work in this connection had been referred to, but he did not claim to possess more dynamic energy than anybody else. Dr. Rayner's books were among the first in which he, the President, was deeply interested, and probably it was those books which chiefly directed his mind along the path it had since taken.

Another point he wished to raise was the following. Under the new Mental Treatment Act one was to have voluntary patients. If they came to the clinic were they voluntary because they came to the clinic? After the patient got well at the clinic, had he been a voluntary patient? If superintendents were going to notify the Board of Control of cases which came as voluntary patients, was the same notification to apply to the clinic? Of six voluntary patients who came to his clinic, only one came into the mental hospital, others adjusted themselves outside. It might be possible for patients now to come voluntarily still earlier, and so be given an even better chance of successful treatment. As far as he was concerned, he told the Board of Control unofficially what he was going to do, but officially he did not tell them so much.

The other point he wanted to raise was that concerning the presence of students and other people at the treatment clinics. He agreed with Dr. Skottowe that at the first interview, as a rule, it was easy to have somebody else present, but after that he did not think it was, in many cases. But there was a very practical point which had come to his notice at Oxford, and a very valuable one. When taking the history of one of these people coming to the clinic, the point which was commenced with was never the important one, and the history brought out was seldom in chronological order. If a student was asked to take notes, it saved a lot of time, and simultaneously one was interesting the student and teaching him the way to investigate cases in future. By means of the clinics both patients and students were helped to look at mental illness in the same way as at physical illness, though they might be approached from different points of view.

He could say a good deal on the subject, but would refrain. The paper would be of great use to members of the Association.

Dr. J. G. SOUTAR remarked that one point in Dr. Skottowe's paper had not been referred to, and that was that the reader was not wedded to any particular school of psychology; he recognized that neither Jung nor Freud, nor any of the other leaders of schools told the whole story, that there was a multitude of avenues of approach to the mind of the patient. And as Dr. Skottowe was not committed to any school he did not look at the facts and phenomena as supporting a particular school, but as the true incidents which he had to observe. One of the difficulties in regard to schools hitherto had been that investigators, having once committed themselves to the tenets of a particular school, looked at all the facts in the light of that school of thought. In such an investigation as this it was necessary to keep an open mind, ascertaining the type of mind possessed by the patient, in order to get at the underlying truth. The first mental out-patient clinic he had had to do with was one for ex-soldiers, and in the case of many of them he found it useful to see them twice a week. A considerable number of them needed bed treatment, and fortunately he was able to satisfy that requirement for some, and their improvement thereafter was very marked. Patients who came to one's consulting-room were in the same state of mind as were the patients at these clinics. He contended that these cases could not be dealt with adequately except by employing intensive methods; once a week or once a fortnight was not often enough for them. And many other things had to be done for them, such as providing them with a suitable occupation, which had already been referred to. They should be in places like nursing homes, where there was good organization and every requirement could be provided.

There was a great opening for this work among private patients too. There were many people who were having disabilities in the guise of physical troubles, of which the origin was really mental, and it was investigation and treatment in an early stage which saved them from disaster. Because very soon, fear, the most disabling of influences, took possession of the mind. If one could steer

the patient clear of that, one was ensuring a great step in keeping clear of disaster.

This practical paper of Dr. Skottowe was of immense value, and he was sure that the setting up of these clinics would result in a great reduction in the incidence of mental breakdown.

Dr. DOUGLAS McRAE remarked that some members of the Association were so situated in country districts that they could not get such provisions for early treatment. Those so placed might feel a little comfort from the realization that they made their asylums so like the ordinary hospital that the people in the district were willing and ready to enter them as voluntary patients. Quite 95% of his patients were certified, and they never complained that they had been certified. Relatives came regularly to visit, and they were shown round the hospital and were favourably impressed by the hospital-like and cheery aspect of the wards. Many of the patients expressed regret that they had not sought treatment earlier. As a matter of fact, it was difficult to get cases to leave the mental hospital after they had recovered. There were those who had been trying to make hospitals asylums, and had been able to impress the public concerning them as favourably as they were impressed by the general hospital. Mental hospitals did get recoveries, but unlike general hospitals they had to keep their failures. It was because of this that mental hospitals were stigmatized in having chronic cases. A great deal was talked about a new case being admitted to a nice environment, free from association with any case which might tell upon a sensitive nature. In his own mental hospital, if it was desirable for a patient to be in a quiet ward, the chronic ward was the place for him. The majority of the patients were inoffensive, and not uncompanionable. In the reception wards of some mental hospitals he had seen cases who were in a noisy and turbulent state that would not be tolerated in a well-conducted asylum for ten minutes.

The point he wanted to make was that some of the members had mental hospitals of which they were proud, and it would be a great mistake to emphasize too strongly the importance of avoiding sending patients to asylums. There were many cases being looked after by all sorts of people, in whose case it was a pity they had not arrived straight away at an asylum. He wished to emphasize that there were two sides to every question.

Dr. MACKENZIE said he hoped Dr. Skottowe, in his reply, would inform the meeting about recurrences, as it would be interesting to know whether in the type of case dealt with in these clinics the question of recurrence came up.

The instance given by the reader of the paper illustrated how the State was intervening. He could well imagine, in a more primitive state of society that this man, or one in his condition, would not have suffered from any anxiety neurosis; he would have dealt with one of the factors in the case—the wife—in a much more direct and drastic manner. He would like to know how the solution of the trouble appealed to the wife when she knew the process by which recovery was brought about.

Dr. SKOTTOWE, in reply, thanked those present for the way in which they had received his paper.

As time was short he proposed to reply briefly on the points which had been raised.

With regard to the social service in this work, and the way in which the social worker was received in the people's homes, the clinic had never experienced any difficulty; there had been no cases in which the social worker could not overcome any slight resistance or objection there might be by the judicious use of tact.

The necessity for beds in connection with such clinics he had dealt with in the early part of his paper. No one with experience of the early case would dispute that the psychiatric institute was the ideal place to deal with it; examples were the Maudsley, the Jordanburn, etc. But this paper dealt with the utility of things and agencies as they existed now, not as one would like to have them. One of the points made in the paper read by Dr. Good in 1921 was that very few of his patients required in-patient treatment, that they were better treated as out-patients. He was not alone in that contention. Certainly concerning the psychoneurotic group (as contrasted with the true psychotic group) the speaker considered they were better kept at work; it was not good to encourage

the idea that they were not able to work, because what they stood in need of was the re-establishment of self-confidence. There should be nothing in the nature of "coddling." But there were cases which did definitely require bed treatment, and they were the people who were in the depressive phase of manic-depressive psychosis. Whatever one did, the patient would get well if placed in proper surroundings. It was better not to attempt any interfering therapy. Beds were very desirable for that kind of patient.

There was also another point, one which Dr. McRae touched on. If one had a large ward, or a fair number of beds together in connection with the out-patient clinic, there was a tendency to make it a mental hospital dumping ground, a very bad thing in his opinion. In cases in which bed treatment was required, he thought it should be carried out in the mental hospital. He was aware that the body of opinion was probably against that view. By doing that one tended, in his opinion, to keep the standard of the mental hospital high and to prevent it from degenerating into what was called "looney wards."

Dr. Dawson had really answered Dr. McRae's question about the difficulty of supplying facilities for out-patient treatment in country districts, when he spoke of the simple accommodation provided at the Cardiff Clinic. Dr. Macfie Campbell, at Boston, U.S.A., made the following remark to students: "All one wants, to be a psychiatrist, is a block of paper and a pencil."

Both the President and Prof. Robertson had remarked about the students, and he was glad to know they were in agreement on these points.

Prof. Robertson has stated that the Boston Psychopathic Institute was merely a receiving asylum or clearing-station. He, Dr. Skottowe, spoke as a former member of the staff of that institution, and he was aware that it tended to be very much a clearing-house, because any policeman could sign a ten-day care paper and put any alcoholic or obstreperous person into the Psychopathic Hospital. Twice, namely in 1912 and 1926, the Director circularized the general practitioners in Boston and district, asking them to refrain from sending in cases which obviously should go straight to the State hospitals. Sixty per cent. of admissions to the Boston Psychopathic Institution went on to the proper mental hospitals, and this large number prevented the staff from attending as they should to the earlier, the recoverable cases.

Objection had been expressed to the name "Psychiatric Out-patient Clinic," and the President had associated himself with that sentiment. The only alternative name which he, the speaker, could suggest for the institution in which he was concerned was that of "Nerve Clinic." Again his view might be reactionary but he contended that if a person was mentally ill he should be told so. He did not see any point in not letting patients know they were mentally ill. The first step towards the recovery of the patient, he considered, was that he should realize how ill he had been and still was.

With regard to occupational therapy, that was prescribed as required; they did not make it necessarily craftsmanship, it must conform somewhat to the activity the patient had been accustomed to. He might be told to go and dig the garden or to mend the sofa. Such occupations were prescribed and were valuable, but he did not think they helped much without psychotherapy.

With regard to Sir Hubert Bond's question as to whether voluntary patients would be likely to go to mental hospitals in any number except by passing through the clinic first, he, the speaker, thought it was early yet to say much as to what would happen, but, so far, he had had more voluntary patients who did not come through the clinic than he had had through it. He did not doubt that, eventually, it would be the other way round.

With regard to his omission to mention other mental out-patient clinics at London hospitals, he only referred to St. Thomas's because he wished to stress the point that British psychiatry was not so much of a backwater as seemed to be imagined by some American and continental friends.

His clinic was held once a week. Three psychiatrists acted in rotation, and female patients were dealt with, as he said in his paper, by a woman psychiatrist. The medical officers each had a two-hour session.

With regard to recurrences, in the true type of clinic case, *i. e.*, the anxiety states, psychoneuroses and behaviour problems, accounting for from 60% to 70% of all the cases, he could remember only one recurrence in the eight years that the Cardiff Clinic had been running. The group in which recurrences took place were

the ex-mental-hospital cases, the manic-depressive states and the schizophrenics. These got well enough to go out, then relapsed and came back to the clinic. Among the real clinic cases there were practically no recurrences. The patient whose case he related in the paper first became ill two years ago, and was under treatment four months. Then he recovered. The speaker saw him again a fortnight ago, when he had come to the skin clinic for impetigo. He came to see the speaker and told him that he had remained perfectly well ever since, and the speaker did not think it wise to reopen the old subject of his inner life.

PAPER.—“Mental Disorders Associated with Pernicious Anæmia,”
by NORMAN PHILLIPS, D.P.M.

(As time did not allow of the reading of this paper it was postponed to the May meeting.)

IRISH DIVISION.

THE SPRING QUARTERLY AND CLINICAL MEETING of the Irish Division was held at the Royal College of Physicians, Kildare Street, Dublin, by kind permission of the President and Fellows, on Thursday, April 2, 1931.

The following members were present: Dr. Richard R. Leeper in the Chair. Drs. S. Blake, P. J. Cassin, J. O'Connor Donelan, F. J. Deane, P. J. Dwyer, W. Eustace, John FitzGerald, L. Gavin, T. A. Greene, Dorothy Gardner, P. Grace, B. F. Honan, G. H. Keene, J. Kearney, B. Lyons, J. Mills, J. C. Martin, P. Moran, M. J. Nolan, R. Taylor, and R. Thompson (Hon. Sec.).

Apologies for absence were received from Drs. Rambaut, Kelly, and J. Ivison Russell.

The minutes of the previous meeting were read, approved and signed by the Chairman.

The meeting then proceeded to the election of officers for the ensuing year, and the following, after ballot, were declared elected.

Honorary Secretary: Dr. R. Thompson.

Representative Members of Council: Drs. J. O'Connor Donelan and L. Gavin.

Dr. NOLAN then proposed and Dr. GAVIN seconded that Dr. O'Connor Donelan be elected Chairman of the Division. This was carried unanimously.

The CHAIRMAN, at this stage, referred to the recent death of one of their oldest members—Dr. Lawless, Medical Superintendent of the Mental Hospital, Armagh. A vote of sympathy was passed in silence, the members standing.

The Advisory Committees to the General Nursing Councils were reconstituted as follows:

For Northern Ireland: Drs. M. J. Nolan, Deane, N. B. Graham, W. S. Smyth and J. Watson.

For Irish Free State: Drs. J. O'Connor Donelan, R. R. Leeper, L. Gavin, J. C. Martin and S. Blake.

Dr. Nolan and Dr. O'Connor Donelan were re-elected Examiners for the Association's Certificate in Psychological Medicine.

Dr. Dorothy Gardner, Purdysburn Mental Hospital, Belfast, was recommended for nomination by the Educational Committee for the post of Examiner for the Preliminary Nursing Examination (written).

Following a ballot, Dr. Patrick Moran, Mental Hospital, Mullingar, was recommended for nomination by the Educational Committee for the post of Examiner for the Final Nursing Examination (written).

The meeting then listened with great interest to a paper on the Irish Mental Hospitals, written by Dr. Loberg, of Sweden, and read by Dr. Dwyer, Portrane Mental Hospital.

PAPER.—“Some Observations on a Visit to Ireland in the Spring of 1930,” by Dr. KARL LOBERG.

Having been granted leave of absence by the Royal Medical Board, I visited Ireland from May 8–28, 1930, in order to study the mental hospitals there. On the evening of May 10 I arrived in Dublin, where I was received most kindly by Dr. Dwyer, Superintendent of the Portrane Mental Hospital, Donabate, which is eleven miles north of Dublin. For the first eight days I was Dr. Dwyer's guest, and through him I was able to visit not only his own hospital, but also Grangegorman Mental Hospital, St. Patrick's Hospital, the House of St. John of God and the Central Criminal Asylum. Before leaving, I was asked to read a paper to the Irish Division of the Royal Medico-Psychological Association, and at their meeting on May 15 I discussed the chief experiences up to date with the sulfosin treatment in dementia præcox. On May 19 and 20 I visited Belfast Mental Hospital and on May 23 the Mental Hospital at Cork, to the Superintendents of which Dr. Leeper, Superintendent of St. Patrick's Hospital, and Dr. Dwyer had given me introductory letters. Everywhere I was received with extraordinary kindness and hospitality.

I will now proceed to give some impressions of my visit.

Mental disease is a big problem in Ireland, at all events in the Irish Free State. I am told that the number of mental patients is somewhere about 6 per 1,000. Emigration and alcoholism were mentioned as contributory causes to this high figure: that the former may be a factor of considerable importance is manifest, considering that the population of Ireland has decreased in the last 90 years from about 8 to 4 millions. The frequency of the different mental diseases seems to be about the same as in Sweden; thus, dementia præcox forms about 75% of the total number of cases in Grangegorman Mental Hospital, which contains 2,000 beds and admits 500 patients yearly. On the other hand, a disease which appears to be much more common in Ireland than in Sweden is epilepsy. Of the patients in the Grangegorman hospital 4% were epileptics, and at the Mental Hospital in Cork containing 2,400 beds, 5 or 6%. The corresponding figure for all the Mental Hospitals in Sweden in 1928 was under 2%. Even in Northern Ireland the percentage of epileptics seemed to be high. For instance, in Belfast, in a female ward, out of 74 patients no less than 44 were epileptics. On inquiry into the causes of this high incidence of epilepsy, I was told that many cases have a positive Wassermann.

Legislation with regard to mental hospitals is the same in Northern Ireland as in England and Wales, and the same applies for the most part in the Irish Free State. In the Free State the following are the laws regarding the admission of mental patients.

1. Admission of a Paying Patient.

The procedure for the admission of these cases is embodied in seven different clauses:

1. Application is made to the Joint Committee of Management and signed by some relative or other person closely connected with the patient.
2. A statement is given before a Peace Commissioner that the patient has mental disease and such evidence is made on oath.
3. The statement must be given by the person making the application or by another relative or person closely connected with the patient.
- 4 and 5. Two certificates by different doctors are required as to the patient's mental condition (1st and 2nd medical certificate). These must be issued not more than seven days before the patient's admission.
6. An order made by a Peace Commissioner authorizing the patient's admission.
7. Guarantee of responsibility.

2. Admission of an Ordinary Patient.

The procedure for the admission of an ordinary patient is not so complicated, and is contained in five clauses, namely:

1. The petition, with guarantee that on order from the hospital authorities or the

Inspector of Lunatics the patient will be removed from the hospital when he is fit for discharge, this petition to be signed by a relative or other responsible person.

2. Assurance is to the Peace Commissioner that the facts given in the *statement* are true. This *statement* at the same time contains a clause stating that the patient is unable to meet his hospital expenses.

3. *The statement* : The same as that for a paying patient.

4. Certificate of a medical practitioner : only one is required in this case.

5. A Peace Commissioner authorizes the patient's admission.

3. *Warrant for Committal of a Dangerous Lunatic.*

This is embodied in three clauses as follows :

1. The committal warrant is issued by two Peace Commissioners and directed to the superintendent concerned.

2. At the request of the two Peace Commissioners the medical officer testifies that the patient is a dangerous lunatic.

3. Statement giving the name and address of the patient's relatives and a short account of the patient's previous history.

4. *Voluntary Admission.*

In this case only a statement from the Inspector of Mental Hospitals is required. This form of admission only obtains in the private hospitals.

The three big public hospitals which I had the opportunity of visiting in the Free State were mostly built on the block system. This has the advantage of being cheaper to build and more economical to run than the "colony" system. The latter system would, however, seem to provide greater amenities for the patients. For example, I cannot say that it appealed to me to see the patients herded together in big dining-halls seating several hundred. One of these—at the Mental Hospital in Cork—seats not less than 860 people. Within the limitations imposed by this barrack form, if I may so call it, everything possible is done to make the patients happy and comfortable.

One distinguishing feature of the Free State Hospitals is their system of organized games for patients. I was informed that patients not confined to bed, who could not or would not work, were daily occupied with some form of game. Out of doors they played croquet, tennis, and even football and handball; indoors the chief amusement is billiards. In Portrane Mental Hospital there is a cinema show once a week in winter and a concert or theatre show once a month throughout the whole year.

A very important part in the treatment of the insane is occupation, but nowhere is this given too big a place; Sisyphean work or work merely for show is not evident. The patients are occupied in farming or in workshops, as in Sweden. Dr. McCarthy, Superintendent of the Mental Hospital in Cork, told me that he treated cases of dementia præcox in bed for two to three months after admission, then he put them to work. In some hospitals—Portrane Mental Hospital and Belfast Mental Hospital—I was shown small shops where the patients can buy tobacco, sweets, etc., with their "diligence money." In the Belfast Mental Hospital the shop is open to visitors. In this hospital the voucher system is in operation.

A characteristic of the Irish method of treatment is the almost complete absence of restraint; the only evidence of this in the Irish Free State is isolation. Rather gloomy padded rooms are to be seen. The only—if very essential—merit of these rooms seems to be that the patient cannot injure himself. Even prolonged baths are regarded as a form of restraint, and must be reported to the Inspector of Mental Hospitals. I was told that they had been misused by the staff as a means of punishment. At the Belfast Mental Hospital no method of restraint is used. This has its drawback, as the observer cannot help noticing on looking through the 1928 report of this hospital. In the table showing the causes of death he will find 12 cases under the heading, "Exhaustion from mania or melancholia, not caused by other nervous disease." The total number of deaths during the year was 167. In Swedish nomenclature this would be put under the heading of "Insanity." As a comparison I may mention that under this heading in the

1928 report for all the Swedish Mental Hospitals there were 15 cases (suicides not included), and the total mortality figure was 744.

The medical and curative treatment is, on the whole, the same as in Sweden. At the Grangegorman Mental Hospital Dr. Fitzgerald is especially interested in the treatment of epilepsy. He divides the patients into different groups, and treats each group for three months with a different anti-epilepticum. The patients who, after this period, do not show any improvement are transferred to another group for three months, and so on. In this way he is able to find the best treatment for each patient.

It was a novelty, at least for me, to see the *solaria* in the Grangegorman and St. Patrick's Mental Hospitals. The solaria are verandahs completely covered with a special glass, which permits the ultra-violet rays to pass through. At the St. Patrick's Mental Hospital this is used more especially for melancholic patients.

The Irish hospital staffs seem to have a very sound training—at least as regards the theoretical part. Their written examination is under very close vigilance. The examinees are given a paper of eight questions, of which six must be answered within a time limit of three hours. The questions are set by the Royal Medico-Psychological Association, and the papers are returned with the candidate's number only.

It is, however, noticeable that the staff, in spite of their sound training, are not allowed to give injections, and my Irish colleagues were surprised when I told them that we, with full confidence, allowed our staff to give injections, subcutaneous and intramuscular. The reason for their point of view seemed to be the fear of abuse. The Irish Free State employs only male nurses in the male wards, the reason given for this being to avoid erotic complications. But in the mental hospital in Belfast there is a female staff in the male wards.

As I said in my introduction, I had an opportunity of visiting two private hospitals, namely, St. Patrick's Hospital and the House of St. John of God, both in Dublin. The former, which is Ireland's oldest mental hospital, was founded in 1746 by a donation of Jonathan Swift, and contains 171 beds. As one would expect, it has an old-fashioned appearance, which modernizing improvements have not eliminated. The comfort to which the English upper classes are accustomed outdoor as well as indoor, is here represented as far as is possible in a hospital. Dr. Leeper, the Superintendent, lays stress on modern physio-therapy, ultra-violet rays, etc. There is a special room for this purpose, as well as the solarium which I have mentioned before.

The House of St. John of God is owned by a religious order, but admits patients of all denominations. Most of the patients are admitted voluntarily. The hospital, which accommodates 150 male patients, is not as pretentious as St. Patrick's Hospital, but is very neat and well organized. The cost of maintenance is £3 3s. per week for first-class accommodation, and £2 2s. for second-class. (In St. Patrick's Hospital the lowest charge is £4.) One detail which struck me particularly here was the lighting system in the large courtyard. There are two big electric lamps of 1,000 candle-power each, thus making it possible for the patients to be out of doors after dark. Owing to the mildness of the Irish climate this is possible till late in the autumn.

The Central Criminal Asylum at Dundrum, not far from Dublin, is not very different from the ordinary mental hospitals, except that it is surrounded by high walls and that its patients wear uniform. Precautions for safety are very discreetly concealed, and the patients are mostly given the same comforts, work and recreations as in an ordinary mental hospital. On my visit to the hospital there were 117 patients (98 men and 19 women). One ward has been completely empty since the Free State and Northern Ireland separated.

In contrast to the public hospitals I visited in the Free State is the Belfast Mental Hospital, mostly built on the "colony" system, its buildings scattered over a wide area on beautiful and hilly ground. It reminds one more of a Swedish village than a hospital. In connection with the hospital there is a big farm well stocked with cattle, pigs and poultry. The villas, which are more like private houses than hospital buildings, contain about 80 beds each. Though the hospital would appear to be overcrowded, there was no diminution in the patients' comfort or lack of care in their treatment. Everywhere there was a minute attention to order and cleanliness (the latter struck me particularly), due to an excellent hospital staff, good hospital discipline and up-to-date equipment. The walls are mostly tiled, which

is more hygienic than painted walls and more durable. The coldness and lack of comfort which these tiled walls usually give is neutralized by a happy choice of colour—a warm reddish brown. Obviously the patients were better qualified for indoor and outdoor work than is the case in Sweden. For example, I was told that there were 100 patients occupied in farming, and the hospital laundry employed five laundresses and 36 female patients—a considerable number when one realizes that the total number was not more than 1,350 patients. Probably some of these patients could have lived outside the hospital, and earned their own living. In Sweden we usually follow the principle that a patient should be discharged as soon as he can live outside the hospital and earn a living. Work in the hospital will never be for the individual the same as earning his or her own living outside, and only outside the hospital can the improving patient recover his full self-confidence.

The paper gave rise to a lengthy discussion, in which the majority of the members took part.

Dr. GAVIN and Dr. DONELAN disagreed with the writer's statement that alcoholism played any considerable part in the production of insanity in Ireland.

Dr. MARTIN stated that in Donegal cases attributable to alcoholism had become comparatively rare.

Dr. GREENE and Dr. FITZGERALD agreed with Dr. LOBERG's view that mental nurses and attendants might be allowed, under proper supervision, to give hypodermic injections and to conduct similar nursing operations with which hospital trained nurses were familiar.

This view was opposed by Dr. DONELAN, Dr. MILLS and Dr. DWYER, who pointed out the dangers of abuse.

Dr. DOROTHY GARDNER stated that epileptic patients were segregated in the ward of which Dr. LOBERG spoke. She also stated that during the past few years an unusually large number of extremely exhausted patients had been admitted to Purdysburn Mental Hospital, and that, had these patients been sent in earlier, the death-rate would undoubtedly have been lower.

Dr. GAVIN and Dr. MILLS disagreed with Dr. LOBERG's suggestion that patients were kept in mental hospitals who might be able to make a living in the outside world.

Dr. NOLAN, Dr. GREENE and several other members expressed their disappointment that Dr. LOBERG's itinerary should have been so restricted, and hoped that he would find an opportunity to pay a more extended visit.

The meeting expressed its indebtedness to Dr. Dwyer, who was largely responsible for Dr. LOBERG's visit, and to Herr Ericksson, the Swedish Consul, for his kind assistance in many matters connected therewith.

This terminated the proceedings.

A PSYCHIATRIC VISIT TO BERLIN.

By HENRY HARRIS, M.D., D.P.M.

I. INTRODUCTION.

AFTER a visit to Berlin I submit a number of facts and impressions about matters of psychiatric interest. My observations extend beyond the confines of clinics and hospitals, just as psychiatry itself does, but I hope they will be none the less suggestive and helpful to psychiatrists whose ambitions, purse or ingenuity allow them to visit this city.

I offer—

- (a) A few suggestions on travel and language.
- (b) My impressions of—
 - (i) Clinics, institutions and institutes of psychiatric interest.
 - (ii) Schools and other arrangements for mental defectives.
 - (iii) Speech clinics and speech psychiatry.

- (iv) **Sexological matters**, birth control and marriage advice clinics, the Institute for Sexual Sciences, also a note on homosexuality, which in its overt form is more easily observed and studied in Berlin than in any other European city.
- (c) Some random suggestions on the art of living in Berlin and on its amenities and customs.

2. TRAVEL TIPS.

The most convenient route is the overnight one *via* Harwich and the Hook of Holland. Leaving Liverpool Street at 8 p.m. you get a night's sleep and arrive in Berlin at 5.30 p.m. the next day. Incidentally, for sea-sickness I can recommend eight lumps of sugar in hot coffee—before the event. For travel anxiety—or as an additional reinforcement against sea-sickness—try one crushed sandoptal tablet before the sweetened coffee. Being on holiday I varied the journey by travelling from Southampton to Bremenhaven on the "Bremen." At a cost of £6 10s. I was able to travel first class and to live for 20 hours like a millionaire.

As to language I found the linguaphone set useful, and played the entire set once over on the night before I left for Berlin.

For finding one's way in Berlin, the most convenient pocket guide is Griebens', obtainable for 4s 6d. at "Geographia," 55, Fleet Street. *How to be Happy in Berlin*, by John Chancellor, published by Arrowsmith at 3s. 6d., helps one to appreciate the amenities of Berlin.

Hotels are somewhat cheaper than in London but dearer than in Paris or Vienna. For a short stay I am inclined to recommend a hotel. I myself stopped at the Pension Monopol, Berlin W. 15, Kurfürstendamm 67, where I had bed, bath, breakfast and telephone for 7s. a day in what is now the most elegant and important street in Berlin.

3. CLINICS AND INSTITUTIONS.

Post-graduate work is organized at the Kaiserin Friedrich-Haus, N.W. 6, Luisenplatz 2-4. This is near the Charité, the great teaching hospital of Berlin. All courses are held in German and a yearly handbook is issued free. To work in Berlin one must know some German—unlike Vienna, where one requires little or none.

This building contains a number of permanent exhibitions. There is an interesting exhibition of diagrams and pictures designed for health propaganda. Especially valuable to general practitioners is a permanent exhibition of drugs and appliances—an idea which we might well copy in this country. Here are exhibited the pharmaceutical preparations of all the German firms, and on ledges underneath one finds relevant advertising literature, so that in a few moments one can collect literature on all the drugs that happen to interest one.

Two of the most important mental hospitals in Berlin are those at Dalldorf and at Berlin-Buch. The Dalldorf hospital is one of a group of institutions supervised by Dr. Bratz, and known collectively as the Wittenauer Colony. The vast majority of the patients are contained in this central institution, which is an old but solid building built on the square with its courts inside. There are three subsidiary institutions, *i.e.*, a home for mentally defective children, a home for inebriates and drug addicts and a home for male psychoneurotics. In all there are about 1,800 patients to 16 doctors. The optimum number of patients to each doctor is considered to be 100.

Over 400 patients—about one-fifth of the hospital population—are boarded out under a system which was founded in Dalldorf about forty years ago. This has been extended recently, and it is hoped that in a few years a quarter of the total number will benefit by it. Patients are boarded out in their own homes, with strange families, and in special homes accommodating from 4 to 18 patients, some with members of the staff. A doctor assisted by a social worker is detailed to visit them regularly. The hospital pays up to half of the institutional cost per head. The home contributes the rest in return for work done, and it has been found that a considerable saving of money has been made.

The types that have done best are :

- (1) Defectives who have been either unstable or psychotic, comprising about 50% of the total number.
- (2) Mild chronic schizophrenics.
- (3) Cases of malaria-treated G.P.I.

Alcoholics do not seem to do so well. The possibility of founding a colony of homes boarding mental patients somewhat after the Gheel pattern has also been considered.

My visit to the large mental hospital at Berlin-Buch was rendered ineffective owing to an unfortunate misunderstanding. After making arrangements a week before, I found on arrival that I must produce either an official permit to visit or else my passport. Incidentally, to be completely safe in Germany one ought to carry one's passport with one. I was cordially invited to visit next day, but a flying visit to Hamburg prevented acceptance.

However, I was fortunate enough to be passed on to the Kaiser Wilhelm Institute for Brain Research, which is closely associated with the asylum and is near by. It is here, I believe, that Lenin's brain has been sectioned. It contains certainly the most remarkable laboratories that I have ever had the opportunity of visiting. It was founded in 1928, and is directed by Prof. Vogt, assisted by his wife, and by Prof. Bielschowsky. It accommodates twenty research workers, each with his own department, assistants, technical workers, etc., and new departments are still being added. The building and everything in it is the last word in modernity.

Dr. Eberhard Zwirner, psychologist, is doing important research on speech. This I propose to discuss later. Dr. Riegele showed me through the section-cutting rooms with its elaborate microtomes and numerous technical assistants, each doing with infinite precision a minute part of the work of making a section. This infinite precision is typically German—and rather awe-inspiring. No compromise is made. The work is done either well or not at all, but one feels that perhaps occasionally "ils se noient dans un puits"—the wood is not seen for the trees. There is a printing press in the basement, and here is printed the *Journal für Neurologie und Psychologie*, the official publication of the Institute. Frau Vogt was particularly courteous to me, made many illuminating remarks and seemed keenly interested in English work.

I also visited a three-storey block in which is housed the pathological service to the Berlin-Buch group of hospitals, of which the asylum was only one part, the entire group comprising about 7,000 in-patients. There also I was struck by the extraordinary precision in everything, from the reception of the corpse to the mounting of the section. I had a fascinating chat with Dr. Ostertag on the political situation in Germany.

The University psychiatric clinic is at the Charité under Prof. Bonhoeffer, and has its own self-contained block, including a ward for children.

Prof. Bonhoeffer was at the moment ill, but I had an interesting conversation with his assistant, Prof. Creutzfeldt. His own view-point is predominantly that of neurology and pathology. He explained that psychiatry in Germany has many schools, each radiating its own view-point. That of Berlin derives from Wernicke, a pathologist and intuitive psychologist, and from Kraepelin, a clinical psychiatrist, and is now manifest in Bonhoeffer, whose interest is predominantly that of the pathologist.

4. A WORD ON THE ARRANGEMENTS MADE FOR MENTAL DEFECTIVES.

These I have discussed in greater detail in *Mental Welfare*, January, 1931.

There are 49 self-contained special schools in Greater Berlin, which accommodate about 2½% of the total school population. They are mixed schools and each comprises six grades. Most of the teachers I saw were men of a fatherly type. There are also "Sammeklassen," or occupation centres, for imbeciles of low grade. In addition there are in some of the ordinary schools special classes for "Schwererziehbare," or "difficult" and psychopathic children—nine schools in all Berlin.

The methods of intelligence-testing employed are—that of Rossolimo of Moscow, the modification of Rossolimo's method, by Bartsch of Leipzig, and lastly the German variation of the Binet-Simon tests by Bobertag.

Certifiable defectives are distributed throughout the mental hospitals. The only institutional accommodation specifically reserved for them that I learned of was the "Erziehungsheim" at the Wittenaucr colony, where accommodation is provided for 160 defective children. Here the occupational treatment is particularly good.

I am specially indebted to Herr Schulrat Arno Fuchs, the leading authority on special schools, for his courtesy and helpfulness.

5. SPEECH PSYCHIATRY.

A few words on speech clinics and laboratories, and on speech psychiatry generally, a subject which is lamentably neglected in this country.

I visited the following places :

- (a) The University Clinic for Speech Disorders at the Charité, where I met Prof. Flatau and Dr. Gutzmann.
- (b) The Kaiser Wilhelm Institute for Brain Research, where Dr. Zwirner, head of the Psychological Department, is doing important work on speech.
- (c) The phonetic laboratories at the University of Hamburg, where I met Prof. Panconcelli-Calzia.

The clinic for Speech Disorders at the Charité is under the direction of Prof. Flatau, and is a department of the Ear, Nose and Throat Clinic. Flatau is now over seventy years of age, and unites a Gallic wit with German stolidity and balance. He has an hypnotic personality and an irresistible way with children and even with adults, whom he treats like children. For the children he always keeps a bottle of boiled sweets near at hand, and he has to a marked degree the knack of distracting those who are anxious.

As a voice specialist the emphasis in his work is perhaps more laryngological than psychological. He has invented a series of well-known instruments for investigating the various aspects of voice and speech, and has recently devised a "strobe-endoscope," which he proposed demonstrating, to my regret, the week after I was due to leave Berlin.

His clinic is held every day and is always full. Many of the patients come daily, and the aim is apparently to establish a social milieu where they are continuously observed and influenced. One room is devoted to children of all ages, who form a howling, happy mob ; another to young adults, mainly stammerers ; another to patients with special defects requiring individual rather than group training ; another section is for new cases, and for those who are having direct treatment of the mouth or larynx.

Prof. Flatau also allowed me to accompany him on a visit to one of the special speech schools. This particular school in the Neukölln suburb had been founded at his instigation some years before. One of the specialities of the school was instruction in the mouth-organ, and the school orchestra had given a number of public performances. This has proved an interesting way of training breath control and a sense of rhythm, giving the individual child at the same time a social interest. In addition to the very systematic curriculum the children are encouraged to indulge in spontaneous activities of every kind. While I was there a Punch and Judy show was erected in a class-room, and one of the children gave a remarkably witty exhibition, while the other members of the class spontaneously heckled and joined in the dialogue.

If I were to be hypercritical I might suggest that the danger in speech classes or schools of any kind is that too much direct attention may be paid to speech. It seems to me that speech defectives should not be allowed to become too speech-conscious.

Leaving the school, Prof. Flatau drove me ambitiously in an asthmatical two-seater to a fashionable riding-school. There he rode his daily hour, while I drank coffee on the balcony at one end of the large hall. At the other end of the hall was a colossal mirror in which riders could see how they shaped.

Dr. Eberhard Zwirner, in charge of the Psychological Department of the Institute for Brain Research, is an immaculately groomed, broad-shouldered, fair-haired young Nordic, obviously alert and efficient though self-deprecating in manner. Zwirner is probably one of the most promising and brilliant of the younger men working on the scientific aspects of speech. He has devised a valuable method by which speech can be objectively recorded without the knowledge of

the subject who is being tested. With this method he has already made a preliminary study of the speech of depressives.

The principle is roughly this: The patient is interviewed in a cosy, seemingly ordinary room, but it is a sound-proof one, with a microphone ingeniously concealed under an ornamental bracket in the wall and wired to a registering apparatus in another room. Electrical changes in the microphone are amplified and produce changes in a magnetic field in which are thirty fine strings tuned to intervals of half a tone. The vibration of these strings is photographed on a paper strip by means of a torsion milliampère meter to which is attached a concave mirror, and this forms a pitch curve. On the same strip is recorded an intensity curve obtained from the automatic registration of currents in the microphone. Simultaneously an electrical record of the actual speech is made on a cylinder or metal strip and this can be subsequently reproduced.

We have thus a record of pitch, intensity and actual voice obtained in such a way that the taking of the record does not influence the form and content of the speech in any way. As speech is a significant form of behaviour, the method promises to be of value.

I paid a flying visit to Hamburg in order to visit Prof. Panconcelli-Calzia, Director of the Phonetic Laboratories, whose reputation in speech investigation is world-wide.

Dr. Calzia—slim, with iron-grey hair and a sharp Italian profile—speaks in enthusiastic gusts and torrents, and showed me the various devices and instruments which he has used in his famous researches. I was shown a method of taking ordinary and stroboscopic films of the larynx and vocal cords in action. I was also shown a binocular head mirror, a method of autolaryngoscopy, and a film, partly stroboscopic, of the vocal cords in action. In order to get the necessary degree of illumination for his work, Dr. Calzia uses small arc lamps as his source of reflected light.

Dr. Calzia is inclined modestly to depreciate his own work and to praise that of others. He considers Zwirner to be one of the coming men on the purely experimental side of work on speech. In the realm of therapy he called my attention to Scherwdtner, of Vienna, whose work has been somewhat neglected, and seems to offer interesting possibilities in the psychotherapy not only of stammering but of the psychoneuroses generally. So much so that I hope shortly to publish a short note on the matter.

There is no doubt that the study of speech, from both the scientific and the therapeutic viewpoint, has been grossly neglected in this country, especially when one realizes that there are more children with speech defects than there are mentally defective. All of these are heavily handicapped socially, and being usually of superior intelligence are wasted to the community. When treatment is delayed their cure becomes increasingly difficult to such a degree that a complete cure of stammering is comparatively rare even with the most optimistic therapists. As the commoner speech defects are undoubtedly vocal manifestations of the psychoneuroses they enter into the field of the psycho-therapist, though indeed many psycho-therapists have hardly realized this.

Germany has large clinics under men of professorial status devoted to speech study and therapy. It is a commentary on our ignorance in these matters that venerable English-teaching hospitals still employ elocutionists, dance teachers and advertising laymen to treat their speech cases for them. The only good work that I know of in this country is done by Miss McLeod, who works at King's College Hospital under the guidance of a laryngologist. Trained phonetically and gifted with a naturally strong therapeutic personality, Miss McLeod accomplishes work of an unusual quality.

It seems reasonable to treat such disorders by a team containing under the best conditions—

- (1) A psychiatrist for preliminary active treatment;
- (2) A laryngologist to eliminate, assist and treat any organic defect present and to devise exercises for such disorders.
- (3) A phonetically trained worker to devise and supervise whatever speech or relaxation drill is necessary.
- (4) Lastly, a social worker to supplement the work of the psychiatrist and his phonetically trained assistant.

Perhaps the more practical plan is to have a psychiatrist aided by a phonetically trained worker, his own social workers and a sympathetic laryngologist to whom he may refer cases.

It seems to me that the emphasis should rest on the psychiatric side. German work, so far almost the only work done, rests too heavily on the laryngological side, and speech clinics in Germany still form a part of the ear, nose and throat departments rather than of the psychiatric departments. American work, I understand, is paying more attention to the social and psychological aspects, but the psychiatrists have not yet gained full charge of the speech clinics.

6. SEXOLOGY.

I am treating matters of sexological interest under two headings :

- (1) Birth control, marriage and advice clinics, and Dr. Hirschfeld's Institute of Sexual Science.
- (2) Overt homosexuality as a social phenomenon among presumably non-neurotic individuals.

Dr. Norman Haire kindly furnished me with some invaluable letters of introduction. One was to Dr. Kurt Bendix, chief medical officer of the Berlin national insurance arrangements, a leader in matters of birth control and the organizer of post-graduate courses in the subject. Five clinics are held under his auspices, and the one I visited was beautifully equipped. The clinics are staffed by women doctors helped by social workers. Although most of the work is contraceptive, the clinics also act as marriage advice clinics. Contraceptive advice is given to both married and unmarried women.

Another letter brought me to Dr. Hans Lehfeldt, whose varied experience in contraceptive matters makes his opinions especially valuable. It was interesting to find that in his experience the Graefenberg ring is not quite the almost miraculous solution of contraceptive problems that it was at one time expected, and that the technique still has a number of disadvantages.

I am tempted to digress a few moments from sexological matters to discuss a trend in modern medicine which Lehfeldt represents in Berlin. Lehfeldt is a pupil and co-worker of Aschner of Vienna, a copy of whose book, *Die Krisen der Medizin*, is now in the Library of the Royal Society of Medicine. Aschner is one of a widespread group of German and Austrian physicians who are indicating what is slowly becoming manifest as a strong swing of the pendulum in medicine from the trends of the last half-century. They lay emphasis on the individual and individual types of constitution and reaction.

Dr. Lehfeldt demonstrated to me on several of his patients a technique of blood-letting by means of a specially thick needle which he has devised, which is thrust into the vein and enables one to draw off a pint of blood in a few minutes. Also at my request he demonstrated the technique of the leech—a technique which was not taught me in my student years. It seems to me that these and similar methods of influencing blood content and reflex processes generally may become of increasing interest to the physician.

To return to sexological matters, another letter brought me to the Institute of Sexual Science—the only one so far as I know in the world. Unfortunately Dr. Magnus Hirschfeld, the Director, to whom my letter was addressed, was away from town, but I had the pleasure of meeting Dr. Abraham and Dr. Giese, who with one other doctor work under the direction of Dr. Hirschfeld and constitute the medical staff of the Institute. The Institute advises patients in every aspect of sex, both medical and legal. It arranges public lectures on sexual matters, does considerable propaganda and educational work, and also, as I understand, allows opportunities for invert to meet in the Institute and discuss their problems.

Dr. Giese showed me round a museum of articles, pictures and documents of sexual, erotic and pornographic character. These have been collected from all parts of the world, and are of priceless value and of extreme interest.

One aspect of sex that can be studied in Berlin as it can be nowhere else is over-homosexuality and transvestitism, or eonism as Havelock Ellis calls it. Transvestitism—or the perverse need to dress in clothes of the opposite sex—though often associated with homosexuality, is not always so.

In France the law, as I understand, does not penalize homosexuality, but public

opinion does, and so it is not much in evidence. In England both the law and public opinion oppose homosexuality, consequently it is more difficult to find it, and only with psychiatric training can one perceive its commoner manifestations. In Germany, however, although the law opposes it, public opinion is more tolerant. This is partly due to the fact that the average Berliner is better informed about scientific matters, and there is a larger number of people who know something of sex psychology. Like the fewer cultured people in this country who are in a similar transition stage between ignorance and knowledge of these matters, they are apt, however, to see perversion in others with little or no evidence to go on and without any knowledge other than that gained in books.

The German attitude has also been considerably influenced by Dr. Magnus Hirschfeld and his Institute. Dr. Hirschfeld has done extremely valuable work in securing tolerance for homosexuals, but I am inclined to agree with Stekel that the propagation of his views as to the innateness of homosexuality and its resistance to treatment has also done a certain amount of harm in encouraging homosexuals to glorify their homosexuality. There seems to be little point in putting a premium on homosexuality any more than, say, on anxiety neurosis, or in regarding them as among the higher achievements of culture. Complications, no doubt, of civilization, but not achievements.

Stekel believes that milder cases can often be made sufficiently heterosexual to marry, and it is a matter of everyday observation that such homosexuals do often marry and at times achieve a reasonable amount of happiness.

The first step in the observation of homosexuals in Berlin is to buy their journals. These are prohibited by law, but can be obtained at most bookstalls in the centre of the town although they are not put on view. At the other end of the arcade near Cook's on Unter den Linden is a bookstall, and here they can be bought. It is advisable to buy a newspaper in which the journals may be wrapped.

The following are some of the journals :

For homosexual men : *Das Freundschaftsblatt* ; *Die Insel* ; *Blätter für Menschenrecht*.

For homosexual women : *Die Freundin* ; *Frauenliebe* ; *Garçonne*.

In these journals will be found the addresses of the numerous homosexual cafés and particulars of the weekly dances. At these dances one sees what seem to be both men and women ; actually they are either men or women, but not both. The transvestites, too, have their own journal, *Das 3te Geschlecht (The Third Sex.)*

The cafés range from the better-class places where only respectable homosexuals resort as they would to an ordinary café down to the very low-class places where homosexual prostitutes are to be found. In one of the former one saw only men, who danced together to a small jazz orchestra. At a low-class place I and a companion were accosted by a hoarse-voiced, repulsive-looking male transvestite in a dress of pillar-box red and with long peroxide-fair marcelled hair. Under the flap of the woman's purse he carried he showed us photographs of himself dressed both as a man and as a woman.

One well-known cabaret is patronized by ordinary heterosexuals who go to see dances executed by male homosexuals, and to hear soprano songs sung by heavy-bosomed males, all in women's dress. Other male transvestites act as managers, dancing partners and as master of ceremonies, others in male clothing as barmen. The entrance hall is lined with pictures of very obviously homosexual content. The place is disliked by the more respectable homosexuals, who consider it rightly as a degrading exploitation of popular curiosity.

There are also a number of female homosexual cafés.

One cannot conclude, however, that the proportion of homosexuals and transvestites is greater in Berlin than elsewhere, but only that in Berlin it expresses itself more completely and more directly. In Anglo-Saxon countries perverse trends are more likely to express themselves in neurosis, psychosis, eccentricity or even along the socially acceptable lines of conventional conviviality in men.

The Germans have tackled these problems in a characteristically "objective" way, but my own feeling is that in the process, and especially under the influence of Dr. Hirschfeld, the homosexual has been led to think too highly of his defect. There is no need for humility, self-pity or a feeling of inferiority in the homosexual, but neither is there any justification for self-glorification. Homosexuals must be treated in the few cases where treatment is possible and tolerated where it is not

possible. Essentially the matter is one of prevention, and that is only possible where a normal and healthy sex ethic is prevalent, and where there are ample opportunities to lead a heterosexual life. The first step in the prevention of perversion is the treatment of sexual maladjustments in the parents.

7. CUSTOMS AND AMENITIES.

Berlin prides itself on being a city of workers. The Berliner keeps on until the job is finished. There is no interruption of work to have a cup of tea, no knocking off at 5 p.m. promptly. He tends to laugh at the Englishman's cavalier manners and casual attitude. But there is some ambivalence in this attitude, for the next moment he will deprecate his own seriousness and praise the English "week-end," the English sporting spirit and English practicality. Perhaps it is because he feels that he is so often being objective in a very subjective way.

In German academic circles there is an exaggerated cult of impersonality and an unreasonable disrespect for "façade" and wit, which are, after all, the indications of a leavening imagination.

Berlin leans towards America rather than towards England. It is a city of strident young men—intense, uncharitable perhaps, but efficient; men who are sometimes only sufficiently cultivated to be intolerant. The Berliner is reasonable, and therefore at times brusque and uncharitable.

Berlin has two central areas, two "West Ends." On the one hand, there is the area which includes Unter den Linden, crossed by Friedrichstrasse; on the other hand in the far west the Americanized "Kurfürstendamm," Berlin's "Broadway." Berlin itself is architecturally dull except in spots, but in its suburbs experiments in modern architecture have been made on a large scale.

As to the amenities of Berlin, the cafés are not as cosy as in Vienna, but the music is generally good and the prices and customers democratic. Very many of them specialize in a unique "*décor*" and look like coloured slices out of a very modern revue, always vivid but not always attractive. The Romanisches Café, a centre for artistic and literary folk, the Café des Westens, the Adlon or the Bristol Hotel for tea—these are only a few of many places worth visiting. And no tourist is ever allowed to leave Berlin without visiting the famous "Haus Vaterland," where one can have the food and drink of seven different nationalities under one roof.

Restaurants are many and of all nationalities. The Baltikum, Augsburgstrasse, 13, is a Russian restaurant where one can obtain a middle-sized bottle of vodka and a large meal for a small sum, and at the same time enjoy the music of a Russian balalaika orchestra.

A convenient meal for English visitors is Frühstück, or breakfast, which is served anywhere up to 5 p.m., and consists of eggs, ham, coffee and rolls, all for a shilling or eightpence.

With regard to tipping, 10% is automatically added to your bill for service, so do not tip unless you have been given some very small change or the place is very fashionable. Hotel bills likewise include 10% for service. Taxi men do not expect a tip but they deserve one, and anything up to 10% will make them more than happy.

The 'buses have only two tariffs—"einfach" or simple, where for 25 pfennigs one can travel any distance provided one does not change; and "umsteigen," where for 30 pfennigs one is entitled to change once only and that within the hour. Trams and underground railways have a uniform tariff of 25 pfennigs and one can change from the one to the other.

Theatres and operas I had to postpone for another visit. But the wittiest variety theatre in Berlin is the "Kabarett der Komiker," where one can book a table and have a meal in the auditorium.

Pensions have a technique all their own. You are given three keys—one for the door of the house, another for the door of the pension-flat and another for your room. The key of the outer door must be turned twice in the bottom keyhole and once in the top one. After 8 p.m. the lights go out in the entrance hall, but if you press a push they go on for two minutes, giving you time to get to your pension and room. After 8 p.m. the *conciierge* goes off duty, and it is impossible to get into any house, flat or pension in Berlin after this time unless your host has

arranged to come down and open the door for you at a certain time or unless you can ask him by telephone to do so. These details may seem trivial but they are certainly not so, and my ignorance of them was responsible for one or two misadventures, and for a most exciting but miserable evening in Berlin which nearly lost me a good friend.

It is for this reason that I advise an hotel rather than a flat for those who are not staying long in Berlin.

I need not enumerate the places that one might visit; Potsdam, Wannsee with its beaches for sun-bathers, etc., all these will be found in the guide-books. I enjoyed the privilege of being shown over the Stadion—where the next Olympic Games are to be held—by Herr Krotki, who is leader of the ju-jitsu movement in Germany and an instructor at the Sportsforum. The Sportsforum, near by, reaches the very peak of Germany's intense physical culture activities and contains the very last word in equipment. The "boxing" room, for instance, contains 18 roped-off rings with punch balls of every conceivable size, weight and type.

With Herr Krotki I visited two of the more prominent ju-jitsu clubs, and was amazed and amused to find that I was able to cope more than adequately with younger and stronger opponents who were in relatively strict training. This of course was not due to my athletic powers, which are very slight. The real reason throws a light on German mentality and reflects only moderate credit on my very limited skill. My own training had been with Japanese wrestlers along orthodox Japanese lines. The Germans, with their characteristically objective approach, have attempted to found a new ju-jitsu on a logical basis and have neglected the empiricism of the Japanese, who have been evolving this art for many years. The result is that the German ju-jitsu of the moment is a highly energetic and acrobatic but somewhat unsubtle method of conflict, which may be an excellent exercise, but is not ju-jitsu. No doubt when they stumble on more correct methods, as they are now on the point of doing, they may well be, with their brains, physique, extraordinary enthusiasm and application, unbeatable.

"Nacktkultur," or the cult of the nude, is a large and increasing movement in Germany, and one by no means confined to the crank element in the population. In Berlin alone there are upwards of 10,000 adherents, in addition to a vast and increasing fringe of theoretical adherents. Germany, generally, wears fewer clothes these days.

Although a believer myself in the physical and psychological values of the movement, I felt rather sceptical of its practical possibilities. However, in Herr Krotki's company I visited one of the many beautiful indoor bathing establishments in Berlin. Most of the public baths in Berlin reserve certain evenings and certain hours for the various nudist organizations.

Herr Krotki introduced me as his guest and vouched for my integrity. I understand there is a careful scrutiny of all who join these organizations or attend their meetings, and those whose motives are considered objectionable or perverse are promptly eliminated. I was provided with soap, borrowed a towel, and proceeded to one of the very sumptuous large dressing-rooms, provided with lockers for each individual. On this occasion no distinction was made between the sexes, and my locker happened to be in the ladies' dressing-room, where my street clothes were locked in by a woman attendant. We were then required to wash and soap under hot and cold sprays before proceeding into the large hall.

There we found 500 to 600 men and women of all ages, sizes and figures. To my surprise all my anxiety disappeared with my last garment. Most of those present were swimming, diving, splashing, some were sitting on marble slabs by the side and chatting; in side balconies there were classes in rhythmic exercises and dancing.

Of the people I saw, all seemed eminently normal. There was none who to my psychiatric eye suggested neurosis, abnormality or crankiness. I must confess that never in my life have I seen so much genuine *joie de vivre* as I saw here, and so completely free from any *arrière-pensée* of prurieny.

The actual experience of partaking in such a meeting seems to have a peculiar psychological effect on one, and one which I must confess I had not been able to predict in myself. My experience convinced me completely that there is really nothing impracticable about the movement. No doubt it will grow even in English soil, but not until a large number of English men and women have had their initiation abroad.

8. CONCLUSION.

I must ask to be excused for colloquial, hurried and perhaps careless writing. But I do not apologize at all for dealing with subjects outside the field of institutional or clinic psychiatry. Part of the psychiatrist's job is to avoid confining his interests to "shop." He must be wise at least a little, and wisdom was never built on technicalities. I hope to persuade at least a few psychiatrists to go abroad who might otherwise not do so.

For letters of introduction and practical suggestions which helped me to make most use of my time, I wish to thank Dr. J. R. Lord, Dr. Norman Haire, Mr. Stephen Jones of the Phonetics Department, University College, Mrs. Welfare of the Central Association for Mental Welfare, and Mr. Tricker of the Budokwai Ju-jitsu Club.

THE BOARD OF CONTROL.

PURSUANT to the provisions of Section 11 of the Mental Treatment Act, 1930, the Board, with the approval of the Minister of Health, have appointed the following to be Commissioners:

Mr. A. E. Evans, M.B., D.P.H., Mr. S. E. Gill, M.D., D.P.H., Mr. E. O. Lewis, D.Sc., L.R.C.P., Mr. J. W. W. Adamson, M.D., Surgeon Rear-Admiral J. F. Hall, C.M.G., K.H.S., R.N. (ret.), Surgeon Rear-Admiral E. T. Meagher, R.N. (ret.), at present Medical Inspectors; and Mr. C. F. Penton, Barrister-at-Law, Miss I.M. C. Duncan, B.A., LL.B., Barrister-at-Law, Surg. Capt. H. C. Devas, R.N. (ret.), Miss Isabel G. H. Wilson, M.D., D.P.M., and Miss R. Darwin (part-time).

NOTICES BY THE HONORARY LIBRARIAN.

The following journals are circulated from the Library:

American Journal of Psychiatry.
The Psychological Review.
Journal of Neurology and Psychopathology.
L'Encéphale.
International Journal of Psycho-Analysis.
Journal of Abnormal Psychology.
Mental Hygiene.
Journal of Nervous and Mental Diseases.
Revue Neurologique.
Archives of Neurology and Psychiatry.
Journal of Comparative Psychology.

Members are requested to return all long-outstanding books to the Library as soon as possible for the purpose of cataloguing.

Members are invited to make gifts to the Library to assist in building up a historical collection of psychiatric works from the seventeenth century onwards. In selecting books for presentation, members are advised to consult the Hon. Librarian to see what books the Library possesses and those it is desirable it should possess.

The new accommodation for the Library at the B.M.A. House is available for use. There is now ample room for the expansion of the Association's collection of books.

Any communications concerning Books, Journals or Library matters should be addressed "Librarian, Royal Medico-Psychological Association, 19b, Tavistock Square, London, W.C. 1."

NOTICES BY THE REGISTRAR.

Bronze Medal and Prize for 1932.

Dissertations for the Association's Bronze Medal and Prize must be delivered to the Registrar by April 30, 1932.

Divisional Prizes for 1932.

Papers certified as eligible for this competition must be forwarded to the Registrar not later than April 30, 1932.

Gaskell Medal and Prize.

The examination for the Gaskell Medal and Prize and the examination for the Certificate in Psychological Medicine will be held at the Maudsley Hospital, Denmark Hill, London, in May, 1931.

Applications for entry to each examination to be made to the Registrar, St. Andrew's Hospital, Northampton.

There is no fee for entrance to the Gaskell Prize Examination.

The entrance fee for the examination for the Certificate in Psychological Medicine is three guineas.

The Nursing Badge.

This Badge, founded at the Annual Meeting (Wakefield), July 11, 1928, can be obtained from the Registrar. The application must be made on a special form and accompanied by 6s., which includes the cost of engraving the name and registration number of the holder.

The badge is issued for general use, but especially for occasions when the nursing medal is inconvenient or inappropriate. It is fitted with a brooch-pin for women and a crescent-shaped button-hole stud for men.

For full particulars of the Association's Medals and Prizes and the Certificate in Psychological Medicine see "Year Book" prefacing the January number of the Journal.

NOTICES BY THE GENERAL SECRETARY.

Appointment.

JARRETT, R. FITZROY, F.R.F.P.S.Glasg., to be Medical Superintendent, Kent County Institution for Mental Defectives, Leybourne Grange, near Maidstone.

The Maudsley Lecture, 1931.

Owing to unforeseen circumstances, the 12th Maudsley Lecture by Sir HUBERT BOND, K.B.E., has been postponed until the November Quarterly Meeting.

NOTICES OF MEETINGS.

The *Ninetieth Annual Meeting* of the Association will be held in Dublin on July 7, 8, 9, 10 and 11, 1931, under the Presidency of Dr. R. R. LEEPER.

The incoming President will deliver his address on Wednesday, July 8.

Scientific Meetings will be held on the mornings of July 9 and 10.

The Annual Dinner will take place on July 8 at the Royal College of Surgeons.

Members have been invited to a reception at St. Patrick's Hospital (July 8); Luncheon at St. James's Gate Brewery (July 9); dinner, by some members of the Strollers' Club (July 9, gentlemen only); performance at the Abbey Theatre (by Mrs. Leeper, July 9, ladies only); Garden Party at the Royal Zoological Gardens (July 10); reception by H.E. The Governor-General (July 10); motor trip through County Wicklow (July 11).

There will be a Ladies' Club Room.

Quarterly Meetings.—May 21, 1931, at the British Medical Association House.

South-Eastern Division.—May 7, 1931, at the East Sussex County Mental Hospital, Hellingly.

South-Western Division.—April 30th, 1931, at the Oxford County and City Mental Hospital, Littlemore.

Northern and Midland Division.—April 29, 1931, at Bryn-y-Neuadd, Llanfairfechan, North Wales.

Scottish Division.—June 5, 1931, at the Midlothian and Peebles Mental Hospital, Rosslynlee, Rosslyn Castle.

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WILLIAM CHARLES CLIFFORD SMITH.

Mr. WILLIAM CHARLES CLIFFORD SMITH, *O.B.E.*, *J.P.*, *M.Inst.C.E.*, *F.R.I.B.A.*, an honorary member of the Association, died at his home in Wallington, Surrey, on June 3, 1931. He was 76 years old, having been born on March 30, 1855, and from 1892 to 1924 he had been associated with the London County Mental Hospital Service as engineer and architect.

Mr. Clifford Smith was educated at the Anglo-French College and privately, and was trained in civil engineering by the late James Carrington Simpson, *M.Inst.C.E.*, in London and Ceylon. He served a works apprenticeship at Gateshead-on-Tyne, and had later professional experience at Saltaire and Glasgow, and in London with Maudslay, Sons & Field, whose Lambeth works by an odd coincidence occupied a site with which, when the London County Hall was erected upon it, he was again to have close relations at a later stage of his professional career. He had service under the Imperial Turkish Government at the Constantinople dockyard as chief of the technical department, an experience which gave him more than one good story to tell in after years. After the termination of that service he was appointed to be Asylums Engineer by the Visiting Committee of what were then the London County asylums, commencing his work in September, 1892. It was to be his duty to advise on all engineering and building works, and to prepare plans, specifications and estimates in particular for the three institutions at Banstead, Cane Hill and Claybury, and to act in an advisory capacity for the two at Hanwell and Colney Hatch, where at that time resident engineers were serving, but on the understanding that on the retirement of those officers full responsibility for those institutions would fall to him. The scope of his duties, however,

was soon enlarged ; he was associated with the engineering equipment of new hospitals designed by the late G. T. Hine at Bexley, Horton and Long Grove, and he was entirely responsible for the planning of the Manor Mental Hospital, the Ewell Colony and West Park Mental Hospital at Epsom, and of the Maudsley Hospital at Denmark Hill, for the construction of a central station for the supply of electricity and water to the London County Council's institutions at Epsom, and for substantial works of improvement, remodelling and extension at Hanwell, Colney Hatch and Banstead mental hospitals, as well as for works necessary, during 1921, to adapt the Manor Mental Hospital for the use which it now serves as a certified institution for the mentally defective. The war brought him new responsibilities ; he was actively engaged in the structural rearrangements necessary for the adaptation for service as war hospitals of three of the Epsom institutions (Horton, The Manor and the Ewell Colony), and for their subsequent reconditioning on return to civil use, and it was for his service in this connection that he was awarded the O.B.E. At his retirement in 1924 he was responsible for the structural and engineering maintenance of fifteen institutions for cases of mental disorder and mental defect, accommodating nearly 20,500 patients, instead of the five institutions for 10,175 patients with which he had first been associated in 1892. The London County Council in 1919 and subsequently year by year decided by special resolution to retain his services beyond the usual retiring age of 65, which he reached in 1920, pending the completion of important works upon which he was then engaged, the chief of which was the erection of West Park Mental Hospital, then once more under way after a long pause due to war conditions.

"Cliffy," as his older colleagues and familiars in the London service delighted to call him, was a man pre-eminently fitted for the position he held. He was above all things a practical man of affairs, he was gifted with a large measure of shrewd worldly wisdom, and he had an accurate eye for detail. He had grown up with the London County Mental Hospital Service, and there was very little that he did not know about his own side of it. The Council's Mental Hospitals Committee had learned to repose confidence in his judgment and to accept his advice, realizing that he was whole-hearted in his devotion to the interests of economy and efficiency in that section of the service for which he was responsible. Their confidence was not ill-placed, and when the time for parting came it was felt that the Service had suffered a real loss. Mr. Clifford

Smith was not merely the respected senior officer, he was personally popular, and he brought to his relations with his Committee and his colleagues, medical and other, a *bonhomie* which endeared him, and a *savoir faire* which carried him far. He was, indeed, a man of strong personality, but his strength was tempered with a saving grace of humour and sweetened with a disarming friendliness. His manner was inimitable. It was something of an education to see "Cliffy," with the aid of a small ivory rule which always appeared from his waistcoat pocket upon such occasions, demonstrating the virtues of one of his plans. The bright blue eye which he would cock quizzically at his questioner, the assured flourish of the rule, the imperturbable address, even the tilt of the reddish beard, which gave him a little of the air of a Captain Kettle, all helped to carry conviction. But it is fair to say that there was generally solid merit in what was submitted, and that the wisdom of the serpent, which was sometimes playfully attributed to the subject of this note, was really unmingled with serpentine guile.

With the thoroughness which characterized him, Mr. Clifford Smith early in his career had made himself acquainted with developments in mental hospital design in other countries, and had studied at first hand features of planning and construction in various parts of Europe, some notes of which were published. He became a whole-hearted advocate of the system of detached villas, which he was able to embody in his designs for the Ewell Colony for Epileptics and, later, for West Park Mental Hospital, the latest large institution of its kind to be provided by the London County Council.

After his retirement Mr. Clifford Smith continued to be busy with local government in his home district, as a Justice of the Peace for Surrey, a member of the Beddington and Wallington Urban District Council and of the Joint Isolation Hospital Board, and Chairman of the Wandle Valley Joint Sewage Board. In spite of some impairment of his health following a severe operation a few years ago, he continued these public activities almost until the time of his death.

R. H. C.

Part I.—Original Articles.

**THE STANDARDIZATION OF THE WASSERMANN
REACTION FOR THE USE OF MENTAL
HOSPITAL LABORATORIES.**

REPORT AND RECOMMENDATIONS OF THE PATHOLOGY, BACTERIOLOGY
AND BIO-CHEMISTRY SUB-COMMITTEE.

By W. M. FORD-ROBERTSON, M.D.,
Hon. Secretary of the Sub-Committee.

FOR many years psychiatrists have appreciated the clinical value of the Wassermann reaction, not only in diseases of the central nervous system, but in somatic infection in the psychotic and the mentally defective. As a diagnostic test for syphilis, reliance has been placed on this reaction out of proportion, perhaps, to its relative efficiency; sometimes without a full appreciation of the difficulties which the pathologist has to face in rendering the test as accurate as possible, and also of the fact that the results must be interpreted both on clinical and serological grounds. Adding to the difficulties of co-operation between the two groups of observers, there has been the fact that, owing to increased efficiency in anti-syphilitic treatment during the past twenty years, the strength of the reactions to be found serologically has become progressively less marked. Thus, it is inevitable that many of the methods employed hitherto, although at one time satisfactory and reliable, cannot now completely fulfil all the criteria of a reliable test so essential to accurate diagnosis and the control of modern methods of treatment. Further, and of even more importance from the point of view of research and of the necessity of making strict comparison of the results of one laboratory with another, it has been ascertained that very little uniformity of method exists. This lack of cohesion not only reflects upon the efficiency of the routine work and research in mental hospitals, but isolates them as a whole from the Ministry of Health venereal disease centres, in that in very many instances the methods employed could not be strictly compared. From these facts alone it will be seen that sooner or later the time was bound to come when all the requirements of a standard method should be investigated and, from among many

excellent techniques, the difficult task be faced of choosing one or a combination of tests that would serve the needs of the clinician and serologist working in the domain of psychiatry. At the time of the inception of the Pathological, Bacteriological and Bio-Chemical Sub-Committee there was current amongst its members a desire that one of the aims of this section of the Research and Clinical Committee should be to investigate this difficult and highly technical problem of standardization. Thus, after the preliminary work of the Sub-Committee on various schemes of research had been initiated, I was asked at the meeting on February 13, 1929, to prepare a memorandum on a standard method of performing the Wassermann test. This report was entirely of a preliminary nature, and intended only to form a basis of discussion. While this was in course of preparation a *questionnaire* was sent to those mental hospitals undertaking serological work, with a view to ascertaining and contrasting in some detail the methods employed by each. In order that all interests in the various branches of psychiatry should be fully represented, it was unanimously decided that all members of the General Paralysis, Mental Deficiency, and Encephalitis Sub-Committees should be invited to co-operate. Thus, on May 3, 1929, a conjoint meeting was held at Horton Mental Hospital, Epsom, under the chairmanship of Dr. J. R. Lord. In the memorandum I dealt mainly with the work of the three laboratory conferences held under the auspices of the League of Nations in November, 1922, November, 1923, and May, 1928, the latter, held at Copenhagen, being by far the most important in its results and influence upon the researches into the serology of syphilis.

The following are the resolutions, as published in the Conference's Report; they serve to indicate the trend of opinion of highly trained serologists carrying out simultaneous tests on nearly 1,000 sera:

1. The Conference, having considered the results of the blood-serum tests for syphilis according to the methods under review, notes that in the case of those which depend on directly visible changes in mixtures of extract and serum, hereinafter referred to as flocculation tests, certain new tests have been elaborated and certain others have been improved considerably since the last Conference in 1923, and is of the opinion that the best of them may be regarded as equal in value to the best of those which depend on fixation of complement. It desires, nevertheless, to emphasize the fact that, no less than the complement-fixation tests, these flocculation methods are, despite their apparent simplicity, extremely

sensitive to the slightest difference in experimental conditions, and subject to so many sources of error in connection both with the execution of the test and the reading and interpretation of the results, that they must be placed only in the hands of specially trained serologists.

2. The Conference, being of the opinion that some serological tests may have the advantage of greater sensitiveness without being absolutely specific, and *vice versâ*, and that concordance of reaction to two or more tests has greater diagnostic value than has a single reaction, recommends that, in order to secure the most reliable information to the clinician, at least two different sero-diagnostic methods should be used.

The following, namely, Dr. Harrison, Dr. Sachs and many others, consider—

(a) That, as theoretical considerations give reason to expect, some sera react to the Bordet-Wassermann but not to the flocculation tests, and *vice versâ*, and that the Bordet-Wassermann and the flocculation tests supplement each other.

(b) That strong confirmation of a weak or \pm flocculation test is afforded by a positive Bordet-Wassermann test, and *vice versâ*;

They would, for the present, prefer that one of the methods should be a Bordet-Wassermann test.

3. The Conference, having in view the necessity for constantly readjusting sero-diagnostic methods in order to obtain the highest degree of specificity, recommends that the serologist should check the accuracy of his test by regular and very frequent reference to clinical data, in consultation with the clinician, whose assistance in supplying adequate information as to the history of syphilis and the clinical particulars of the case is of great value for the interpretation of the results.

4. The Conference, having in view the fact that serological tests for syphilis are primarily for the purpose of assisting clinicians in diagnosis, in observing progress under treatment and in tests for cure, and having in view also the fact that patients frequently pass from the care of one clinician to that of another, the serum of one patient being tested from time to time in different laboratories, is of opinion that a uniform method of notation of serological results bearing approximately the same clinical interpretations would be of great value to clinicians, and proposes the following general rules :

(1) That a negative reaction should be reported as "—" or "negative."

(2) That a reaction which is just positive to a degree which in the hands of the serologist has been afforded practically only by sera from cases of syphilis (and of a few well-defined pathological conditions) should be reported as "+" or "positive."

It is recommended, in this connection, that serologists should so adjust their tests that practically only sera from cases of syphilis afford reactions which they report as "+" or "positive."

(3) That a reaction which is neither negative nor positive as defined in (2) should be reported as "±."

In making these recommendations, the Conference would remark that there is nothing in them which would prevent the serologist adding to his report any amplifying or explanatory note which may be considered desirable (*e.g.*, signs expressing the strength of the reaction).

5. The Conference wishes to reiterate with particular emphasis :

(1) That, in spite of the increased sensitiveness which the various sero-diagnostic methods have shown at the present conference, serological results may, notwithstanding the presence of a syphilitic infection, be negative in certain cases.

(2) That a positive reaction in the absence of a clear history or of signs of syphilis should, if only to exclude all possibility of error, never be accepted until a test of at least one more specimen has afforded the same result.

(3) That, except in the case of a few well-defined pathological conditions, syphilis is indicated with a degree of probability which closely approaches certainty, when several tests performed according to different methods give a positive result.

The Conference would suggest that the gist of the remarks in sub-sections (1) to (3) might be printed on the backs of the reports on serum tests for syphilis which are rendered by serologists to clinicians.

6. The Conference, having in view the special importance of sero-diagnosis for the diagnosis, treatment and prevention of syphilis, desires to record its view that considerable misunderstanding would be avoided, and reports on tests of sera would be greatly enhanced in value, if clinicians would study closely the diagnostic and therapeutic implications of such reports.

7. The Conference, considering that the work in common and the discussions among participants have contributed greatly to a

fuller knowledge and better understanding of the subject, bearing in mind, however, that the methods for the sero-diagnosis of syphilis are constantly improving and that they are of capital importance for public health, and in order to stamp out a social scourge, considers it extremely desirable that the Health Organization of the League of Nations should keep this question on the programme, and take steps to secure further comparisons of this kind in the future.

8. The Conference, being of opinion that the special value of its work lies in the fact that the authors have themselves been able to compare, on the same test material, the results of their own methods with those of others, and contemplating the possibility of ultimately securing uniformity in the sero-diagnosis of syphilis, holds it to be desirable that the Danish State Serum Institute, acting as the central laboratory of the Health Organization of the League of Nations, should, in continuation of the work of the Conference, undertake the distribution of a series of serum samples for comparative tests in the different laboratories; and should itself test, at request, any other serum samples which it may receive, or distribute them for the purpose of comparative re-testing; and undertake to arrange in the same way an exchange of extracts, thus initiating a co-ordination of work which might be further developed in due course.

With regard to the information obtained from the *questionnaire*, the following summary as to the methods at present employed by nine laboratories is given, along with their views on some major technical points:

(1) The Bordet-Wassermann reaction is used by all in the routine examination of sera and cerebro-spinal fluids.

(2) Each hospital employs either widely or slightly different methods, except the seventeen London County hospitals, whose Wassermanns are carried out at their central laboratory.

(3) All except one claim that technical errors most affect results.

(4) The use of pipettes is preferred to drop methods.

(5) The great majority prefer the complement-fixation to flocculation tests.

(6) The methods of reading results are by no means uniform. The terms of evaluation are, in some, expressed as units of complement, in others in figures representing the dilution of the serum or fluid. The use of plus and minus terms is, however, most commonly adopted.

(7) In the preparation of antigen a standard heart extract is generally used, but a few prefer to make their own.

(8) All inactivate their sera, but one laboratory does not inactivate its cerebro-spinal fluids.

(9) Of the few flocculation tests being carried out, two employ the sigma, and one has commenced experiments with the photometric method of Vernes.

Col. L. W. Harrison, of the Ministry of Health, was kind enough to reply to one of the *questionnaire* forms, in which he refers to his No. 1 method as detailed in the Medical Research Council Special Report, Series No. 129. This technique was employed at the 1928 Copenhagen Conference, and proved as delicate as any method of the Wassermann which does not afford non-specific reactions. With regard to interpretation of results, a \pm reaction is not allowed to count for a diagnosis, but in treated cases is recognized as an indication that the disease has not been eradicated. His other points were that the drop method is found to be more accurate, rapid and less fatiguing for batches of more than 100 sera, and that technical errors most affect the accuracy of results. The relative merits of the Wassermann and flocculation tests were given as follows: The flocculation tests are simple, accurate, and easy to interpret; they are more rapid for a batch of less than 100 than is No. 1 method, but after this No. 1 method with dropping technique scores. The Wassermann is preferred for diagnosis, but flocculation for test of cure, consequently both have a place.

At this meeting considerable progress was made, and a number of resolutions adopted. I was asked to investigate numerous points relating to the standardization of the different systems of the test, and to approach Col. Harrison with the view of ascertaining the possibilities of coming into line with the Ministry of Health methods.

The second conjoint meeting was held on September 26, 1929, at Horton Mental Hospital, Epsom, Col. Harrison having kindly consented to be present. His information and suggestions on various matters were of very considerable assistance, not only at this meeting, but throughout the intervening periods. I read the second report, the first part of which dealt with replies from Col. Harrison to questions relating to supplies of extract, cholesterol, and hæmolytic serum. The difficult question of whether dilution of serum or dilution of complement should form the basis of the test was also raised. This is a matter of considerable importance, especially in mental work where exactness of

titration is essential in order to catch fading or weak reactions in serum or cerebro-spinal fluid, since these are of considerable value to clinicians in estimating the progress or regression of the disease under the influence of treatment. Other questions relating to the criteria of the ideal serum for testing, doubtful \pm reactions in mental deficiency, cold storage and flocculation tests were dealt with. In the second part of the report the more technical details of Col. Harrison's No. 1 method, Medical Research Council Report No. 129, were outlined. In the discussion that followed, further satisfactory progress was made, but, owing to the divided opinion of the meeting on the question of the quantitative basis of the test, it was decided that Dr. S. Mann, of the Central Pathological Laboratory, and Dr. Wyler, of the Ministry of Health, should compare their tests with a view to effecting a compromise that would bring them into line without altering the fundamental basis of the present method used by the Central Pathological Laboratory of the London County Mental Hospitals, which for many years has developed its technique to meet the requirements of psychiatry. Further points, such as the standardization of laboratory receiving and remittance report forms, were referred to me for investigation and subsequent discussion.

The final conjoint meeting was held on May 21, 1930, at British Medical Association House, Tavistock Square, London. In giving my final report, I outlined the main points dealt with and discussed at the two previous meetings, and presented for consideration: The reagents, the standardization of the sheep-cell suspension, the provocative test for latent syphilis, report forms for serologists and clinicians, laboratory refrigeration, the Hinton glycerol-cholesterol agglutination reaction, and Dr. Mann's report relating to the modification made in the Central Pathological Laboratory of the Wassermann technique after his collaboration with Dr. Wyler. The following are the main points in his report:

1. That their test has been especially adjusted for mental hospital practice, in order that the weak reactions may receive special consideration.
2. That the best means of increasing the severity of the test is effected by keeping the complement dosage constant and increasing the amounts of fluids to be tested. Also the signs used and the method of recording results as described in the Medical Research Council Report No. 129, though embracing all the details of a satisfactory test, do not enable adequate expression of the intensity of the reaction, and it is suggested that the technique

should be as described by Dr. Wyler for the cerebro-spinal fluid, with the result expressed as units of complement deviated per cubic centimetre of serum or cerebro-spinal fluid.

3. The modified No. 1 method is a volume or drop technique in contrast to a pipette method, and if the serum or cerebro-spinal fluid is to be varied in quantity the volume procedure loses its technical advantage. Therefore it is better to follow the latter, which is rapid and easy in operation and applicable to large batches of tests.

4. The basis of interaction (M.H.D. and M.C.D.) of the two tests under comparison has hitherto been different, but it has been found that adopting the modified No. 1 basis causes no variation in the Central Laboratory test, and thus it is now comparable in fundamental details with Wyler's No. 1 method.

5. It is also accepted that the red-cell suspension shall be standardized by hæmoglobin estimation.

6. As the two methods are now comparable, it is possible to give a universal expression of the intensity of the reaction, based on the deviation of complementary units calculated per 1 c.c. of serum or cerebro-spinal fluid, taking as the unit 1 c.c. standard sensitized cells. In place of the usual plus and minus signs, the amount of deviation of the three minimum complementary units is expressed in terms of the dilution of the serum or cerebro-spinal fluid. Thus, for example, if 0.2 c.c. of serum also gives complete prevention of hæmolysis, in terms of 1 c.c. the result is expressed + 15, if 0.1, + 30, and so on.

7. All the details regarding preparation of reagents noted by Wyler are emphatically endorsed, and it is urged as essential that the hæmolytic amboceptor especially should be obtainable from a central and reliable source.

8. In the interpretation of results, long experience would justify the conclusion that the weaker reactions, such as a serum + 6 or cerebro-spinal fluid + 2, provided that all technical details are rigidly adhered to, have considerable significance in congenital syphilis, and an even greater one in parasyphilitic conditions.

The following resolutions relating to the standardization of the Wassermann reaction were approved and adopted by the conjoint sub-committees :

1. Of the two methods, drop or pipette, the latter was approved.

2. That the various reagents used in the test should be obtained from a central and reliable source, *i.e.*, heart extract, cholesterol solution, hæmolytic serum. (Dr. E. J. Wyler, Ministry of Health

Laboratory, Dudley House, Endell Street, London, at the cost of £1 for 30 c.c. for heart extract, 10s. per 30 c.c. for cholesterol solution, hæmolytic amboceptor 2s. 6d. per vial of 1 c.c. Payments made to Dr. Wyler.)

3. That standardization of the sheep-cell suspension is essential, and should be carried out by one of two methods recommended in the Medical Research Council Special Report No. 129, or in the Central Laboratory report on the new technique.

(a) As in method No. 1, Medical Research Council Special Report No. 129, by Dr. E. J. Wyler, using the Haldane hæmoglobinometer with coal-gas and comparator tube. (Baird & Tatlock, price 2 guineas.)

(b) The Newcomer acid hæmatin method, using a Klett colorimeter and a standard glass colour plate. (Baird & Tatlock, Klett Bio-colorimeter from £20; standard glass plate, £1 6s.)

4. The criteria recommended by Col. L. W. Harrison as to what constitutes the ideal serum should be accepted. (The ideal serum is one which is clear, sterile, and free from any but a slight tinge of hæmoglobin. Chylous serum is generally unsuitable for flocculation tests, and at the best the presence of chyle makes such tests difficult to carry out. The Wassermann can be applied to chylous sera and to those with a fairly strong tinge of hæmoglobin, but both are undesirable.)

5. That the provocative test for latent syphilis recommended by Col. Harrison should be carried out. (The method is to give 0.3 or 0.45 grm. of 914 and take the blood a week later. If possible, four specimens should be taken on the second, seventh, thirteenth and twenty-first days respectively after the provocative dose. This is not usually practicable in ordinary work, but in institutions elaboration of this kind is possible, and it may have distinct value from the point of view of research, especially in mental deficiency. For purposes of research, where greater accuracy of the test is required, it is recommended that the dosage of the arsenical preparation should be basal.)

6. That the laboratory and clinical report forms recommended should be standardized, and used throughout mental hospitals. (Forms appended at end of this report.)

7. That Dr. S. A. Mann's report on the modification of the central laboratory's Wassermann technique, after his collaboration with Dr. E. J. Wyler, of the Ministry of Health, combines the advantages of both tests, while rendering them comparable and fully meeting the requirements of psychiatry, and that it be adopted.

8. That electrical refrigeration should be used for the storage of sera and reagents.

FLOCCULATION TESTS.

Owing to the large amount of work that is being done in this field and the numerous tests that are being brought out, the Sub-Committee have found it somewhat difficult to recommend the best flocculation tests at the moment, since they are so quickly superseded. There are, however, a few well-established tests which have proved relatively simple and reliable; and certain of these, in addition to two relatively new techniques, have been selected. The resolutions of the 1928 Copenhagen Conference relating to flocculation tests have been given, and will be found in paragraphs 1 and 2 (a) and (b).

Col. Harrison's recommendations are as follows:

"Flocculation tests are excellent as additional tests, but should not be substituted at present for the Wassermann reaction. They are valuable as a test of cure, but the Wassermann is to be preferred for diagnosis; consequently both have a place. The difficulty about most flocculation tests is the doubt as to their delicacy with cerebro-spinal fluid. The Kahn, however, gives results comparable with the Wassermann (the results of a comparative series of tests on 555 cerebro-spinal fluids are given in the appendix of the 1928 League of Nations Laboratory Report). The Meinicke Turbidity Reaction (M.T.R.) has not been found so good as the Kahn; consequently Meinicke has brought out a new reaction, the Meinicke Klarungs-Reaction (M.K.R.), of which there is now a modification by Hohn. The Hinton glycerol-cholesterol reaction is to be recommended for sera and cerebro-spinal fluid."

The following resolutions relating to flocculation tests were approved and adopted by the conjoint Sub-Committees.

1. That the Kahn test be used for sera.
2. That the Hinton glycerol-cholesterol reaction be tried for sera and cerebro-spinal fluid.
3. That the Meinicke Klarungs-Reaction be tried for sera.

FORM A.

THE ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.

RESEARCH AND CLINICAL COMMITTEE.

STANDARDIZATION OF WASSERMANN REACTION.

Report on the Case accompanying the Specimen sent to the Laboratory.

Name of Institution

Name of Patient

Case No.....Age Sex

Nature and Source of Specimen.....

Date and Time of Collection

Mental State

.....

Neurological Signs and Symptoms

.....

Physical State

.....

State if suffering from (a) Tuberculosis

(b) Cancer

(c) Blood Disease

(d) Active Suppuration

(e) Gonorrhœa

(f) Acute Infectious Fever.....

Has Patient received any form of specific or other Treatment?

If so, state particulars as to (a) The preparation used

(b) Method of administration

(c) Malarial treatment

.....

(d) Duration

(e) If discontinued.....Date

State whether blood or cerebro-spinal fluid has been examined before.....

If so, give particulars and date

.....

Special Remarks

.....

Signed

Medical Superintendent.

FORM B.

THE ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.
RESEARCH AND CLINICAL COMMITTEE.

STANDARDIZATION OF WASSERMANN REACTION.

Laboratory Report.

For use at Laboratory.

Name of Institution	No. in Gen. Reg.
Name of Patient	Specimen received.....
Case Number	Date
Nature of Specimen	Time

Nature of Test

Result

.....

.....

.....

.....

.....

Date of Report.....

Signed

Pathologist.

[Special Note overleaf.]

APPENDIX I.

THE NEW STANDARD TECHNIQUE FOR THE WASSERMANN REACTION.

The following technical details are quoted, by permission of the London County Council, from "Memorandum on the Wassermann Reaction in Mental Hospital Practice," by S. A. MANN, D.Sc., F.I.C., and F. PARTNER, published by the Council, price 9d. net. The memorandum also contains a historical introduction, and a description of parallel tests on sera and cerebro-spinal fluids.)

In the Preface to the Memorandum the authors state: "No one should attempt to do Wassermann tests who is not capable of the highest technical accuracy, and in possession of full knowledge of the theory of the reaction and work on its technique. It is not possible to embody such full information in this memorandum, and further reference should be made to the Medical Research publications on the subject, and to such standard works as Kilduff's, etc. Acquaintance with ordinary laboratory procedure is not sufficient criterion of the suitability of any worker to perform Wassermann tests, and this memorandum *is not intended to be a description* of a technique that can be handed out at random to any laboratory worker. A series of accurate results can only be expected from one who has received careful tuition, and after much study and practice of the test.

"The careful standardization of reagents may appear tedious and lengthy, but *it must be strictly observed*. Scrupulous cleanliness in the care of glassware is also essential."

The method described by the authors conforms with the Modified

No. 1 Method (Wyler, Medical Research Council Report Series, No. 129) in the following details: (1) The use of a standard corpuscle suspension; (2) the relative proportions of hæmolysin and complement, *viz.*, six times the minimum hæmolytic dose and three times the minimum complementary dose, and differs in that—

- (1) The volume of the test is greater, *i.e.*, 3 c.c.
- (2) Exact pipetted quantities are used throughout, not drops or volumes.
- (3) The intensity of the reaction is measured by varying the amount of tested serum or fluid, with the complement and antigen dose fixed.
- (4) Larger proportionate amounts of serum and fluid are used in the test.

The description of the technique given by the authors is as follows:

PREPARATION AND STANDARDIZATION OF REAGENTS.

Hæmolytic System.

- (1) 0.9% chemically pure sodium chloride in pure distilled water.
- (2) Complement—guinea-pig serum.
- (3) Standard suspension of washed sheep's red corpuscles.
- (4) Hæmolytic antibody for sheep's corpuscles.

Standardization necessary.

(1) Hæmoglobin estimation of washed sheep's corpuscles suspension and adjustment to standard content.

(2) Estimation of minimum hæmolytic dose, *i.e.*, the minimum amount of hæmolysin that will cause complete hæmolysis of 0.5 c.c. standard corpuscle suspension in the presence of the average complementary dose (see later) used in the test proper.

(3) Estimation of the minimum complementary dose. The minimum amount of complement that will cause complete hæmolysis of 0.5 c.c. standard sheep's corpuscles suspension in the presence of six times the minimum hæmolytic dose.

It must be remembered that complement and hæmolysin are variable reagents. The titre of a batch of hæmolysin remains fixed if suitably stored, and is generally determined by parallel titrations with the previous batch of known titre (*cf.* p. 483). The titre of complement must be determined daily (p. 484).

Saline solution.—A 0.9% solution of chemically pure sodium chloride in distilled water is *accurately* prepared. The solution is raised to boiling-point for 2 minutes, the flask lightly plugged with a sterile muslin-covered cotton-wool plug, and allowed to cool to room temperature.

Complement.—Complement is a property of all sera, and is destroyed by heating at 56° C. for half an hour. Guinea-pig serum contains a comparatively high titre of complement, and is used universally as the source of complement for the Wassermann reaction. It is important that the animals should be kept under healthy conditions and suitably fed, also that they should not be subjected to extreme changes of heat and cold. The heat-regulating centre of the guinea-pig is slow to adjust to sudden change of temperature, and this factor, in our experience, can markedly affect the complementary titre. The guinea-pig selected should be a healthy animal of good weight; old female animals should not be used.

The animal is stunned, its throat cut, and the blood collected into a clean porcelain basin. The basin is covered with a clock glass and allowed to stand at room temperature overnight. In the morning the serum is pipetted off, and is ready for use. We have found no need to use pooled guinea-pig serum; a low titre is at once observed, the supply rejected and another animal taken; the presence of a faulty serum in a pooled specimen cannot be advantageous.

Moreover, considering the lability of complement and the importance of accurate diagnosis, the use of the same guinea-pig serum on subsequent days seems inadvisable.

Sheep's red corpuscle suspension.—*The careful preparation of this reagent is of the utmost importance.* Many faulty reactions owe their origin to insufficient washing of the corpuscles, or to the use of corpuscles already showing the tendency to hæmolyse.

Blood is collected at the slaughter-house into a suitably-sized sterile, wide-mouthed, stoppered bottle containing small glass balls. When about half filled with blood the bottle is stoppered, and shaken vigorously for twelve minutes. It is then stored in the cold chamber until required. It more often happens that the facilities of a slaughter-house are not always available and the laboratory is dependent on a distant source for its supply. As the butcher's method of defibrination generally consists in running the blood into a pail and stirring the contents with his hand, such defibrinated blood requires special attention when it arrives at

the laboratory. If it shows the slightest sign of decomposition the supply is rejected, otherwise the following treatment of all sheep-blood samples gives satisfactory result.

Filter the blood through muslin, and half-fill centrifuge tubes; fill up the tubes with saline and mix. Centrifuge and remove the supernatant fluid by suction. Refill the tubes with saline, gently mix and transfer the contents to fresh centrifuge tubes, leaving behind the fibrinous detritus at the bottom of the tube. Repeat this washing and transference three times. Finally add an equal volume of saline to the cell deposits, and transfer all deposits to a clean tube and proceed with hæmoglobin standardization.

Method of standardization.—The final strength of washed sheep's corpuscles approximates to a 6% suspension, but it is adjusted to an accurate standard by means of hæmoglobin estimation. If this is effected by means of the acid-hæmatin colorimeter method (Newcomer disc method, or Migos hæmometer), the final suspension is made up to contain 1.5% actual hæmoglobin content.

The same standard can be obtained by use of the clinical Haldane hæmoglobinometer, the final suspension being adjusted to give the Haldane tint of the clinical figure 10 (Wyler). The description given by Wyler (Medical Research Council Report Series, No. 129, p. 8) is appended (p. 493).

The actual technique will depend on the colorimeter or hæmometer available. The following method is that employed in this laboratory, using the Newcomer hæmoglobin disc and Klett bio-colorimeter.

The preparation of the cell suspension and standardization are made the day prior to the test.

Pipette 0.025 c.c. of the washed cell suspension (half diluted with normal saline) into 10 c.c. N/10 hydrochloric acid, thus producing a 1 in 400 dilution of the cells, the hæmoglobin being reduced to acid hæmatin. This is allowed to mature for four hours, and then compared in the colorimeter with the standard Newcomer hæmoglobin disc, the amount of hæmoglobin calculated, and the cells diluted to give a suspension which will contain 1.5 grm. % hæmoglobin.

For example :

Reading on colorimeter = 12.3.

This represents 12.5 grm. hæmoglobin % in the washed cells in equal parts saline.

A 12% dilution of these will be equivalent to 1.5 grm. % hæmoglobin.

The finished standard suspension should be of good colour,

exhibiting stability of the corpuscles, and not showing the slightest sign of hæmolysis in the supernatant fluid.

Hæmolysin (hæmolytic antibody).—This reagent is the serum of an animal immunized against alien red blood-corpuscles. In general practice it is the serum of the rabbit immunized against sheep corpuscles, and heated at 56° C. for half an hour to destroy complement, after separation. It is essential that the hæmolysin used should be of sufficiently high titre, the more satisfactory results being obtained with the most potent reagent.

It is recommended that if the laboratory has not the facilities for the preparation of its own hæmolysin, it should be obtained from a reliable central source, where its potency and reliability have already been tested.

Estimation of minimum hæmolytic dose, and preparation of sensitized cell suspension.—A fresh batch of hæmolysin is always titrated in parallel with the known reagent in use. This is done by making minimum hæmolytic dose determinations with both known and unknown hæmolysins, using the same complement dosage. If a hæmolysin of known titre is not available, then the minimum hæmolytic dose of the hæmolysin to be tested is determined by the following procedure, but it will be necessary to average the results from a series of titrations using different specimens of guinea-pig serum.

A series of tubes is prepared containing 0.5 c.c. of a suspension of washed sheep's corpuscles standardized to contain 1.5 grm. % hæmoglobin (*cf.* p. 482), an amount of complement representing the average dose used in the test proper (this is generally of the order of 0.5 c.c. of a 1-15 complement saline dilution), and falling doses of the appropriate hæmolysin (generally 1.0 c.c. to 0.1 c.c. of a 1 in 1,000 saline dilution); and the volume made up to 3 c.c., this being the total volume used in all preliminary tests as well as in the test proper.

The tubes are heated in the 37° C. water-bath for one hour, when the minimum amount of hæmolysin giving complete hæmolysis is noted. This quantity is the minimum hæmolytic dose. A suspension of cells is now prepared, each cubic centimetre containing 0.5 c.c. of the standardized suspension of sheep's corpuscles, an amount of hæmolysin equivalent to six times the minimum hæmolytic dose, and saline to 1 c.c.

For example :

If complete hæmolysis occurs in the tube containing 0.5 c.c. of hæmolysin (1/1000), then one would require for six times the minimum hæmolytic dose 3.0 c.c. of 1/1000 or 0.3 c.c. of 1/100 dilution of hæmolysin for each cubic centimetre of

sensitized cells. Thus, the composition of each c.c. of the hæmolytic system will be as follows :

0·3 c.c. 1/100 hæmolysin.
0·5 „ standardized sheep's red cells.
0·2 „ saline.

1·0 c.c. total.

Tube No.	Saline dilution complement 1 in 15. (4)	Hæmolysin 1-1000 saline dilution.* (3)	Red blood-corpuscles. (2)	Saline to 3 c.c. (1)
1	0·5 c.c.	1·0 c.c.	0·5 c.c.	1·0 c.c.
2	0·5 „	0·9 „	0·5 „	1·1 „
3	0·5 „	0·8 „	0·5 „	1·2 „
4	0·5 „	0·7 „	0·5 „	1·3 „
5	0·5 „	0·6 „	0·5 „	1·4 „
6	0·5 „	0·5 „	0·5 „	1·5 „
7	0·5 „	0·4 „	0·5 „	1·6 „
8	0·5 „	0·3 „	0·5 „	1·7 „
9	0·5 „	0·2 „	0·5 „	1·8 „
10	0·5 „	0·1 „	0·5 „	1·9 „
Control tube				
No 11	0·5 „	..	0·5 „	2·0 „

* Further dilution must be made (*viz.*, 1-10,000) if prevention of hæmolysis does not occur with this series.

It is not advisable to use a hæmolysin that reacts weaker than in 1-1,000 dilution. The figures (1), (2), (3), (4) indicate the order in which the reagents should be placed in the tubes.

No. 11 tube is a control in order to detect any hæmolytic power in the guinea-pig serum to the sheep's cells. Any sign of hæmolysis in this tube, therefore, indicates the necessity for using another guinea-pig.

Estimation of minimum complementary dose.—Into a number of tubes are introduced 1 c.c. of sensitized cells and falling doses of guinea-pig serum diluted with saline to 1 in 50 (1·0 c.c. to 0·1 c.c.). Each tube is then filled with saline to a total volume of 3 c.c. They are now heated in a 37° C. water-bath for one hour, when the minimum amount of guinea-pig serum (complement) giving complete hæmolysis is noted; this quantity is the *minimum complementary dose*.

In the test proper three times the minimum complementary dose is used in a dilution of 0·2 c.c. Thus, if the minimum complementary dose is 0·5 c.c. of the 1-50, 0·15 of a 1-5 dilution will be required, and to make the 0·2 c.c. dosage, the 1-5 dilution is further diluted with saline in the proportion of 15 up to 20 c.c.

Tube No.		Complement		Sensitized		Saline
		saline dilution		cells.		to 3 c.c.
		1-50.		(3)		(1)
		(2)				
1	.	1·0 c.c.	.	1·0 c.c.	.	1·0 c.c.
2	.	0·9 "	.	1·0 "	.	1·1 "
3	.	0·8 "	.	1·0 "	.	1·2 "
4	.	0·7 "	.	1·0 "	.	1·3 "
5	.	0·6 "	.	1·0 "	.	1·4 "
6	.	0·5 "	.	1·0 "	.	1·5 "
7	.	0·4 "	.	1·0 "	.	1·6 "
8	.	0·3 "	.	1·0 "	.	1·7 "
9	.	0·2 "	.	1·0 "	.	1·8 "
10	.	0·1 "	.	1·0 "	.	1·9 "

The figures (1), (2) and (3) indicate the order in which the reagents should be placed in the tubes.

Preparation of antigen.—The Royal Medico-Psychological Association recommend that the antigen should be obtained from a reliable central source, whenever local facilities for making a standardization are not available. Details are, however, given for its preparation.

Heart muscle extract.—Heart muscle (showing no evidence of disease) obtained from any necropsy and freed from fat is minced and weighed; it is then ground up with washed and dried silver sand, transferred to a bottle, and absolute alcohol added in the proportion of 9 c.c. for every gramme of heart muscle. The mixture is then shaken on a shaking machine for two hours, stored in the dark at room temperature, and filtered as required for use.

Cholesterol can be bought, but can easily be prepared from any formalin-hardened nervous tissue. This cholesterol in our experience is superior to the chemically pure substance obtained from manufacturing chemists. The tissue is minced and allowed to dry; this is then further powdered up in a mortar, and cold acetone poured on. After standing overnight the acetone solution is decanted, and more acetone added. The acetone is distilled off the combined extracts, and the residual crude cholesterol purified by re-crystallization from absolute alcohol. The solution for use in the antigen is prepared by dissolving 1 grm. of the purified crystals in 100 c.c. of absolute alcohol contained in a stoppered bottle. Solution is effected by placing the bottle in the incubator at 37° C. and shaking at intervals. This solution, like the heart muscle extract, is kept at room temperature, but not necessarily in the dark.

The antigen consists of—

2 parts of alcoholic human heart extract (lecithin).

1 part of a 1% solution of cholesterol in absolute alcohol.

The two constituents are kept separately and mixed before using, and made up to a 1 in 10 dilution with saline, by rapid addition of the saline diluent. The cholesterol solution keeps indefinitely, but the heart extract should be prepared every three months.

Standardization of antigen.—A satisfactory antigen must possess high antigenic properties, and must not be either anti-complementary or hæmolytic in character.

Antigens as formerly prepared from syphilitic organs showed marked variation of these properties, but the chemical antigen, as prepared above, functions satisfactorily from all points of view. However, standardization is necessary, and this is effected in the following manner:

A series of tubes are put up as for the estimation of the minimum hæmolytic dose, and parallel with these a similar set of tubes containing 0.5 c.c. of a 1-10 antigen saline dilution as below.

Tube No.	Complement 1-50. (4)	Antigen 1-10. (3)	Sensitized cells. (2)	Saline to 3 c.c. (1)
1	1.0 c.c.	0.5 c.c.	1 c.c.	0.5 c.c.
2	0.9 "	0.5 "	1 "	0.6 "
3	0.8 "	0.5 "	1 "	0.7 "
4	0.7 "	0.5 "	1 "	0.8 "
5	0.6 "	0.5 "	1 "	0.9 "
6	0.5 "	0.5 "	1 "	1.0 "
7	0.4 "	0.5 "	1 "	1.1 "
8	0.3 "	0.5 "	1 "	1.2 "
9	0.2 "	0.5 "	1 "	1.3 "
10	0.1 "	0.5 "	1 "	1.4 "
11	—	0.5 "	1 "	1.5 "

The figures (1), (2), (3) and (4) indicate the order in which the reagents should be placed in the tubes.

After heating in the 37° C. water-bath for one hour there should not be more than one tube difference between the hæmolytic reaction of the above and the minimum hæmolytic dose experiment without antigen, also the last tube containing only sensitized cells and antigen should not show the slightest sign of hæmolysis. For example, if in the minimum hæmolytic dose experiment complete

hæmolysis occurs in the sixth tube, for satisfactory anti-complementary properties, the same degree of hæmolysis must occur at least in the fifth tube in the above antigen titration. The antigenic value, which seldom alters with fresh extracts, is checked by parallel tests made with known positive and negative fluids and a known satisfactory antigen.

	Complement dilution. (3)	Antigen 1-10. (2)	Serum. (4)	Saline to 3 c.c. (1)
<i>Undiluted :</i>				
Tube No. 1	0.2 c.c.	0.5 c.c.	0.5 c.c.	0.8 c.c.
„ 2	0.2 „	0.5 „	0.4 „	0.9 „
„ 3	0.2 „	0.5 „	0.3 „	1.0 „
„ 4	0.2 „	0.5 „	0.2 „	1.1 „
„ 5	0.2 „	0.5 „	0.1 „	1.2 „
<i>Diluted 1-10:</i>				
Tube No. 6	0.2 „	0.5 „	0.9 „	0.4 c.c.
„ 7	0.2 „	0.5 „	0.8 „	0.5 „
„ 8	0.2 „	0.5 „	0.7 „	0.6 „
„ 9	0.2 „	0.5 „	0.6 „	0.7 „
„ 10	0.2 „	0.5 „	0.5 „	0.8 „
„ 11	0.2 „	0.5 „	0.4 „	0.9 „
„ 12	0.2 „	0.5 „	0.3 „	1.0 „
„ 13	0.2 „	0.5 „	0.2 „	1.1 „
„ 14	0.2 „	0.5 „	0.1 „	1.2 „

Place in 37° C. water-bath for one hour. Then add 1 c.c. sensitized cells to each tube, and further heat for another hour.

The figures (1), (2), (3) and (4) indicate the order in which the reagents should be placed in the tubes.

The table above shows the quantities used of a positive serum, worked out to the probable limit of the reaction. Similar checks should be made with a positive cerebro-spinal fluid used in the test. In the former case the limit of the positive reaction will indicate the antigenic property of the new reagent, and the latter will further check any possible anti-complementary properties.

Standardizations should be made frequently, but in our experience it is not necessary to make them with every batch of tests performed.

Collection of Specimens and Preliminary Treatment of Sera and Fluids to be Tested.

Blood.—At least 5 c.c. blood should be collected by venepuncture, and contamination with any fluid other than normal saline must be carefully avoided. Traces of antiseptics, carbolic acid, methylated spirit, water, etc., have a very hæmolytic effect on the blood, and reliable tests cannot be expected from sera tinged from such hæmolysis.

Post-prandial vene-puncture should also be avoided, as fatty sera also may give anomalous reactions.

It is helpful if the tubes containing the blood specimens are gently shaken to detach the clot from the sides of the tube before despatching to the laboratory. It is important to state whether the case is or has been under any form of treatment.

After coagulation the clear serum is pipetted off, centrifuged if necessary, and transferred to a dry tube, from which sufficient is removed for parallel flocculation tests, and the remainder *inactivated* by heating in a 56° C. water-bath for 30 minutes. The tubes are now stored in the cold chamber until the tests are made.

Cerebro-spinal fluid.—Cerebro-spinal fluids are examined for the presence of cells, globulin excess and colloidal reactions by the usual methods, and it should be remembered that the slightest admixture of blood greatly invalidates the significance of these tests.

Inactivation of the cerebro-spinal fluid is not essential, but non-syphilitic fluids containing pathological amounts of protein may give false positive reactions, which can be obviated by the routine inactivation of all specimens of cerebro-spinal fluid for the Wassermann test.

The Test Proper.

A series of five tubes is used for each test; into each tube is placed a quantity of guinea-pig serum equivalent to three times the minimum complementary dose (this generally approximates to 0·2 c.c. of a 1 in 5 saline dilution of guinea-pig serum), 0·5 c.c. of a 1 in 10 saline dilution of antigen, a quantity of the cerebro-spinal fluid or inactivated serum to be tested, and saline to the total volume of 2 c.c.

In the case of cerebro-spinal fluid the quantities range from 1·5 c.c. to 0·1 c.c., and in the case of serum from 0·5 c.c. to 0·1 c.c. When it is required to estimate exactly the intensity of the reaction

a wide range of test is made, containing doses falling to 0.01 c.c. by means of saline dilutions of serum or cerebro-spinal fluid. In the course of routine tests it may not be always necessary to use the higher dosage of 0.5 c.c. serum and 1.5 c.c. cerebro-spinal fluid respectively, but in the special investigation of treated cases which appear to give anomalous findings they should always be used, the results being of great significance to the clinician.

The tubes are now heated in a 37° C. water-bath for one hour, when 1 c.c. of sensitized cells is added to each tube. After shaking, the tubes are returned to the water-bath for another hour, when hæmolytic reaction will have taken place and the results can be read off.

Serum Test.

Tube No.	Complement saline dilution. (3)	Antigen 1-10 saline dilution. (2)	Serum. (4)	Saline to 2 c.c. (1)
1	0.2 c.c.	0.5 c.c.	0.5 c.c.	0.8 c.c.
2	0.2 "	0.5 "	0.4 "	0.9 "
3	0.2 "	0.5 "	0.3 "	1.0 "
4	0.2 "	0.5 "	0.2 "	1.1 "
5	0.2 "	0.5 "	0.1 "	1.2 "

Place in 37° C. water-bath for one hour. Then add 1 c.c. sensitized cells to each tube.

Cerebro-spinal Fluid Test.

Tube No.	Complement saline dilution. (3)	Antigen 1-10 saline dilution. (2)	Cerebro- spinal fluid. (4)	Saline to 2 c.c. (1)
1	0.2 c.c.	0.5 c.c.	1.5 c.c.	..
2	0.2 "	0.5 "	1.0 "	0.3 c.c.
3	0.2 "	0.5 "	0.5 "	0.8 "
4	0.2 "	0.5 "	0.2 "	1.1 "
5	0.2 "	0.5 "	0.1 "	1.2 "

Place in 37° C. water-bath for one hour. Then add 1 c.c. sensitized cells to each tube.

The figures (1), (2), (3) and (4) indicate the order in which the reagents should be placed in the tubes.

Controls.—It is generally possible to include positive and negative controls with every batch of tests, but if all standardizations have been accurately made these are not an absolute necessity. A batch of tests control themselves, and very obviously demonstrate any faulty technique.

Anti-complementary reactions.—An anti-complementary serum is one which of itself (without the presence of antigen or the syphilitic reacting substance) can fix complement, and so give a non-specific prevention of hæmolysis on the addition of the sensitized cells. Fortunately such reactions of an unavoidable nature are rare, and only met with in pathological conditions (*e.g.*, uræmia, jaundice). The majority of these reactions are avoidable, and, if a large number occur, it is a sure sign that the technique is imperfect, or more commonly that the collection and treatment of the specimen is at fault (*cf.* collection of specimens).

All specimens of serum to be tested should be clear, but often, generally due to carelessness in the collection of the blood specimen, tinted sera result, and, in our experience, these are prone to give the majority of anti-complementary reactions.

Interpretation of Results.

Prevention of hæmolysis represents a *positive*, and hæmolysis a *negative* Wassermann reaction. In the majority of positive cases there is complete prevention of hæmolysis in all tubes, but chronic syphilitic subjects, cases under treatment, and parasymphilitics may give less marked but, nevertheless, important positive reactions. The above technique enables a quantitative expression of the results to be made, which seems to be preferable to the somewhat confusing collection of + and - signs usually employed. Taking the minimum complementary dose (which is generally represented by 0.01 c.c. of pure guinea-pig serum) as a unit of complement, in each tube there are three units of complement, with a unit standard of 1 c.c. standardized sensitized cell suspension. Thus, when any quantity of serum or cerebro-spinal fluid gives *total* prevention of hæmolysis, it is clear that three units of complement have been adsorbed or fixed, and the results can be expressed as units of complement adsorbed per 1 c.c. of cerebro-spinal fluid or serum. For example, if a tube containing 0.1 c.c. cerebro-spinal fluid or serum shows complete prevention of hæmolysis, the reaction is recorded as plus 30, and similarly for tubes containing other fractions of a cubic centimetre of cerebro-spinal fluid the exact degree of adsorption of complement can be determined; but in the figures given 0.1 c.c. is the smallest amount of fluid noted and, if total prevention of hæmolysis occurs, the result may be given as +30+, which indicates a further adsorption of

complement if the range of dilution of serum or cerebro-spinal fluid were extended.

In definitely positive cases *complete* prevention of hæmolysis is shown in at least one of the tubes, but in very chronic cases and cases under treatment a marked retardation with partial hæmolysis may occur; such results are of importance, but must be regarded with care and in conjunction with the history of the case. Positive results on the cerebro-spinal fluid in general paralysis may have a range from +2 to +300+, and the same in the serum in syphilis, but the more marked reactions are generally the rule.

It has been the practice in mental hospitals to submit the blood of all admissions for the Wassermann test, and to forward the cerebro-spinal fluid of those giving positive reactions. At one time it appeared that this procedure was sufficient to detect most cases of neurosyphilis, but, probably as the result of the extended public health control and treatment of venereal disease, it can no longer be assumed that a negative cerebro-spinal fluid is necessarily associated with a negative serum reaction. The occurrence of positively reacting cerebro-spinal fluids in cases with a negative serum reaction is now by no means infrequent, therefore the clinician should be guided by the clinical picture and, where the symptoms so indicate, even although the routine serum reaction may be reported negative, forward both blood and cerebro-spinal fluid for special investigation.

Method of Dealing with a Batch of Specimens.

On receipt of a large batch of specimens of blood and cerebro-spinal fluid they are first entered in a record book and given a serial number. This number remains as the identification mark throughout the entire manipulations. The serum is separated from the clot in each of the blood specimens, and after the requisite amount of serum has been taken for parallel tests, the remainder is inactivated. This procedure is preferably done the day before the actual tests are made. After inactivation any apparent abnormality of the serum, colour due to hæmolysis, fat, etc., should be noted in the record book. From the specimens of cerebro-spinal fluid are taken (a) sufficient fluid for a cell-count, (b) ten drops into a tube for estimation of protein, and (c) 0.2 c.c. for a colloidal gold test; 5 c.c. (or the remainder) are then centrifuged, the supernatant fluid completely decanted into a clean, sterile

test-tube, correctly numbered, and the deposit carefully transferred to a clean slide and dried in the incubator before staining and microscopical examination for the presence and nature of cells. The fluids are then heated for half an hour at 56° C., after which they are ready to be tested.

Sera.—As Wassermann tests on the blood of all admissions to mental hospitals are now the rule, much time and reagents can be saved by a preliminary elimination of the *negatives*. To do this racks are prepared for the serum test in two dilutions, *viz.*, 0.5 c.c. and 0.2 c.c. (*vide Test Proper*), and all negative results eliminated. The cases showing prevention of hæmolysis in either 0.5 c.c. only or in both tubes are tested further in 0.4 c.c., 0.3 c.c. and 0.1 c.c. dilutions, the quantitative reaction determined and the serum also tested for anti-complementary properties.

Cerebro-spinal fluids.—As lumbar punctures are only performed on patients whose blood is already known to be *positive* or who have suggestive clinical signs or history, a large percentage is expected to be positive, and the complete routine test of five tubes is used (*vide Test Proper*) for each specimen.

CARE OF GLASSWARE.

It is advisable that the glassware (tubes, pipettes, etc.) used for Wassermann tests should be kept solely for that purpose; also that good pipettes should be selected for the delivery of reagents, and the same pipettes used for the same purpose on all occasions.

Tubes should be *thoroughly* rinsed in tap-water and afterwards in distilled water, then drained, and finally dried in the hot-air oven. They will frequently require cleansing in chromic acid cleaning mixture (commercial sulphuric acid saturated with potassium dichromate). They are totally immersed in this acid mixture overnight, and afterwards *very thoroughly* rinsed in tap and distilled water as before.

Pipettes are washed as soon as finished with by thoroughly rinsing with tap and distilled water on a suction pump. These, again, will require frequent chemical cleansing as above, the pipette markings being replaced by rubbing in soot or by a blue grease pencil.

All pipettes and tubes must be used *dry*.

APPARATUS REQUIRED.

Constant temperature water-bath, 56° C., with copper racks to take 4-in. by $\frac{1}{2}$ -in. tubes, 10 or 12 in a row, 2 deep.

Constant temperature water-bath, 37° C., with copper racks to take 4-in. by $\frac{1}{2}$ -in. tubes, 10 or 12 in a row, 5 tubes deep, and similar racks with tubes 2 deep.

There are many types of constant temperature water-baths obtainable, but a serviceable pattern is *Baird & Tatlock, Catalogue No. B3824*. The size should not exceed 45 cm. by 25 cm. surface dimensions, as with larger types the constant temperature in all parts of the bath is more difficult to maintain.

For sheep cell standardization :

Colorimeter with Newcomer hæmoglobin standard,

or

Migos or similar type hæmometer,

or

Haldane hæmoglobinometer.

Wooden racks.—To take 12 tubes 4 in. by $\frac{1}{2}$ in. in a row; also racks suitable for holding both specimen tubes and centrifuge tubes in parallel rows.

Glassware :

Test-tubes, 4 in. by $\frac{1}{2}$ in., medium thickness, good quality.

Measuring cylinders.—50 c.c., 100 c.c., 250 c.c. capacity.

Capillary pipettes and teats for removal of supernatant fluids.

*Pipettes.**—Straight, to deliver—

10 c.c. in $\frac{1}{10}$ ths c.c. Reading length should not be less than 40 cm.

5 c.c. in $\frac{1}{10}$ ths c.c. Reading length not less than 30 cm.

2 c.c. in $\frac{1}{10}$ ths c.c. " " 35 "

1 c.c. in $\frac{1}{10}$ ths c.c. " " 25 "

The 2 c.c. pipettes are for the delivery of complement, and the 1 c.c. for the addition of sera and cerebro-spinal fluids. It is essential that a good number of the 1 c.c. pipettes are available, so that a separate one can be used for each specimen.

STANDARDIZATION OF RED CORPUSCLE SUSPENSION BY WYLER'S METHOD (HALDANE HÆMOGLOBIN ESTIMATION).

(*Medical Research Council Report Series, No. 129, p. 8.*)

" A suspension of the red corpuscles in saline is prepared which is double the strength of that required for the test. This suspension

* Accurate reading pipettes of this nature are made by the Scientific Glass-Blowing Co., 95, Gray's Inn Road, W.C.

is sensitized and brought to the desired strength by adding to it an equal quantity of a suitable dilution of hæmolytic immune body (amboceptor). The cell suspension is standardized on the lines of the method described by Bigger (*Lancet*, 1921, ii, p. 1369). The standardization occupies about ten minutes, the only special apparatus required being a Haldane hæmoglobinometer. It is conveniently carried out as follows :

“ Prepare an approximate 20% suspension of the washed cells in saline in a test-tube.

“ With a 1 c.c. pipette draw up and eject some of the suspension several times, and finally draw up a little more than 1 c.c.

“ Wipe the outside of the pipette. Place the point of the pipette against the side of the test-tube containing the 20% suspension above the level of the fluid, and run out until exactly 1 c.c. remains in the pipette. Place the point of the pipette at the bottom of a large test-tube and run out exactly 0.5 c.c.

“ Add 10 c.c. distilled water with a 10 c.c. pipette, and then a further 4 c.c. with a 5 c.c. pipette and 0.5 c.c. with a 1 c.c. pipette. Thus the 0.5 c.c. of suspension is now laked and diluted 1 in 30. By means of a capillary pipette attached to a coal-gas tube, bubble gas through the fluid for about half a minute, until the cherry colour of CO-hæmoglobin is fully developed. Now pipette a little of the fluid into a Haldane comparison tube, and compare the tint with that of the standard Haldane tube. (With a centrifuge revolving for twenty minutes at about 1,500 revolutions per minute, the above dilution frequently gives in this laboratory exactly or nearly the required tint.) If the tint is darker or lighter a fresh trial must be made, using more or less distilled water. The strength of the suspension of cells (before adding an equal quantity of amboceptor dilution) used in this laboratory is such that when 1 part is mixed with 9 parts of water and gas passed through the mixture, the resulting tint exactly matches that of the standard Haldane tube. The amount of dilution required for each cubic centimetre of the 20% suspension may be calculated according to the following formula by Prof. Bigger—

$$\frac{x - (p - 1)}{p} \text{ c.c.,}$$

where x = quantity of water in c.c. which it was necessary to add to 1 c.c. of the suspension to give Haldane's tint ; p = the desired multiple of Haldane's tint (10 in this laboratory).

“ Thus, in the above example, x was found to be 29.

“ Therefore $\frac{29 - (10 - 1)}{10}$ = quantity of saline necessary to add to each c.c. of the 20% suspension.

$$= \frac{29 - 9}{10} = \frac{20}{10} = 2 \text{ c.c.}$$

“ Thus in the example given it is necessary to add 2 c.c. saline to each 1 c.c. of the 20% suspension to produce the unsensitized suspension of the desired strength.”

APPENDIX II.

THE HINTON GLYCEROL-CHOLESTEROL REACTION FOR SYPHILIS: SECOND MODIFICATION.

By WILLIAM A. HINTON, M.D., and ARTHUR BERK, M.D.

In April, 1929, one of us published, with Stuart, modifications in the technique of the Hinton tests for syphilis(1). Since then investigations have been conducted to determine the efficacy in the test of approximately 150 different cholesterinized lipoidal extracts. For a specific precipitating reaction with syphilitic sera, we compared extracts made from uterine muscle of cows, beef heart and beef-steak obtained from adult cattle, and from veal of the same cut. The extract from beef heart gave the best results. But far more important than this specific precipitating effect was the presence of a characteristic ring, which, under the conditions to be described, was a still more sensitive and equally accurate sign of syphilitic serum. For a specific agglutinating reaction the extract of voluntary striated beef muscle (round steak) proved, as before, to be the best.

The result of this work is a test as simple and as easy to read as the original one, but more sensitive and dependable. It is composed of the original method slightly modified and a supplementary procedure. Before beginning our description of this test, we wish to stress the importance of strict adherence to minutæ, upon which depends the acquirement of a precise and invariable technique—a necessity for good results. We have been made to realize this by many inquiries concerning the previously published technique of the Hinton test, and by the following experience, which illustrates the importance of a minute detail. In one laboratory a reagent

was added either by pouring from cylinder to flask or by delivering to a flask with a 10 c.c. pipette, depending usually upon the amount of the indicator to be made. The method of mixing, therefore, was variable. The results at times were excellent, at other times confusing, and rarely very poor. In another laboratory the same reagent was always added by using 10 c.c. pipettes, the delivery rates of which were approximately the same. In the latter laboratory the results were excellent and remarkably constant.

We shall proceed to give a list of equipment and the directions for the test as it is now performed.

EQUIPMENT.

1. Test-tube racks holding 40 to 160 tubes in multiples of 10 or 20 in a row.
2. Small test-tubes 10 mm. in diameter and 100 mm. long, commonly called serum tubes. The diameter of the tubes should be approximately uniform. Incorrect results may occur with the use of larger or smaller tubes.
3. An inactivating bath kept at 55° C.
4. An accurately standardized maximum and minimum thermometer to be used in conjunction with the standard bath thermometer. Check the accuracy of the former with the latter.
5. A Wassermann bath, kept at 37° C. or a degree lower. Change the water in the bath frequently to avoid a dirty deposit on the outside of the tubes, which makes reading difficult.
6. Graduated cylinders of 100 c.c. and 250 c.c. capacity for measuring the reagents.
7. Pipettes of 2 c.c. capacity, graduated in tenths to the tip for measuring the serums; and 5 or 10 c.c. serological pipettes for mixing the indicators.
8. Thick-walled Erlenmeyer flasks of 500 c.c. capacity, for mixing the glycerinated indicators.

PREPARATION OF REAGENTS.

(1) Cholesterinized muscle extract, referred to in previous publications as stock indicator, prepared as originally; remove fat and connective tissue from round beef-steak (adult animals only), grind fine, and dry for four to five days at 56° C. in a large flat uncovered dish. Pulverize the dried muscle tissue with a meat grinder, using the machine's finest disc. Extract by placing 100 grm. of the

powdered tissue with 400 c.c. of ether (for anæsthesia) in a glass-stoppered bottle and shaking vigorously by hand for ten minutes. Allow to settle, pour off and discard the ether. Make four or more separate extractions, using 400 c.c. of ether for each. The process is complete when the last extract is colourless. Decant the ether and dry the residue, containing the ether-insoluble constituents, on filter-paper. Weigh this dried residue and extract in a colourless glass-stoppered bottle with 95% alcohol, in the proportion of 1 gm. of the dried residue to 5 c.c. of alcohol, for three days at 17° to 20° C. (room temperature). Filter to remove the tissue, and mix 1 part of this alcoholic extract with 9 parts of a 0.7% solution of cholesterol in absolute alcohol in a colourless glass-stoppered bottle. Allow the mixture to stand for 5 to 8 weeks to ripen. Adjustment (or titration) of this cholesterinized muscle extract is unnecessary. Fourteen such extracts made in the above manner have given practically identical results. This extract and the cholesterinized heart extract, the description of which follows, keep indefinitely in colourless glass-stoppered bottles at 15° to 20° C. Chilling will cause the cholesterol to precipitate.

(2) A cholesterinized heart extract,* for use in the supplementary procedure, prepared as follows: Extract dried ground beef heart muscle (Digestive Ferments Company)† by placing 100 gm. of the powder with 400 c.c. of ether (for anæsthesia) in a glass-stoppered bottle and shaking vigorously by hand for ten minutes. Allow to settle, pour off and discard the ether. Make four or more separate extractions, using 400 c.c. of ether for each. The process is complete when the last extract is colourless. Decant the ether and dry the residue, containing the ether-insoluble constituents, on filter-paper. Weigh this dried residue, and extract in a colourless glass-stoppered bottle with 95% alcohol, in the proportion of 1 gm. of the dried residue to 5 c.c. of the alcohol, for 3 days at 17° to 20° C. (room

* The method of preparing the cholesterinized heart extract is practically that of Neymann and Gager (2), used by them in the Wassermann reaction, and by Kahn (3) and others in their precipitation tests. The method of extraction itself was first applied by Erlandsen (4) to a study of heart muscle without reference to the Wassermann or other serum reactions for syphilis.

† We wish to thank the Digestive Ferments Company of Detroit, Michigan, U.S.A., to whom we are indebted for the dried beef heart muscle used in this investigation. Eight different preparations were used. The first four preparations had been kept at room temperature, in the bacteriological laboratory of the Digestive Ferments Company, for 18, 23, 25 and 38 months respectively, before being sent to us for testing. The remaining four preparations had been kept in the refrigerator, 18-20 degrees Fahrenheit, in the bacteriological laboratory of the Digestive Ferments Company for 3, 8, 18 and 23 months respectively before being sent to us for testing. There has been no evidence of deterioration in any of these preparations.

temperature). Filter to remove the tissue and add 0.4 grm. of cholesterol to each 100 c.c. of extract. Cholesterol obtained from Merck and from the Digestive Ferments Company, when compared, gave identical results. Occasionally a cholesterinized extract prepared in strict accordance with these directions is inferior, even though made from a ground powder which has yielded excellent extracts on previous occasions. The reason for such failure is not clear to us.

(3) A 5% solution of sodium chloride (C.P.) in distilled water.

(4) A 50% solution of glycerol (Baker and Adamson C.P.) in distilled water.

For convenience, several litres of sodium chloride solution and the 50% glycerol solution may be made up at one time, as they keep indefinitely.

TECHNIQUE OF THE TEST.

(1) Separate each serum from its clot with a long dropping pipette, which should be *thoroughly* rinsed with physiological salt solution each time to avoid the contamination of one serum with another. Heat the sera in the inactivating bath at 55° C. for one half-hour. Extreme care should be taken to keep the bath at 55° C. throughout the entire period of inactivation, as erroneous results may be obtained when the temperature falls even one degree below this point. Inactivation at a temperature above 55° C. will decrease the strength of the reactions. Furthermore, it is preferable to inactivate just before testing, as sera kept for several days, and even for a day, occasionally give negative or weak reactions, whereas if tested a few hours after separation from the clot they would be strongly positive. Should it be necessary to re-test a specimen, always use serum freshly separated from the clot rather than that which has been inactivated 24 hours previously. It is well to use a strongly positive and a negative control serum, particularly if only a few tests are to be made.

(2) Place four serum tubes (10 mm. × 100 mm.) in a row for each specimen to be tested. Inspect each tube before use to be sure that it is clear and chemically clean. To clean the tubes, fill them with a warm solution of 1 part sodium hydroxide in 1000 parts of tap-water, allow to stand for about 2 hours, and wash *thoroughly* with hot water to remove the alkali. This process will completely remove any deposit of cholesterol which may have remained from previous use. Boiling in this caustic solution will corrode the tubes.

(3) With a 2 c.c. pipette graduated in one tenths to the tip, pipette into the first tube 0.3 c.c. of serum, into the second tube 0.5 c.c., into the third 0.3 c.c., and into the fourth 0.5 c.c. Use a clean dry pipette for each serum to be tested.

(4) Prepare glycerinated muscle indicator as follows, adhering precisely to the directions, for incorrect mixing will lead to inaccurate results. Pipette one part of cholesterinized muscle extract into a 500 c.c. Erlenmeyer flask. With a 10 c.c. pipette, add 2 parts of the 5% solution of sodium chloride at one time, and shake vigorously for 3 minutes. Add 12 parts of the 5% solution of sodium chloride, and shake thoroughly. Add 15 parts of the 50% solution of glycerol and mix the whole well. The density of the completed indicator should be equal to that of a barium sulphate standard prepared in the following manner: Suspend 2 grm. of pure barium sulphate powder in 100 c.c. of distilled water. Shake the suspension, and *immediately* add 1 c.c. of the supernatant suspension to 6 c.c. of the 50% glycerol solution and mix. This standard may be kept in a sealed test-tube indefinitely. As the barium sulphate settles to the bottom of the tube on standing, it should be shaken thoroughly before each comparison. A sample of the glycerinated muscle indicator should be poured into a tube of the same diameter as that containing the standard and compared with it. An indicator of less density has probably been prepared incorrectly, and should not be used.

(5) With a 10 c.c. pipette, add 0.5 c.c. of the above glycerinated muscle indicator to the first two tubes.

(6) Prepare glycerinated heart indicator as follows, adhering precisely to the directions for mixing. The accuracy of the test depends very much on this, because incorrect mixing may result in an atypical ring in all the tubes containing negative serums.

For each 30 c.c. of indicator pipette 0.8 c.c. of the 5% sodium chloride solution into an Erlenmeyer flask of 500 c.c. capacity. With a clean, dry pipette add 1 c.c. of the cholesterinized heart extract, allowing it to flow directly into the salt solution. A more opalescent and less turbid indicator may result if the extract is allowed to run slowly down the side of the flask. A wide-bottomed flask of this size is necessary in order to ensure a sufficiently large surface for the proper mixing of the cholesterinized extract with the salt solution. Shake the flask vigorously for at least a minute, and let the mixture stand 5 minutes. A shorter period of standing causes a less turbid indicator, which is also less sensitive. The maximum degree of turbidity is apparently attained by delaying 5 minutes,

since standing 10, 20 or 30 minutes produces no greater turbidity nor sensitiveness. Next add 13.2 c.c. of the 5% sodium chloride solution and shake thoroughly. Fifteen cubic centimetres of 50% glycerine are finally added, and the whole is mixed well. This is the smallest amount of glycerinated heart indicator which can be mixed satisfactorily at one time. Thirty to 150 c.c. of the glycerinated indicator may be prepared at one operation. Should more than 150 c.c. of glycerinated indicator be required, prepare amounts utilizing 5 c.c. or less of the cholesterinized extract, and pool the resulting indicators for use. In this way, a suspension of the maximum turbidity with the concentration of cholesterol employed is obtained, which should correspond in density to a barium sulphate standard if the two are compared in test-tubes of equal diameter. Prepare the standard as described previously in connection with the muscle indicator. Since the barium sulphate suspension is somewhat different in appearance from the glycerinated heart indicator, comparison of density can be made most satisfactorily by standing or sitting with the back toward the light, and looking through the two test-tubes at some mark, such as a pencil-line drawn on a piece of paper. The line should be seen with equal distinctness through both the standard tube and that containing the heart indicator. It is important to make this comparison each time, since a very minor fault in mixing may result in an indicator of less turbidity, which will cause difficulty in reading the test, and, furthermore, will be less sensitive. After a trial of many methods over a period of several months, this method of mixing was chosen because it gave us the most uniform results. Unfortunately the zone of maximum turbidity extends from the ratios of 0.6 or 0.7 to 0.9, or 1 part of salt solution to 1 part of the cholesterinized extract. When the ratio is 0.6 of salt to 1 of extract the resulting reactions, besides showing a scum at the top of the fluid in every negative serum, also show a ring (to be described later) with serum from non-syphilitics, which is indistinguishable except in size from that formed with the syphilitic serums. On the other hand, if the ratio is salt 1 part to cholesterinized extract 1 part, the test is too insensitive. We have found that 0.8 of salt to 1 part of the cholesterinized extract is optimum for most glycerinated indicators, but a slightly lower or higher ratio may be necessary for some cholesterinized extracts; but once this ratio is established by tests with negative serums no further testing is required for that particular extract.

(7) With a clean, dry 10 c.c. pipette, add 0.5 c.c. of the above glycerinated heart indicator to the third and fourth tubes.

(8) Shake the rack by first inclining it so that the tubes are almost horizontal, and then thrusting it quickly backward and forward. The first motion is as if one wished to throw the tubes from the rack. By repeating 10 times one obtains a quick but thorough mixture of the serum with the glycerinated indicator. The presence of small bubbles at the surface of the fluid in many of the tubes is the only safe criterion of adequate mixing, which is important.

(9) Note the temperature of the bath as indicated by the bath thermometer, and rectify it if above or below 37° C. Adjust the maximum and minimum thermometer in the bath. If the temperature rises above 37° C. the tests with the glycerinated muscle indicator may be very granular (to be described later), but unless the temperature exceeds 40° C. there will be no unfavourable effect on the tests containing the glycerinated heart indicator. Temperatures as low as 33° and 34° C. result in incomplete reactions, manifested by a relatively large proportion of tests in which the smaller amounts of serum give stronger reactions than the larger amounts.

(10) Place the rack containing the tubes in the Wassermann bath at 37° C. and let it remain for 16 hours (conveniently from 5 p.m. to 9 a.m.). Do not disturb the contents of the tubes before reading.

(11) At the time of removing the tests from the bath, note and record the temperature readings shown by the regular bath thermometer and by the maximum and minimum thermometer.

READING THE TEST.

The results may be read immediately. However, the characteristic ring with the beef heart indicator is intensified by standing in a refrigerator, especially in the case of weakly positive reactions. Therefore, in order to facilitate the readings in the second two tubes, the racks may be placed carefully, without shaking, in the refrigerator and allowed to remain there three hours. After taking out of the refrigerator, allow to stand long enough for the water of condensation on the outsides of the tubes to evaporate. Do not delay reading more than four hours after removal from the bath. Accuracy is of extreme importance in reading the tests. *This requires a precise procedure and judgment based on experience.* In practice we read and record the readings for the four tubes at one time, but for the purpose of description we are here separating the methods of reading and recording according to the indicator.

(1) To read the tests in the first two tubes (containing glycerinated muscle indicator), sit in front of a window, lift the tubes carefully from the rack with one hand, raise to the level of the eyes, and read and record the changes in each tube. Neither opalescence occasionally encountered in serums nor hæmolytic, unless marked, affects the accuracy of the tests with this indicator. A few sera give stronger reactions in 0.3 c.c. of serum than in 0.5 c.c., but apart from this the strength of the reaction as a whole determines the interpretation.

Changes Observed with Glycerinated Muscle Indicator (first 2 tubes):

Negative reactions:

	To be read.	To be recorded.
(1) No visible change	Minus	—
(2) Clearing of fluid resulting in granularity but no definite agglutination of cholesterol	Minus	—

Positive reactions:

These show definite agglutination of cholesterol and are divided into four types:

(1) Incomplete clearing with small clumps	Weak	W
(2) Complete clearing with small clumps	Weak	W
(3) " " . moderate clumps	Moderate	M
(4) " " . large clumps	Strong	S

(2) To read the tests in the last two tubes (containing glycerinated heart indicator), sit in front of a window, but not in the direct sunlight. Lift the tubes carefully from the rack with one hand, hold them at the level of the eyes and look in the direction of a darkened background, either on the right or left-hand side of the window. Note any clearing of the fluid or a pronounced ring. Incline the tubes to an angle of 45 degrees and note any ring which may not have been observed before. Gently rotate them with the fingers, and again look for a ring. To be significant, a ring must be only slightly adherent to the inside of the tube, and must possess fine flakes which have a tendency to "creep" up the inside of the tube in a thin film when the tube is gently shaken. Such a ring must not be confused with a relatively broad band 2 to 4 mm. wide caused by a slight, very fine, granular deposit on the inside of the tube (due to incorrect mixing of the glycerinated indicator or to an inferior heart extract). A deposit on the outside of the tube from dirty water in the bath will cause a confusing ring. A spurious ring is difficult to dislodge from the tube by shaking and may have remained from previous use (improper cleaning), or may be due

rarely to a marked increase in hæmoglobin in old serums. Still holding the tubes at a 45-degree angle at the level of the eyes, shake them gently once or twice and then several times, and observe any further changes. Read and record the changes in each tube.

Changes Observed with Glycerinated Heart Indicator (last 2 tubes).

Negative reactions:

	To be read.	To be recorded.
(1) No visible change	Minus .	—
(2) A fine granular scum on top of fluid with no flakes. This does not occur when the indicator is properly prepared	Minus .	—

Positive reactions:

	To be read.	To be recorded.
(1) A flaky ring, approximately 0.2 mm. to 1.5 mm. wide, slightly to moderately, but not strongly adherent to inside of tube, accompanied by—		
(a) Complete clearing of fluid and large agglutinated masses of cholesterol. Shaking causes ring to disappear, but a precipitate remains	A (Agglutinate) .	A
(b) Partial to complete clearing, but no definite agglutinated masses, with a fine but definite precipitate which remains after shaking	P (Precipitate) .	P
(c) Scarcely any visible change in clearing and no precipitate observed after shaking	R (Ring) .	R
(2) No ring, but a definite precipitate on shaking. This is rare	P (Precipitate) .	P

INTERPRETATION OF THE READINGS.

(1) Where no significant change occurs and each tube is read "Minus," interpret the test as negative, as illustrated in the column headed "Report" in the table below.

(2) Where any significant change occurs in any one or all of the tubes, interpret the test as positive; except (a) "Weak" in only one or both of the first two tubes, and (b) "R" in only one of the last two tubes.

(3) Where "Weak" is read in one or both of the first two tubes, with no change in any of the other tubes, interpret the test as doubtful.

(4) Where "R" is read in only one of the last two tubes, with no change in any other tube, interpret the test as doubtful.

With experience, one rapidly learns to recognize the changes which have significance and the almost imperceptible ones which

do not, thus simplifying the interpretations of the readings. The following table, taken from a page of our laboratory book, illustrates our method of recording and interpreting results.

Although we have indicated the intensity of the reaction as weak, moderate, strong, or described the changes as those of agglutination, precipitation, ring formation, etc., we imply no quantitative significance by these terms. As used by us, they are purely descriptive and for our own records, for we have found that none of them has significance in therapeutics, or in diagnosis, except to indicate the presence of syphilis.

Patient's name.	Physician, institution or hospital service.	Laboratory No.	Hinton readings.	Report.	Condition of serum.
Sawyer	Harley Hosp.	1263	----	Negative	..
Jones	Harley Hosp.	1264	SSPP	Positive	..
Smith	Karcher	1265	SSAA	Positive	..
Powers	Smith, C. M.	1266	WWPP	Positive	..
Young	Stein, L. C.	1267	--PP	Positive	..
Adams	Fenway Hosp.	1268	--RR	Positive	..
Stone	Fenway Hosp.	1269	-W--	Doubtful	..
Davis	Greene	1270	WW--	Doubtful	..
Hill	Skirball	1271	---R	Doubtful	..
Brown	Skirball	1272	WM--	Positive	..
Henderson	St. Mgt. Hosp.	1273	-W-P	Positive	..
Grant	Cheever	1274	--R-	Doubtful	..
Doherty	Blossom	1275	???	Unsatisfactory	Hæmolysed.
Stuart	Boston Disp.	1276	-W-R	Positive	..
Blake	Boston Disp.	1277	-WR-	Positive	..

DISCUSSION.

Many of those who have had wide experience insist upon well-trained serologists for the execution and interpretation of serum reactions for syphilis. We do not entirely agree with them. The method which we have described has been performed with excellent results by students, by young women of less than high-school training, and by physicians who have had relatively little training in serology. The reliability of their results has been solely dependent upon the acquirement of sufficient *experience* to enable them first to master the technique, so that it is practically invariable from day to day, and second, to recognize significant changes. In this test one must be able to distinguish true agglutination from simple granularity, and a significant ring consisting of fine flakes from a slight, but broad, cloudy deposit on the inside of a tube

caused by floating cholesterol particles. One cannot expect to attain expertness in the management of even this simple test in a single trial. For one with abundant experience, daily use of the test increases accuracy in discerning the difference between positive and negative tests, so that the number of doubtful tests progressively decreases.

The test, as described, is approximately 25% more sensitive than the original one. The glycerinated heart indicator is usually more sensitive than the glycerinated muscle indicator. The reverse, however, occurs in a sufficient number of instances in a large series to make the use of both necessary for the best results. The increased sensitiveness has manifested itself largely in a group of treated syphilitics, many of whom were inadequately treated, in latent syphilis, and in neuro-syphilis. The supplementary procedure has increased the dependability of the test as a whole, for the use of two separate indicators provides a valuable means of comparison, which quickly points out technical difficulties encountered in the preparation or mixing of either of the indicators. For example, should the test with one indicator become too sensitive as compared with the other, this fact may be noted immediately, the difficulty found, and the tests repeated.

Throughout, we have insisted upon a strict adherence to a simple but definite procedure arrived at after much experimentation. We tried different concentrations of salt solution, and the concentration given is that which worked best, not in a few cases, but in thousands. The same was true of different buffered solutions. We also performed many experiments with indicators of greater or lesser acidity than that possessed by our glycerinated indicators. The results were superior in isolated instances, but were distinctly inferior in a wide range of cases. After a careful clinical analysis of the cases, the amounts of serum to be used for each test were chosen which gave the largest number of positive tests in syphilitics, and less than 5 positive tests per 1,000 in non-syphilitics. From our point of view the definite concentration of 0.4% of cholesterol in the cholesterinized heart extract is perhaps the most important factor in standardizing this test. After many months of study it was found that with any simple method of mixing this glycerinated indicator, a lower concentration of cholesterol was too insensitive, and a higher one always resulted in confusing rings which, although not characteristic, might mislead the beginner, and at times would trouble the experienced worker.

In conclusion we wish to say that attempts to shorten the method,

both in technique, and particularly in time, were made. These attempts have always resulted in the loss of *extreme* accuracy.

APPENDIX III.

THE MEINICKE CLARIFICATION TEST FOR SYPHILIS.

Since the discovery of Michaelis (1907), that precipitation occurs when a syphilitic serum is treated with organ extracts, numerous flocculation tests depending on this phenomenon have been described, *e.g.*, Kahn, Sachs-Georgi, the Sigma, Vernes, and Meinicke. Most of these have been reviewed in the League of Nations Report on the sero-diagnosis of syphilis. The differences in technique depend mainly on the manner in which the organ extract is prepared, and the method by which the resulting flocculation, precipitation and clarification is observed. The Meinicke clarification reaction follows the Meinicke turbidity reaction; the organ extract is made from ox heart muscle; balsam of tolu is added to it, and the system is adjusted with alkali of varying strength until the iso-electric point of the colloidal suspension is approached, with the result that a positive reaction presents a clear-cut precipitation of the colloidal elements and clarification of the system.

The test can be set up in two forms :

A. The macro-reaction, a procedure which requires 0·7 c.c. of serum and takes 16 to 20 hours to obtain a complete and quantitative reading.

B. The micro-reaction, which can be utilized where only small amounts of serum are available, as in pediatric practice, or where a rapid test is required. The reaction enables a result to be obtained within one hour.

It is claimed that hæmolytic, icteric and cloudy sera are all adaptable to the reaction, and fake positive results are not produced by such modified sera.

The test has received investigation at the Central Pathological Laboratory, and the findings indicate that it is to be commended as a parallel test to the Wassermann on account of its simplicity of manipulation, clarity of results, general reliability, and comparative freedom from non-specific positive reactions.

An analysis* of 1,000 parallel Wassermann and Meinicke

* Ogden, W., and Partner, F., "The Meinicke Clarification Reaction for Syphilis in Mental Hospital Practice," *Lancet*, 1931, ii.

clarification tests on sera from patients in the London County Mental Hospitals shows an agreement of 96.6%.

The cases showing disagreement were mainly treated cases, and the fact was elicited that the Meinicke clarification reaction persists longer with the sera of treated cases than does the Wassermann reaction. The practical significance of this finding is that the cerebro-spinal fluid should be examined by the Wassermann and usual tests in all cases that give a positive serum reaction with the Wassermann or with the Meinicke clarification test.

The micro gave a 95.1% agreement with the macro Meinicke test, and should only be employed in cases where but minute quantities of blood are obtainable; or if used on account of its rapidity, the result should be subsequently confirmed by the macro technique.

DESCRIPTION OF METHOD.

A. *The Macro Test.*

1. *Reagents Required.*

(a) The "antigen" is specially prepared and standardized at Dr. Meinicke's Serological Institute, and can be obtained from Messrs. Bredt, 38, Great Tower Street, E.C.3. It should be kept at room temperature and in the dark, preferably in the 20° C. incubator in which the tests should be made.

(b) Sodium chloride solution: Meinicke suggests keeping a stock solution of 10% NaCl, and diluting to 3.5% when needed. A stock solution of the strength desired for the test (3.5%) obviates the possibility of error in preparation, and keeps just as well as the stronger solution. A.R. sodium chloride is used and is dissolved in distilled water.

(c) Sodium carbonate solution: A stock solution of 1% anhydrous sodium carbonate in distilled water is prepared, and will keep indefinitely in a stoppered bottle.

The solutions for use in the test are 0.01%, 0.015%, 0.02% and 0.04% sodium carbonate in 3.5% NaCl, and should be freshly prepared each week.

2. *Details of Technique.*

Each serum to be tested will require four tubes. Into the first three pipette 0.2 c.c. of the serum, and into the fourth 0.1 c.c. serum, and 0.1 c.c. of the 3.5% NaCl solution, containing 0.04% sodium carbonate.

When all the sera to be tested have been pipetted into the necessary tubes the dilutions of antigen can be prepared in batches. This is done by placing into four wide tubes 10 c.c. of each of the four sodium carbonate-saline solutions and into other four tubes 1 c.c. of the heart extract reagent. These are placed in the water-bath at 56° C. and heated until they reach this temperature. The salt solution and their corresponding tubes of "antigen" are then rapidly mixed, and immediately put back into the 56° C. water-bath for exactly 2 minutes; they are then ready to be used in the test. These details of preparation are important and must be closely followed. The "antigen" suspensions thus prepared are:

- | | | | |
|----|--------------------------------|--------|-------------------|
| A. | A saline suspension containing | 0.010% | sodium carbonate. |
| B. | " " | 0.015% | " " |
| C. | " " | 0.020% | " " |
| D. | " " | 0.040% | " " |

For each test pipette 0.5 c.c. of suspension "A" into No. 1 tube, 0.5 c.c. of "B" into No. 2 tube, 0.5 c.c. of "C" into No. 3 tube, and 0.5 c.c. of "D" into No. 4 tube. This pipetting must be performed very rapidly, and all the antigen dilutions should be in their respective tubes in not more than 10 minutes from the time of preparation, hence the necessity for making batches of the "antigen" of not more than 11 c.c.—this will complete 22 tests. After the reagent has been added the tubes are shaken and placed in an incubator at 20° C. for 20 hours. If the tests are left at room temperature care should be exercised that it does not fall below 18° C.

Controls.—Pipette into four separate tubes 0.5 c.c. of each of the antigen dilutions. After 20 hours at 20° C. the tube containing 0.01% sodium carbonate should show almost complete flocculation with clearing of the fluid and sedimentation, the tube with 0.015% sodium carbonate should show slight clearing with a relative amount of sedimentation, and the other two tubes should retain their opacity. This is a control of the sensitivity of the reagent. For the actual test the controls consist of known positive and negative sera. With the negative sera the opacity remains in all tubes, whereas with positive sera a clearly discernible clarification occurs in one or more of the tubes.

3. Reading the Results.

The test-tubes having been left standing for 20 hours at 20° C.,

the reading of the reaction is performed with the naked eye, looking at the tubes with a window behind them.

Negative reactions.—The fluid in the tubes is opaque as before; there may be a slight sedimentation and a slightly lighter shade of the fluid. The decisive fact is that, notwithstanding the sedimentation, the fluid never becomes transparent in a negative case.

Positive reactions.—A complete clarification of the suspension represents a positive reaction and may occur in all or any of the four tubes.

4. *Interpretation of Results.*

If no clarification of the fluid has occurred in any one of the four test-tubes containing the serum under examination, the reaction must, of course, be marked *negative*.

Complete clarification of all four tubes, or of the fourth tube only, should be interpreted as *strongly positive* (+++).

The distinctive sign of medium and weak reactions is that the clarification of the fluid is most distinct in the first tube with 0.01% of sodium carbonate, and that by degrees it decreases, with increasing sodium carbonate concentration.

Complete clarification in the first three tubes must be interpreted as (+++). A result of (++) is noted when the first two tubes are completely clear, and (+) when the first tube alone shows clarification.

5. *Procedure with Small Amounts of Serum.*

Should the amount of serum available be less than 0.7 c.c. the test can be performed by using the first, second and fourth tubes, or even the second and fourth only, this requiring only 0.3 c.c. serum. If less than 0.3 c.c. serum is obtainable the *micro test* must be used.

B. *The Micro Test.*

The test can be performed with minute amounts of blood-serum, and can be read after one hour. A small platinum loop filled with serum is mixed with a larger loopful of "antigen" suspension, and with the mixture a hanging-drop preparation is made; after one hour the preparations are examined under the low power of the microscope. In a positive case flocculation is visible, in a negative there is none.

1. Reagents Required.

(a) Antigen: This is the same as that used in the macro test.

(b) Salt solution: A 3.5% salt solution is used, as in the macro test, but with a 0.03% concentration of sodium carbonate.

2. Details of Technique.

The sera must be at room temperature when the test is performed; if they have been in the refrigerator they must be warmed for an hour at room temperature or for a shorter time in the incubator. The reagent is prepared as for the macro test, and after ripening for 2 minutes at 56° C. is poured into a porcelain crucible which has been previously warmed, and covered with a watch-glass.

Mixtures are now made using a loopful of "antigen" and passing through this a smaller loopful (one-fifth the size) of serum. A drop of the mixture is then taken and made into a hanging-drop preparation. More than ten tests should never be made from one preparation of "antigen," the suspension becoming useless after 10 minutes from the time of ripening in the water-bath. The completed tests are left for one hour at room temperature, as near as possible 20° C. (an incubator is preferable).

3. Reading and Interpretation of the Results.

The results are read by examination under the low power of the microscope, the light being arranged as for observation of any hanging-drop preparation. A negative result appears as a regular granulation of the field of vision with tiny spots showing marked molecular movement. A strong positive reaction is observed when the particles have clumped together and molecular movement has ceased. Less marked reactions may be seen when the clumps are not so definite and there is some movement in the free particles.

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AN INVESTIGATION INTO THE POSITION IN FAMILY OF MENTAL DEFECTIVES.

PREPARED FOR THE MENTAL DEFICIENCY SUB-COMMITTEE OF THE
RESEARCH AND CLINICAL COMMITTEE OF THE ROYAL MEDICO-
PSYCHOLOGICAL ASSOCIATION.

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I. INTRODUCTION.

THIS investigation was undertaken at the instance of the Mental Deficiency Sub-committee of the Research and Clinical Committee of the Association. It is an attempt to answer the question whether or not the order in which a mentally defective child is born into a family can have any influence as a cause of the mental defect.

Obviously if the order in which the defective child is born approaches closely to that which would be expected mathematically were the order of birth and the cause of the defect unconnected in any way, then it is presumptive evidence that the dangers or difficulties peculiar to the first or last or any particular order of birth do not form one of the causes of mental defect. If, on the other hand, it is found that considerably more than the expected number of defectives are, say, the first children in a family, it goes some way to prove that the difficulties of a first confinement do cause mental defect. This is important, because it would be a cause of mental defect which we may reasonably hope greater knowledge and skill will in the future largely prevent.

Some authorities maintain that the first-born child in a family is more likely to be defective than any of the later children.* Some

* Karl Pearson, *On the Handicapping of the First-Born*, 1914. G. F. Still, "On Place-in-family as a Factor in Disease," *Lancet*, October, 1927, pp. 795 and 853.

think that more families show the last child in a family to be defective. Others maintain that, in their experience, the defective child appears more often in the middle of a family.* Possibly all these views may be correct, because results vary with the type and grade of cases studied. In the present survey, therefore, as far as possible, cases were classified into grades and types.

The Committee is much indebted to the Association for defraying the cost of printing the *questionnaire* sent out, and especially grateful to the superintendents of institutions and their medical officers who have spent so much time and energy in getting out the answers to the questions. Amongst these were Drs. Chislett, Norwood East, Gill, Langton, Littelljohn, Middlemiss, Stewart and Rees Thomas.

2. METHOD OF COLLECTING THE INFORMATION AND ITS RELIABILITY.

Medical officers were asked to fill in, in each case, particulars of the age, health and mentality of all members of patients' fraternities, and to give certain particulars about their birth and their parents and grandparents. They were also asked to state the source of their information, *i.e.*, whether it was from personal investigation or from case-papers.

The reliability of the evidence from the completed *questionnaires* was not of the same standard in every case. Firstly, with regard to the number of persons in each family and the position of the defective, there is no doubt that case-papers are unreliable. Miscarriages and stillbirths are very apt to be passed over. In cases which have been personally investigated by the medical officer sending in the papers there are also some dangers of error. Usually only one relative has been seen and questioned. Information as regards miscarriages is often much more reliable when the mother gives it than when the father gives it. Parents with numerous children very often do not remember all the pregnancies when questioned at one sitting, and, worst of all, the informant may be of poor mentality.

Secondly, classification of grade and type has not been altogether homogeneous. For example, many medical officers used the legal definition of idiot and imbecile, while others used the I.Q. or mental age. Hence, in the construction of these tables, it is evident

* Neil A. Dayton, "Order of Birth and Size of Family," *Amer. Journ. of Psychiat.*, 1929, viii, p. 979.

that there must be a certain amount of overlapping between idiots and imbeciles, and between imbeciles and feeble-minded. Most medical officers agree about types of defectives such as mongols. Occasionally they speak about "mongoloid" cases. These have been counted as mongols in this report.

The standard of a history of difficult labour is a very variable one. It may mean delay in the second stage, or in the first stage, or simply that forceps were used. In the cases of encephalitis lethargica, too, the diagnosis was several times queried.

Thirdly, the cases reported in this survey are, to some extent, a selected group. They have nearly all come under some sort of official observation, if not institutional care. It will be noticed that the average size of the family increases as the grade of the patient is higher (Table I) :

TABLE I.

Type of case.	Average size of fraternity.
Idiots (personal investigation)	4·65
„ (case-papers)	4·33
Imbeciles (personal investigation)	5·68
„ (case-papers)	5·39
Feeble-minded (personal investigation)	5·95
„ (case-papers)	5·04

This effect may be partly due to the selection of cases, for many low-grade cases come from a higher social class (where families are smaller) than the high-grade patients, who are mostly derived from a lower social class.

Generally speaking the families personally investigated in this survey cannot be regarded as altogether accurate, but are probably a good deal better than a group of families culled from official reports, such as those from which Neil Dayton drew his conclusions. A high reliability cannot be credited to the families collected from case-papers. In the above table it will be seen that the families recorded from case-papers are smaller than those personally investigated, showing that in the case-papers some members of the fraternity were not recorded.

3. ANALYSIS OF THE DATA.

Altogether 1,455 papers were sent in, and the information contained in them was tabulated in various ways. First of all, 154

papers had to be rejected on account of ambiguity of the statements made in them. Then, again, it was thought to be simpler to exclude from all the tables (except Table XI) 19 families in which the defective was a twin. Separate tables were compiled for each class of defective, and in the large groups, idiots, imbeciles and feeble-minded, the information from case-papers was separated from the data obtained from personal investigation. The method adopted in compiling the tables was the same as that used in the L.C.C. Reports.* Families of the same size were taken together, and the number of defectives found in each position was recorded.

If a defective was equally likely to be found in any position in the family, that is to say, if order of birth had no effect, approximately the same number of cases should fall in each place in families of the same size. On this assumption the expected value for the total number of cases which should fall in each place in family can easily be found,† and in the tables which follow it has been calculated.

The first three tables, II, III, IV and also table XI, were compiled entirely from personally investigated cases. The other tables were extracted from questionnaires filled in from either case-papers or personal investigation.

TABLE II.—*Idiots (from personal investigation).*

Order of birth.	Size of the fraternity.												Total.	Expectation.	
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.			
1	3	4	6	5	4	3	1	—	—	—	—	—	—	26	17·8
2		5	1	3	—	—	—	2	—	—	—	—	—	11	14·8
3			3	1	1	—	1	—	—	—	—	—	—	6	10·3
4				3	1	—	—	—	—	—	—	—	—	4	7·0
5					2	1	1	—	—	—	—	—	—	4	4·0
6						—	1	2	—	—	—	—	—	3	2·4
7							1	1	—	1	1	—	—	4	1·7
8								1	—	—	—	—	—	1	1·0
9									—	—	—	—	—	0	0·3
10										—	—	—	—	0	0·3
11											—	1	—	1	0·2
12													—	0	0·1
Total	3	9	10	12	8	4	5	6	0	1	1	1		60	59·9

* Annual Report of L.C.C., iii, 1912 and 1925.

† In a given table, if (N₁) be the number of only children, and (N₂) the number of cases in families of 2 and (N₃) the number of cases in families of 3, and so on, then the expectation of the number of first-born children is (N₁) + ½(N₂) + ⅓(N₃) + . . . etc., and the expectation of the number of second-born is ½(N₂) + ⅓(N₃) + ¼(N₄) + . . . etc., and so on. For example, in Table II the values of N₁, N₂, etc., are given by the totals in the last line. Thus the expectation of first-born is—

$$3 + \frac{1}{2}(9) + \frac{1}{3}(10) + \frac{1}{4}(12) + \dots = 17·8,$$

and the expectation of fifth-born is—

$$\frac{1}{5}(8) + \frac{1}{6}(4) + \frac{1}{7}(5) + \dots = 4·0.$$

TABLE III.—*Imbeciles (from personal investigation).*

Order of birth.	Size of the fraternity.														Total.	Expectation.
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.		
1	15	13	9	9	5	2	2	2	2	1	—	—	—	—	60	58·7
2		12	6	4	3	—	2	2	—	1	—	—	1	—	31	43·7
3			13	4	4	4	4	1	—	1	—	—	—	—	32	31·1
4				2	5	4	1	1	2	—	1	—	—	—	16	21·7
5					8	3	2	1	3	—	1	—	—	—	18	17·0
6						4	1	2	—	5	1	2	—	2	17	12·0
7							5	4	—	1	2	—	—	—	12	9·2
8								6	3	—	—	1	—	—	10	6·7
9									2	2	1	2	—	—	7	4·4
10										4	1	—	—	—	5	3·0
11											2	—	—	—	2	1·5
12												—	—	—	0	0·7
13													—	—	0	0·2
14														—	0	0·1
Total	15	25	28	19	25	17	17	19	12	15	9	6	1	2	210	210·0

TABLE IV.—*Feeble-minded (from personal investigation).*

Order of birth.	Size of the fraternity.																	Total.	Expectation.
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.		
1	12	10	8	5	4	3	3	2	—	1	—	1	—	—	—	—	—	49	58·9
2		12	14	8	8	1	4	1	2	2	1	—	—	—	—	—	—	53	46·9
3			6	8	2	3	—	1	2	2	1	1	—	—	—	—	—	26	35·9
4				8	7	3	6	—	1	1	1	—	—	—	—	—	—	27	26·5
5					5	8	5	4	2	1	1	—	—	—	1	1	—	28	19·3
6						9	3	2	—	1	—	—	1	—	—	—	—	16	14·1
7							3	1	—	1	1	—	1	—	—	—	—	8	9·6
8								4	1	—	1	—	—	—	—	—	—	6	6·2
9									2	3	—	—	—	—	—	—	—	5	4·3
10										1	—	—	—	—	—	—	—	2	3·2
11											1	—	—	—	—	—	—	2	1·9
12												2	—	—	—	—	—	3	1·1
13													2	—	—	—	—	2	0·7
14														2	—	—	—	0	0·5
15															—	—	—	0	0·4
16																1	—	1	0·3
17																	—	0	0·1
Total	12	22	28	29	26	27	24	15	10	13	8	5	3	1	2	4	1	230	229·9

4. DISCUSSION.

There are a number of interesting points which stand out after examination of the tables quoted above. It will be noticed, for instance, that with regard to the first-born in Tables II, III and IV each table has its own peculiarity. The idiots, Table II, show a marked excess of first-born over expectation; there are nearly half as many again as there would be if the order of birth had no effect. On the other hand, the feeble-minded, Table IV, show the

TABLE V.—All Grades (from personal investigation and case-papers).

Order of birth.	Size of the fraternity.																Total.	Expectation.	
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.			17.
1	89	74	63	60	37	18	10	7	5	3	—	1	2	1	—	—	—	370	363·5
2		68	64	39	31	11	17	13	6	5	1	1	2	—	—	—	—	258	274·5
3			40	41	29	24	15	6	6	4	2	2	—	1	1	—	—	171	203·5
4				44	36	22	19	7	5	1	8	—	—	—	—	—	—	142	147·8
5					48	23	15	13	7	3	3	2	—	—	—	1	1	116	101·8
6						30	12	9	5	8	3	2	1	5	—	—	—	75	65·6
7							16	9	6	7	5	1	1	—	1	—	—	46	44·3
8								20	11	2	1	1	—	—	—	—	—	35	29·4
9									9	7	4	2	—	—	—	—	—	22	18·9
10										13	2	4	1	1	—	—	—	21	12·3
11											5	1	1	1	—	1	—	9	7·0
12												2	—	—	—	—	—	2	3·9
13													2	—	1	1	—	4	2·3
14														2	1	—	—	3	1·5
15															2	—	—	2	0·7
16																2	—	2	0·4
17																	—	0	0·1
Total	89	142	167	184	181	128	104	84	60	53	34	19	10	11	6	5	1	1278	1277·5

opposite tendency: there are too few first-born here, though the deficit is not as great as the excess in the former case. But the later parts of families show a slight compensating increase. In Table III the imbeciles show no significant deviation from the expected number among the first-born. Table V, which was compiled from all the data, including case-paper results, is to be trusted less than the foregoing tables, but has the advantage of greater numbers. It shows a slight excess of first-born. There are slightly too few second-born, a considerable deficit of third-born and a slight deficit of fourth-born. In the subsequent places there is a fairly constant excess of the number of defectives over the expected number.

Now the L.C.C. Annual Report, 1912,* gave a table of defectives similar to Table IV of this Report in the distribution of cases. There were too few first-born, and too many towards the ends of families. The cases were not divided into grades, and it is possible that the great majority of them were feeble-minded; they form at any rate an interesting comparison.

It should be noted that tabulations of the kind set out above may conceal more than they demonstrate unless the cases are sufficiently well classified. A preponderance of first-born in one group is easily swamped by a preponderance of late-born in another group when both are added together. It is best to examine the families of a given size separately, in order to see any effect if both

* Vol. iii, p. 191.

tendencies are at work. It is well to scrutinize Table V from this point of view. Taking families of five or six members, an excess is observable at the beginnings and ends, which partially disappears in the totals when families of all sizes are taken into account. A similar effect is seen in Table III, where most of the groups of fraternities of the same size show a preponderance of cases at the beginning and end. Yet the totals for each place in family show little deviation from expectation. The table is especially interesting in this respect, since it contains many cases with histories of difficult labour, and also many mongols.

The special group of cases of mongolism attracts attention by the large number of last-born children (Table VI).

TABLE VI.—Cases of Mongolism.

Order of birth.	Size of the fraternity.										Total.	Expectation.
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.		
1	4	—	1	2	—	—	—	—	—	—	7	12.3
2		4	—	1	—	—	—	—	—	—	5	8.3
3			4	1	1	—	—	—	—	—	6	6.3
4				3	1	—	1	—	—	—	5	4.6
5					1	1	—	—	—	—	2	2.9
6						4	—	—	—	—	4	2.3
7							3	1	—	—	4	1.5
8								2	1	1	4	.09
9									2	—	2	0.5
10										1	1	0.2
Total	4	4	5	7	3	5	4	3	3	2	40	39.8

Average size of fraternity = 5.02.

„ age of father = 39.8 years; standard deviation = ± 6.1 years.

„ „ mother = 40.1 „ ; „ „ = ± 5.2 „

There is a marked deficit of first-born as compared with expectation here, the figure being relatively as much below expectation as it was above it in the case of idiots (Table II). The table should be compared with one on p. 148 of the L.C.C. Report, 1925, vol. iii, which shows the same type of distribution with a larger number of cases.

In spite of what has been asserted to the contrary by some writers,* it is obvious that there is a tendency for this condition to occur at the end rather than at the beginning of a family or other place. The question whether, in these cases, there is much artificial limiting of families is answered in the negative by two facts: Firstly, the average size of the family is five persons, which is normal,

* Cf. M. T. Macklin, *Amer. Journ. Med. Sci.*, 1929.

so that, at any rate, there cannot have been much limitation. Secondly, the average age of the mother in these cases is 40,* so that not many children could have been born after them in any event.

This investigation does not give much information about the precise importance of disease or trauma in the causation of mental deficiency. There were 84 cases in which a history of difficult labour was given, and these, when tabulated, show a slight excess of first-born over expectation (Table VII). There was also a higher proportion of histories of difficult labour in the low grades than in the high grades of defectives. It cannot necessarily be assumed from this that birth injury tends to cause idiocy rather than feeble-mindedness, because difficult labour can be caused by abnormality in the foetus; but the figures are suggestive.

TABLE VII.—Cases in which a History of Difficult Labour is given.

Order of birth.	Size of the fraternity.										Above 10.	Total.	Expectation.
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.			
1	7	6	4	6	2	3	1	1	1	—	—	31	26·1
2		6	4	3	1	—	—	—	—	—	—	14	19·1
3			4	2	2	2	1	—	—	2	—	13	13·1
4				3	—	1	2	—	—	1	—	7	9·1
5					3	2	—	—	—	—	—	5	5·6
6						1	1	—	—	—	—	2	4·0
7							1	—	1	1	2	5	2·5
8								2	1	—	—	3	1·6
9									—	1	—	1	1·2
10										—	1	1	0·9
Above 10											2	2	1·2
Total	7	12	12	14	8	9	6	3	3	5	5	84	84·4

Average number of persons in fraternity = 5·04.

Of these cases, 19 are idiots; which, out of a total of 126, is 15·1%.

41 are imbeciles; " " " 504, " 8·1%.

24 are feeble-minded; " " " 648, " 3·7%.

It is especially noteworthy that 3·5% of all cases are apparently due to encephalitis lethargica. This may be due to the fact that these patients are difficult to manage; owing to shortage of accommodation they are admitted to institutions in preference to less troublesome defectives. A table showing the place in family incidence of this disease gives totals for each place which are closely

* The ages of the parents in 100 cases of *non-mongolian* defectives taken at random from the *questionnaire* papers were as follows:

Father 33·1 years; standard deviation = $\pm 7·5$ years.

Mother 30·6 " ; " " = $\pm 6·1$ "

In the group of mongols the coefficient of correlation between the ages of mother and father was ·68, and in the non-mongol group it was ·69.

in accordance with expectation (Table VIII). The result is not surprising, since no one would imagine that order of birth would have any effect here.

TABLE VIII.—Cases of *Encephalitis Lethargica*.

Order of birth.	Size of the fraternity.										Above 10.	Total.	Expectation.
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.			
1	1	3	4	1	—	—	—	1	—	—	—	10	10·6
2		2	1	1	—	1	1	—	1	—	—	7	9·6
3			—	4	—	1	—	—	—	—	2	7	7·1
4				1	1	—	2	—	—	—	1	5	5·4
5					3	—	1	1	—	—	1	6	3·7
6						2	1	—	—	1	—	4	2·9
7							1	—	—	—	—	1	2·2
8								1	1	1	—	3	1·3
9									—	—	—	0	0·9
10										—	—	0	0·7
Above 10											2	2	1·0
Total	1	5	5	7	4	4	6	3	2	2	6	45	45·4

Average size of the fraternity = 6·01.

Not all the cases whose histories were sent in had been tested serologically for syphilis. Of those that had been tested 12% were positive—a percentage very close to that found in a previous investigation.* There was a definitely higher percentage among low-grades than among high-grades (see Table IX).

TABLE IX.—Cases in which the Result of a Blood Test for Syphilis was Recorded (*Wassermann or Sigma test*).

	Number positive.	Total cases tested.	Percentage positive.
Idiots	7	43	16·3%
Imbeciles	19	123	15·5%
Feeble-minded	31	292	10·6%
Total	57	458	12·7%

The age of the patient at the time of the test was not recorded, but probably about two-thirds of the cases were over sixteen years old.

In the Ingelby Lectures, 1927,† Dr. G. F. Still came to the conclusion that, with the exception of mongols, mental defectives were

* Report of Research and Clinical Committee of the Royal Medico-Psychological Association, July, 1930.

† *Op. cit.*

more common at the beginning than at the end of the family, and he based his argument mainly on the proportion of first-born children in various groups of patients which came under his observation. The criterion is not a very safe one to base conclusions upon, because the proportion of first-born varies inversely with the average size of the families under consideration. But it shows up clearly the presence or absence of any factor which tends both to limit families and affect the first-born. The analysis of various groups of cases from this point of view is given in Table X.

TABLE X.

	Total number of cases.	Number first-born.	Proportion first-born.
Idiots (Table II)	60	26	43.3%
Difficult labour (Table VII)	84	31	36.7%
All cases (Table V)	1,278	370	28.9%
Imbeciles (Table III)	210	60	28.6%
Encephalitis (Table VIII)	45	10	22.2%
Feeble-minded (Table IV)	230	49	21.3%
Mongolism	40	7	17.5%

The data from case-papers, taken separately, give a percentage of 30.2 first-born in 778 cases. Of these, 66 were idiots, 26 of whom were first-born, *i.e.*, 37.4%.

Dr. Still regarded 20% first-born as the normal expected proportion. This value seems rather too low, and anything between 20 and 30% is probably to be taken as within normal limits. The proportion of idiots who are first-born in this investigation (40%) is high on either view, and supports Dr. Still's contention. He found that 41.7% of non-mongolian defectives were first-born, and since his cases were young children they were probably low-grade defectives, for idiots are usually recognizable at birth, and the higher the grade the later the diagnosis is made.

In evaluating the result it must be remembered that the fact that idiots are recognized early in life may in itself tend to cause families containing idiots to be limited more than those containing higher-grade defectives. And family limitation in any group increases the proportion of first-born children.

5. DEFECTIVES OF SUPPOSED HEREDITARY ORIGIN.

It is commonly believed that in the majority of cases, mental defect is due to hereditary causes. The data under consideration gave an opportunity for testing this belief. Naturally only

defectives in whose record there was no history of severe injury or infection would be suitable for such a study.

After eliminating those cases which were diagnosed as syphilitic, encephalitic or mongol, and also those in which a history of difficult labour was recorded, there remained a group which, for lack of further information, could be considered to be of probable hereditary origin.

If this supposition were true there should be no tendency for them to appear at any particular place in the family rather than any other, and maternal age should have no effect. In order to test this assumption the following table (XI) was prepared. Only cases from personal investigation were suitable, since it was necessary to take into account all the members of the family and their respective ages. There were 261 papers available for this study, and in 128 of these the diagnosis was feeble-mindedness, in 112 papers imbecility, and in the remaining 21 papers idiocy. Any other member of the family coming under any of these categories was recorded in the table, and also any person said to have been dull, backward, or in a special school.

TABLE XI.—*Unclassified Cases (261 families) from personal investigation.*

Maternal age.	Below 24.	25-29.	30-34.	35-39.	40 and over.	Total.
Affected persons	68	94	76	47	27	312
Normal persons	165	230	192	148	64	799
Total	233	324	268	195	91	1,111
Percentage affected of total	29.5	29.0	26.6	22.9	29.7	28.1

The figures in the bottom line appear to indicate that the affected persons appear more frequently at the beginning and end of the family, thereby supporting the views suggested by observation of some of the foregoing tables. Such a distribution is inconsistent with the purely genetic interpretation of mental defect advocated by Goddard,* and still believed in by many people.†

Moreover, there is an obvious way of using these data as a means of testing Goddard's hypothesis that mental deficiency is due to a single recessive gene substitution. If none of the parents of these cases were mentally defective, but both were always "carriers," the proportion of affected persons in the total number should, on

* *Feeble Mindedness: Its Causes and Consequences*, 1916.

† e.g., H. S. Jennings, *The Biological Basis of Human Nature*, 1930.

this hypothesis, be 25%. When one parent was defective the proportion should be 50%, and 100% when both were defective.

Now, at first sight, it would appear that the actual proportion affected in the above families was not far from that required by this assumption. But there is an important consideration which must be taken into account before jumping to the conclusion that Goddard's hypothesis is verified by these results. Owing to the fact that 261 families are represented in the table, each containing at least one defective, there could not be less than 261 affected members in these families—that is, there could not be less than 23.5% affected. On Goddard's hypothesis there would be families in which no affected persons appeared, although both parents were "carriers." These would be left out of such an investigation as this and they must be allowed for. Actually to do so is a comparatively easy matter.* By suitable weighting of the expectation of the numbers of affected members in families of different sizes, the final value of 34.2% is obtained. This expected value differs in a marked degree from the observed figure of 28.1%. There are not nearly enough persons affected in these families to support Goddard's hypothesis, in fact the chances *against* its being true here are of the order of 1000 to one.† On the other hand, there are in these families 343 persons who have, in one way or another, evaded diagnosis. This unknown group contains miscarriages, stillbirths, deaths in infancy, and a few members of families who have been lost sight of by their relatives. In order that the proportion of affected members in families should reach a value in accordance with Goddard's hypothesis, it would have to be assumed that about half of the members of the unknown group were defective. (The proof of this is somewhat lengthy, and does not take into consideration the fact that some of the parents of these cases were themselves considered defective, which would mean that even more of the unknowns would have to be considered defective also.) Another way of saying the same thing is that for every two defectives diagnosed, more than

* Let the size of the fraternity be n members and the expected proportion of affected members in all such fraternities be $\frac{1}{2}$. Assuming that the affected members are distributed at random in these fraternities, and that only those families come under observation which contain at least one affected member, the percentage of affected members in the observed families is given by the formula—

$$25$$

$$1 - \left(\frac{1}{2}\right)^n.$$

A rough value for the expectation is obtained by putting the average size of the family for n . In this case $n = 4.26$.

† The deviation of the observed proportion of affected persons from the expected value is 6.1% which is *more than four times the mean quadratic error of the expected value*, 1.4%.

three must have been missed, if Goddard's hypothesis is to be numerically satisfied. There is no warrant for the assumption that the early mortality in this group of defectives is so high.

It is, therefore, unlikely that hereditary influence of the kind supposed by Goddard is the only factor involved in the ætiology of these unclassified cases.

6. CONCLUSION.

The number of cases on which these tables are based is too small to allow any very definite conclusion to be drawn. Dr. Ross Ashby has worked out some of the sampling errors of the various figures given above, and has concluded that in none of them can the deviations from expectation be considered greater than those which could have arisen from mere chance, and that taken by itself the result of the investigation must be regarded as negative. But in relation to what is known already from other sources and by comparison with other observations on the same lines (L.C.C. Reports, Dr. Still, etc.), the evidence, weak though it may be in many respects, points to the following conclusions:

- (1) In low grades of amentia (idiots) the first-born child is somewhat more frequently affected than the other members of the fraternity.
- (2) In high grades of amentia the defectives are more frequently found among the later members of the fraternity.
- (3) Certain special groups of cases have their own peculiar distribution in the family. Mongols tend to come last, and cases with a history of difficult labour tend to come early.
- (4) The data give no support to Goddard's hypothesis that mental deficiency is due to a single recessive gene substitution.

BLOOD-SUGAR STUDIES IN ABNORMAL MENTAL STATES.

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SOME explanation may seem to be necessary to account for further research into the question of sugar tolerance in psychotic subjects, as it may be thought that this line of research has been exhausted by the numerous workers in this field. A study of their work, however, shows that no critical attempt has been made to correlate the result of the sugar tolerance test with the mental and physical state of the subject at the actual time of the test. Instead, groups of patients suffering from certain psychoses have been investigated, and the results reported as percentages of abnormal curves in such psychoses. Thus, when it has been reported that a certain percentage of melancholics or schizophrenics show sustained hyperglycæmia after glucose ingestion, no attempt has been made to find out in what way these differed from the remainder in whom normal sugar tolerance was found.

It was on the general principle that it is unwise to do any research without normal controls, and not with any idea of calling in question the generally held view of what constitutes a normal blood-sugar curve, that it was decided to examine 6 male and 6 female nurses as controls. The result of menstruation on sugar tolerance, which this control work demonstrated, is very striking. It is, indeed, surprising that it has not been fully reported upon previously, when one considers the large amount of clinical and research work that has been done on sugar tolerance.

Of previous work on the subject, short, but useful summaries are given by Devine (1929) and Page (1930), and a most exhaustive study of blood-sugar in mental disorder has been made by Mann

(1925), who gives a bibliography of all relevant literature up to that year.

A survey of the literature as a whole reveals a state of some confusion. Upon two points there is general agreement :

(1) The fasting blood-sugar level of psychotic subjects is generally within normal limits [Mann (1925), Mann and Scott (1929)]. Bowman and Kasanin (1929) conclude " that there is no correlation between the mood of the patient and the height of the blood-sugar ; various other factors might account for a great many instances of high blood-sugar curves."

(2) Disordered carbohydrate metabolism (*i. e.*, a lowered sugar tolerance) is very frequently found in psychotic subjects.

Beyond these two facts there is little that is clear.

According to Mann, " abnormal sugar curves cannot be coupled with any mental or medical classification," though there is a greater incidence of anomalous blood-sugar curves in psychotic than in normal cases. He (1925) considers it a generally accepted fact that the frequency of the abnormality is greater in those mental conditions associated with melancholia, and especially with stupor. He examined 152 patients (of whom 107 were women), and it seems apparent from his results that abnormality in sugar tolerance bears little or no relation to the type of mental disease present. He does, however, comment upon the fact that " in certain types of acute psychosis with markedly abnormal blood-sugar curves there may be a return to the normal type of curve coincident with recovery."

Raphael, Ferguson and Searle (1928) made a careful study of one case of manic-depressive psychosis, and showed that the return of the blood-sugar curve to the normal closely followed the return of the mental condition from an acute depression to a normal condition. It is impossible, however, to make any general deduction from a study of only one case.

The reason for the present state of confusion is not difficult to perceive. In the first place, the usual practice has been to make a single test of the sugar tolerance of the patient, and relate this to the type of psychosis with scarcely any reference to the physical condition at the time the test was made ; *e.g.*, the presence or absence of menstruation, toxæmia, endocrine imbalance. In the second place, there has usually been an insufficient description of the mental condition of the patient *at the time* of the test. It is easy to see how the examination of a large number of patients, carried out in a statistical manner, and with little reference to their clinical and mental condition at the precise time of examination, may give rise

to a series of sugar-tolerance curves, having no apparent relation to the type of psychosis present. Such examinations carried out in an *extensive* manner seem fruitless, and should be replaced by serial examinations, each patient being repeatedly examined in different phases of his illness.

It is the purpose of this communication to report upon a careful examination of 85 patients, in which each has been investigated on a number of occasions. The examinations have been made both when changes in mental and physical condition have occurred and when they have not, the primary object of the investigation having been to discover whether or not an abnormal sugar tolerance bears any relation to the mental condition of the patient.

It will be shown that, in the absence of certain physical conditions, which will be described, an abnormal sugar tolerance bears the closest relation to the emotional tension of the subject. This is so much the case that with many patients the progress of the change in sugar tolerance may be watched with confidence as a guide to the emotional condition of the patient and to the efficacy of his treatment, and as a valuable aid in deciding the time of his discharge from hospital.

METHODS.

Throughout the work reported in this paper, the well-known method of Hagedorn and Jensen has been used for the estimation of sugar in blood. At the commencement of the work, both this titrimetric method and the colorimetric method of Folin and Wu were used. It soon became apparent, however, that, although the two methods did not give identical results in the actual amount of sugar in the blood, the sugar-tolerance curves by the two methods were always parallel. For this reason, and because the Hagedorn-Jensen method is easily and rapidly carried out with consistent results, this method has been solely adopted for all the routine blood-sugar work.

Each blood-sugar estimation has been made, without exception, in duplicate. Usually the duplicate results have agreed to within 2 or 3%.

The Hagedorn-Jensen method, like most reducing methods, is affected by substances in the blood other than glucose, so that the figures do not give true measures of the actual amounts of glucose in blood. Since glucose, however, is presumably the only variable in a sugar-tolerance test, the curves, as determined by the

Hagedorn-Jensen method, may be considered to give true indications of the rate of change of glucose in blood.

For the test, the patient was given 50 grm. pure glucose in 150 c.c. water, flavoured with lemon-juice. The sugar was administered at 8.30 a.m., the patient having had no food since 8 p.m. the previous day. The blood was examined just prior to giving the glucose, and then at half-hourly intervals for a period of two hours after the glucose ingestion. A final examination was made at the end of three hours. The blood was taken from the ear. At first, in making the duplicate tests, one lot of blood was taken from the left ear and the other from the right; but since these always agreed, it has become the practice to take the two specimens from one ear. It is imperative that the patient lie quietly in bed during the whole of the test, and whoever takes the blood from the patient should not converse with him in a manner liable to add to his excitement or cause any undue alarm.

The normal procedure has been to draw one or two drops of blood from the ear into a small tube containing a trace of lithium oxalate. The tube is brought to the laboratory, where the analysis is made. It is possible to do sugar tolerances on two patients a day even if only one operator is available; but, in practice, it has been found best to carry out only one sugar tolerance test a day.

NORMAL SUGAR-TOLERANCE CURVE.

For information on a typical sugar tolerance curve, the effects of the administration of various quantities of glucose, etc., the paper of Maclean and de Wesselow (1920-21) should be consulted. Spence (1920-21) gives results obtained in a number of normal cases. Hansen (1923) and Gray (1923) have made exhaustive investigations on the subject, and Malmros (1928) has made a study of sugar-tolerance tests in various cases of physical disease. Mann (1925) has investigated a number of normal cases. It is clear from the results as a whole that following a 50 grm. glucose meal there is a relatively rapid rise of blood-sugar to a value which may vary from 0.15% to 0.21%, and a return to the normal fasting level within two hours. The return to the fasting level within two hours is the most constant finding in all normal cases, and occurs whatever the height to which the blood-sugar has ascended.

Jørgensen (1926) has pointed out that after intravenous injection of large doses of glucose the fasting blood-sugar level is re-established within two hours.

HYPERGLYCÆMIC INDEX (H.I.).

It was found, at the beginning of the work, a difficult matter to contrast various sugar-tolerance curves without some *quantitative* measure of expressing the departure of such curves from those usually found in the normal case. The commonly used term "abnormal sugar curve" is vague, and may apply to cases where the blood-sugar has risen to excessive heights, and yet fallen to a normal fasting level within two hours; or to cases where the blood-sugar has risen in a normal manner, but *not* fallen to the fasting level within two hours; or to cases where the blood-sugar has scarcely risen at all. Clearly an abnormality may occur in more than one direction; and it is probably for this reason that no attempt has so far been made to express the abnormality of a sugar curve in a quantitative sense.

It was quite obvious that the abnormality, as a general rule, exhibited itself as a sustained hyperglycæmia. This did not mean that the blood-sugar necessarily rose to a level higher than that which obtained in normal cases, but that it did not return to normal within two hours. This was the most constant finding in all abnormal sugar-tolerance curves. It seemed, therefore, that a quantitative expression of the extent of the abnormality of the sugar curve could be found in the length of the delay to return to the normal fasting level. The most abnormal condition of the curve would be when the sugar level was at its *highest* value at the end of the two-hour period; and the curve would be deemed normal when the sugar level had returned to the fasting value at the end of the period.

A quantitative expression of the amount of *sustained* hyperglycæmia, exhibited in an "abnormal" curve, can be given as follows:

$$\text{H.I.} = \frac{\text{Two-hour blood-sugar level} - \text{fasting level}}{\text{Maximum blood-sugar level} - \text{fasting level}} \times 100,$$

where H.I. represents the measure of sustained hyperglycæmia, and is conveniently referred to as the hyperglycæmic index. The maximum blood-sugar level is the maximum level to which the blood-sugar rises within two hours of ingestion of the glucose.

It will be seen that the index is 100 when the blood-sugar level has, after the two-hour period, only just (or not yet) reached its maximum peak after the sugar ingestion. It is zero when the curve is a normal one. The index has the advantage that it is independent of the absolute magnitude of the fasting level, and, being a

ratio of two differences in sugar levels, is a function only of changes in the actual quantities of glucose in blood.

Many curves (normal and otherwise) show, after a return of the blood-sugar level to the fasting level, a slight secondary hyperglycæmia. This may occur at about the end of the two-hour period. For this reason the H.I. is taken as zero if the blood-sugar level has fallen to the fasting value *before* the end of the two-hour period. Moreover, if a secondary hyperglycæmia should be manifested before or at the two-hour period and the blood-sugar level has not previously fallen to the fasting level, then the lowest value which the level has attained in that period is taken as equivalent to the two-hour value. It is, therefore, essential for the purpose of calculating the index that the whole sugar-tolerance curve be examined. Typical examples are shown in Table I.

TABLE I.

Sex.	Blood-sugar mgrm. %.						H.I.
	Fasting level.	$\frac{1}{2}$ hour.	1 hour.	1 $\frac{1}{2}$ hours.	2 hours.	3 hours.	
F.	103	196	161	156	142	87	42
F.	126	231	227	219	188	163	59
M.	101	149	151	134	113	106	24
M.	87	143	165	126	119	87	40
M.	115	147	177	157	143	108	45
F.	104	122	166	166	173	159	100

The H.I., as defined above, as a measure of the sustained hyperglycæmia, is not without its defects. For instance, patients who give low maximum sugar levels tend to give a high H.I., whilst those who give high maximum sugar levels tend to give a low H.I. It is desirable to know, therefore, whether the sugar curve exhibits any particular abnormality other than that of sustained hyperglycæmia, and to bear this in mind when making deductions from observations of the magnitude of the H.I. Generally speaking, however, very little trouble is encountered, for the maximum height of the blood-sugar level found in psychotics is not greatly different from that obtained in normal cases.

The H.I. has proved, after eighteen months' experience of this work, to be of very great use; and it has become the practice in this hospital to place the index in the clinical records of each patient on every occasion he is investigated for sugar tolerance.

An H.I. above zero but below 10 may be considered normal, for the experimental errors involved in collecting blood and estimating blood-sugar, though small, are such as to give an index possibly as high as 10. An index between 10 and 50 indicates a definite sustainment of hyperglycæmia, whilst one above 50 points to a severe disturbance in carbohydrate metabolism.

SUGAR TOLERANCE WITH NORMAL MEN.

Although the normal curve has been previously exhaustively studied, it was felt, as already stated, that on general principles a number of normal men and women should be examined with the object of discovering whether the sugar-tolerance curve remained the same in each individual after examination on several occasions.

Six male nurses and six female nurses of this hospital kindly volunteered for the work.

Typical results with male nurses are described below :

TABLE II.

Control.	Date.	Blood-sugar mgrm. %.						H.I.
		Fasting level.	½ hour.	1 hour.	1½ hours.	2 hours.	3 hours.	
1	9.4.30	110	162	165	101	113	98	5
	29.5.30	113	166	188	136	113	110	0
2	16.4.30	116	194	173	138	123	80	9
	26.5.30	108	179	154	131	97	113	0
3	11.4.30	126	176	138	87	85	90	0
	23.5.30	120	204	149	99	99	99	0
4	7.4.30	113	131	190	124	101	106	0
	22.5.30	104	163	147	119	89	101	0
5	21.5.30	122	142	126	99	108	94	0
	28.5.30	131	193	119	110	110	110	0

It will be seen that the male nurses all give normal curves with H.I. between 0 and 10.

SUGAR TOLERANCE WITH NORMAL WOMEN.

A different state of affairs exists with women. It was found, at first, that whereas two or three of the women gave normal curves, the others gave abnormal ones, their H.I.'s being high. The magnitude of the H.I. was increased by the fact that the maximum rise in blood-sugar was relatively small. On repetition of the

test it was found that those who were previously abnormal had become normal, and that one or two of those who were previously normal had become abnormal. On carrying out the test a third time, this state of affairs was repeated.

It was apparent that the departures from normality could not be related to obvious physical or mental disorder, and it was clear, too, that the abnormalities were confined to the women and did not occur in the men.

A possible explanation was that the abnormal sugar tolerance was connected with menstruation; and this proved to be the case, as is shown in Table III.

TABLE III.

Control.	Date.	Relation to menstruation.	Blood-sugar mgms. %.						H.I.
			Fasting level.	½ hour.	1 hour.	1½ hours.	2 hours.	3 hours.	
1	17.3.30	+14	96	133	92	104	97	92	0
	2.4.30	0	113	188	134	133	131	110	24
	8.5.30	+	114	156	168	145	106	101	0
2	17.3.30	+	94	106	122	105	90	86	0
	24.3.30	0	99	135	110	124	113	108	30
	9.5.30	+	94	135	110	118	94	84	0
3	14.3.30	0	100	133	133	125	115	88	45
	27.3.30	+	110	138	135	99	105	105	0
	25.4.30	+ 7	127	166	129	153	111	111	0
4	13.3.30	*	108	117	120	111	100	96	0
	19.3.30	- 3	108	152	104	94	94	88	0
	7.5.30	0	111	162	129	126	127	110	29

* Case 4. Amenorrhœa for 4 months.

The numbers in column 3 indicate days before onset (-) and days after cessation (+) of menstruation; 0 indicating actual menstruation.

Careful inquiry showed that, apart from Case 4, who had had amenorrhœa for four months prior to her first test, menstruation was perfectly normal in these nurses, and in all cases quite unaccompanied by any physical or nervous upset.

Okey and Robb (1925) have already pointed out that during the menstrual period there appears to be some alteration in the mechanism by which glucose is removed from the blood. This conclusion is borne out by the results given above, but probably owing to the fact that no attempt was made by the above-named workers to make their subjects rest during the test, the abnormalities obtained by them do not correspond with those obtained in the present investigation.

It is clear from this effect of the menstrual cycle on sugar tolerance that many of the abnormal curves reported in the literature on female psychotic patients may well be vitiated if done without reference to the presence or absence of menstruation. That the blood-sugar curves of female psychotics are similarly affected will be shown later. Care has been taken in the present investigation to make the examination at intermenstrual periods in female subjects.

The results of this investigation with 85 patients will now be considered under their respective psychoses.

MANIC-DEPRESSIVE INSANITY, INCLUDING INVOLUTIONAL MELANCHOLIA.

Fifty-two of the patients came under this category, namely, 43 melancholiacs, 4 maniacs and 5 cases of benign stupor. A few of the 43 melancholiacs showed maniacal phases while under investigation. Table IV shows the results obtained in this group of patients.

A perusal of this table indicates a relatively high incidence of melancholic patients exhibiting an H.I. of over 50, and a relatively low incidence of these patients (7 out of 43) who consistently give an index of zero.

It is in the group of cases belonging to the manic-depressive psychosis that the sugar-tolerance test gives results of greatest practical importance. Here it is possible to understand the significance of the H.I. and to interpret it in clinical terms. Generally speaking, it is found that the height of the H.I. is a criterion of the emotional tension of the patient at the time of the actual test. In fact, in the series of figures given in Table IV it was always possible to correlate any change in the index with a change in the emotional tension of the patient.

MELANCHOLIA.

(a) *H.I. as a guide to clinical progress.*—Examples will now be given to show that by means of the index we can gauge the progress of a melancholic patient without having to depend entirely on the clinical picture. This is particularly important in those by no means rare cases when it is difficult to say if the melancholic patient has really returned to normal, or is only pretending to have done so with a view to early discharge—it may even be with the concealed

TABLE IV.

Case no.	Sex.	Age.	Diagnosis.	Hyperglycæmic index.	Remarks.
1	F.	49	Involuntional melancholia	57, 34, 0	Discharged recovered.
2	F.	54	Ditto	24, 69, 19, 77	Still in hospital.
3	F.	59	"	50, 0	Discharged recovered.
4	F.	48	"	86*, 38	*Menstruating.
5	M.	53	"	54, 52*	*Stuporose.
6	F.	47	"	54, 54, 37, 39, 81, 0, 0	Discharged recovered.
7	F.	46	"	40, 0, 0, 0, 100, 16, 13, 0	" "
8	M.	57	"	94, 86, 100, 100, 53, 76	No improvement.
9	M.	63	"	65, 22, 45, 100	"
10	F.	56	"	0, 0	Died from exhaustion.
11	F.	49	"	13, 9	Bad prognosis.
12	F.	45	"	14, 0, 44*, 12	*Special upset.
13	M.	55	"	0, 0	Bad prognosis.
14	F.	46	Agitated melancholia	90, 51	Died from exhaustion.
15	F.	44	Ditto	42, 60	
16	F.	56	"	100, 57	
17	F.	56	"	23	
18	F.	41	"	8, 0	Died from exhaustion.
19	M.	50	"	0, 0	Bad prognosis.
20	F.	47	Recent melancholia	100	
21	M.	36	Ditto	77, 24, 11, 40, 24, 0	Discharged recovered.
22	F.	48	"	67, 78*, 12, 0	*Menstruating. Discharged recovered.
23	F.	22	"	70, 0	Discharged recovered.
24	F.	40	"	100, 0	Died from chronic nephritis.
25	M.	28	"	67, 0	Discharged recovered.
26	M.	37	"	0, 14, 0	Depressed on each occasion. Bad prognosis.
27	M.	40	"	0, 0	Bad prognosis.
28	F.	49	"	33*, 12	*Vaccinated.
29	F.	32	Recurrent melancholia	90, 0, 0	Discharged recovered.
30	F.	45	Ditto	80, 100	No improvement.
31	M.	18	"	100	"
32	F.	58	"	100, 56, 62, 45	Still in hospital.
33	F.	31	"	63, 25, 0	Discharged recovered.
34	F.	39	"	0, 80*, 34	*Menstruating.
35	F.	31	"	40*, 17, 40†	" " †Relapsed.
36	F.	35	"	0, 0, 0*	" " Adlerian mechanism in ament.
37	F.	48	"	33, 0	Discharged recovered.
38	F.	61	Chronic melancholia	31, 87, 72	Chronic arthritis.
39	F.	50	Ditto	48, 50	
40	F.	62	"	0, 0	Bad prognosis.
41	F.	27	Depression in epileptic	0	Adlerian mechanism.
42	F.	44	Melancholia and mania	100*, 77, 7†, 93, 39	*Menstruating. †Mania.
43	F.	33	Ditto	50, 0*	*Mania.
44	M.	53	Recent Mania	14, 74, 0	
45	M.	72	" "	0	Senile dementia.
46	F.	23	" "	14	Schizoid.
47	M.	54	Recurrent mania	0	
48	F.	18	Benign stupor	37, 0	
49	F.	22	" "	20	
50	F.	62	" "	28	
51	F.	35	" "	14, 100*, 0, 0, 0, 0	*Vaccinated.
52	F.	17	" "	0, 0	

determination to commit suicide if such discharge takes place. The following case illustrates this point.

CASE 3.—Widow, æt. 59: housewife. Admitted 5.9.29 with history of 3 months' illness.

Diagnosis: Involuntional melancholia.

Physical: Nothing of note.

Mental: Left a widow at 25, brought up her family, and after marriage of last daughter five years ago felt very lonely. Later became depressed and, unsettled. The following symptoms were present on admission: Claustrophobia, *folie de doute*, subjective uncertainty, lack of self-confidence. At one time she would admit, at another deny, thoughts of and desire for death; any thought of suicide was strongly denied.

Progress: She settled down very well and was sent to a "parole" ward on 5.10.29. She occupied herself in the ward, but remained of very worrying disposition and very anxious for discharge.

In January, 1930, the question of a period of trial at home was being considered, but on a sugar-tolerance test being done it was found that her H.I. was 50. She appeared untroubled by the experiment, and was quiet and cooperative throughout. It was considered advisable to postpone her discharge from hospital, and the position was explained to her son. He then revealed for the first time that on the occasions when he had taken his mother out of hospital on short leave of absence she was very easily upset by trifles, and that from what she said on these occasions he felt that his mother's great desire for discharge was because she felt she was about to die, and wanted to do so at home. It was very apparent that, as had been suspected, she was really under considerable tension, but was with much determination hiding this. She made steady improvement from the middle of January, and at the time of her second blood-sugar test on 17.2.30 she admitted that she had previously been much worried, though she had denied this, but now felt much better and fully confident of herself. Her index on this occasion was normal.

She was discharged "recovered" shortly after this, and a recent report states that she has continued to keep well.

The following two cases further illustrate very well how the H.I. follows the clinical progress of the disease, and show how the index can be used as a valuable guide to the progress of the case:

CASE 1.—Married, æt. 49; housewife. Admitted 26.9.29 with a history of 3 years' illness.

Diagnosis: Involuntional melancholia.

Physical: Nothing of note, apart from considerable emaciation.

Mental: She had a bad family history, her father being an alcoholic, an uncle having committed suicide, and an aunt being in this hospital.

On admission, no true intellectual disorder, but amnesic and disorientated owing to being wrapped up in her own misery; retardation and difficulty of thinking; somatic delusions—*e.g.*, insisted that she had not passed water and that bowels had not moved for three weeks; delusions of sin and unworthiness; anxious for death and actively suicidal; frequently agitated, calling on God and wringing her hands.

This was still her mental condition at the time of the first test on 5.11.29, when the H.I. was 57. She was very apprehensive during the test.

About August, 1930, she began to show some slight improvement, which continued up to 3.10.30, when another test was carried out. She was still mildly depressed and retarded, but now had some insight into her delusional formation. Her H.I. was now 34. She was quiet and cooperative during this test.

By 3.11.30 she was clinically well, and her H.I. was now found to be normal. Her convalescence was uninterrupted and she left hospital on 27.2.31, since when she has remained well.

CASE 21.—Married. Fuel-worker. Admitted 18.12.29 with history of recent onset.

Diagnosis: Recent melancholia.

Physical: Bad pyorrhœa, headaches, marked tremor of hands; otherwise nothing of note.

Mental: On admission he exhibited the fundamental phenomena of the melancholic state, with retardation and acute depression. He had the delusion that because of his having revelled in sexual phantasies during the war, he was now going to be hanged and his wife and children punished.

On 30.12.29 his H.I. was 77. He was quiet and cooperative during the test. He made steady improvement, and on 7.2.30 his H.I. was 24. At this time he was still retarded; and, though there was no affective depression, he was still very quiet and solitary.

On 24.2.30 his H.I. was 11; he had been practically his normal self for a week, with no appreciable retardation or undue depression, but for two days he had been complaining of pain at the site of an old fracture. The low index showed that this complaint was not associated with any return of his depression.

On 20.3.30 his H.I. was 40. There had been a definite recurrence of his symptoms during the past week; he had again become solitary, retarded and depressed. He again improved, and his sugar tolerance was tested on 31.3.30, when his H.I. was 24. At this time he seemed quite cheerful when interviewed, but was rather dull, and did not give the impression of normality. He continued to convalesce, and prior to his discharge on 24.4.30 his index had reached normal.

Cases 10, 11, 13, 18, 19, 26, 27, 36, 40 and 41 constitute a group of ten melancholiacs, who, in spite of apparent depression, give a normal or only slightly abnormal H.I. It was some considerable time before an explanation of these apparently anomalous results offered itself. It was Case 18 which gave the first clue. Here was a woman, apparently extremely agitated and depressed, and, at first sight, under considerable emotional tension, whose H.I. was quite low. In making a critical examination with a view to discovering in what way this patient differed from the usual melancholic, one was struck by her histrionic behaviour, which suggested that there was a considerable hysteroid element in her psychosis. That this clue was significant has been borne out by the fact that the hysteroid element has since been found to be very generally associated with a low index, and to be always present in melancholiacs with a low index. It is, of course, a moot point whether the hysteric actually feels the emotion he proclaims, or whether there is an absence of depth in his emotion owing to absence of the secondary reverberatory phenomena associated with emotion. This latter hypothesis was put forward by Golla in his Croonian Lectures of 1925, and findings corroborative of it have been obtained by one of us (McCowan, 1926). As this hypothesis seems to fit in very well with the present findings, it may be permissible to attempt to bring it into agreement with the more generally accepted hypothesis of Jung—that the hysteric is a feeling extrovert, the contention being that the hysteric, far from being devoid of emotion, actually guides his life by it. It may be admitted that the hysteric is a feeling

extrovert, but with the proviso that his emotions are not accompanied by the usual secondary reverberations due to vasomotor and other changes. This gives him his well-known feeling of voidness of emotion and want of inner satisfaction; and this, in turn, brings his thinking into play to tell him how he should feel and behave in any given circumstances; but, as he is a feeling extrovert, it follows that the thinking thus aroused comes from his unconscious, and is, consequently, primitive and undifferentiated. It is characteristic of phenomena which derive their driving power from the unconscious that they are unadapted and archaic; and certainly this fits in well with the symptoms manifested by the melancholiacs under discussion.

Work being done in the psychological laboratory at this hospital by Dr. Lockwood on several of the patients in the present series is showing that the psycho-galvanic reaction runs parallel with the H.I. It is being found that the hysteroid melancholiac, like the ordinary hysteric, fails to give evidence of emotion as recorded by the psycho-galvanometer.

The following two cases are illustrative of this type of patient :

CASE 18.—Married, æt. 41; housewife. Admitted 10.1.29 with history of recent onset.

Diagnosis: Agitated melancholia.

Physical: Nothing of note.

Mental: House-proud woman, who had severe blow to her pride when her husband lost a good position owing to some petty swindling. A week prior to admission she developed delusions that her husband was unfaithful, did not want her, and was trying to poison or hang her. She cut her wrists in what she pretended to be a suicidal attempt, and was continually praying for herself and others. She gradually improved for three months, but then relapsed into an acutely agitated state, with all her former symptoms greatly exaggerated. She required tube-feeding at times; self-pity was very prominent, and her praying and agitation were very theatrical, and much exaggerated when anyone was present. The unconscious motive of her psychosis was probably a desire to escape from a mode of life and a husband she had come to hate. This was her condition when a sugar-tolerance test was done on 18.12.29. Her H.I. was 8. She was emotional and disturbed during the experiment. On repetition later her H.I. was 0.

She continued extremely agitated until her death from lobar pneumonia on 26.1.30.

CASE 11.—Married, æt. 49; housewife. Admitted 3.1.30.

Diagnosis: Though classified as a case of melancholia, this patient was undoubtedly a hysteric who had been certified because of threats of suicide, which she really had no intention of carrying out. She had a right-sided hysterical hemiplegia of three years' standing.

She was a miserable-looking woman with marked feelings of subjective deficiency, full of self-pity and pseudo-altruistic talk of great worry because her illness was standing in the way of her daughter's education as a school-teacher.

This was her condition on 10.1.30, when her H.I. was found to be 13. She was quiet and cooperative during the test. On repetition later her index was 0.

She was discharged "not improved" on 27.2.30, and a recent report shows that she has made no progress.

The prognosis in the cases of melancholia who have given a consistently low H.I. is of interest. Excluding Cases 36 and 41,

who are aments, whose attacks of depression were merely expressions of the Adlerian "will to power," and almost bordered on malingering, there are left 8 cases whose psychoses have run an extremely bad course. While the number of cases is much too small on which to dogmatize, it is certain that we at this hospital have come to regard a persistently low H.I. in an agitated melancholiac as of extremely bad omen. Death or chronicity has been the invariable fate of such cases.

(b) *Emotional state at time of test.*—The following case shows very well the importance of the emotional state of the patient at the actual time of the test. While in the majority of the cases the mood of the case is such that the H.I. is fairly constant from day to day, the following patient's emotions were in such a labile state at one period of her illness that it was possible to test the result of a temporary emotional upset.

CASE 7.—Married, æt. 46; housewife. Admitted 10.5.30 with a history of seven months' illness.

Diagnosis: Involutional melancholia of reactive type.

Physical: Nil of note.

Mental: Appears to have worried much recently about her mother's death in a mental hospital, and over the drinking propensities of her husband.

On admission she was full of self-pity, and at times very agitated and emotional. She insisted that her husband had had her "put away" for his own purposes. This was her condition on 19.5.30, when the H.I. was 40. She improved quickly and soon showed little sign of depression or anxiety, though still very resentful against her husband. This was her condition on 4.6.30, when the H.I. was 0. She was much quieter and more settled than during the last test.

She was taken out "relieved" on 27.6.30, but returned on 14.7.30 as she had become very depressed and agitated, threatening suicide if not returned to hospital. She soon settled down and maintained that her relapse was due to her husband's drinking habits, that he had come home the worse for drink every night and insisted on sharing her bed. She felt she would relapse if again returned to him. This story was corroborated by her daughter.

On 24.9.30 her H.I. was 0. She was quiet and cooperative during the test.

About this time she always became very distressed when her relations with her husband and her return to him were discussed, and it was decided to see if this had any effect on her sugar-tolerance curve. Accordingly a test was done on 22.10.30, and her H.I. was normal. On the following day the test was repeated, but before the test was begun her relations with her husband were fully discussed, in order to stir up any emotional tension relevant to this. Her H.I. then became 100.

Her husband committed suicide shortly after this—an event which quite pleased the patient, who thought it would make life more pleasant for herself and family. At this time (*viz.*, 19.11.30) her H.I. was found to be 16. The next day the test was repeated, following a discussion of her future, but on this occasion there was no clinical upset, and the H.I. was 13.

On 10.12.30 her H.I. was 0. This test was done just prior to her going on a period of trial, to make certain that the prospect of leaving hospital no longer caused the emotional upset which it had done when her husband was alive.

MANIA.

Other workers state that in mania sugar tolerance after glucose ingestion is normal. This is not altogether true. We have found

in the cases investigated (Table IV, Cases 42-47, both inclusive) that, while the ordinary cheerful maniacal patient gives a normal sugar-tolerance curve, this is not so if the excitement is accompanied by an aggressive, paranoid mood. In this respect the H.I. and the psycho-galvanic reflex are again in parallel, as the latter is only obtained as a response to noxious stimuli and unpleasant emotions. The following case illustrates these points :

CASE 44.—Single, æt. 53; canvasser. Admitted 6.5.30.

Diagnosis: Mania.

Physical: *Nil* of note.

He is a cyclothyme, subject to both depressed and manic phases, his acute attacks, usually precipitated by alcohol, requiring certification.

On admission he was extremely restless, excited, noisy and violent, talking incessantly, boasting of being an M.A. (not true), and of the high social position of his family; language coarse and obscene.

This was his condition on 25.6.30, when his H.I. was 14. During the test, however, he was quite pleasant and cooperative.

On 14.7.30 the test was repeated, and his H.I. was then 74. On this occasion he was very noisy, resentful, and resistive to test.

The results of these two tests show that while the maniacal case in pleasant mood is not under such tension as to affect H.I., the same person in an unpleasantly excited and resentful mood is under emotional tension which does affect H.I. He was convalescent on 15.9.30, when the test was again done. On this occasion his H.I. was normal, and he was discharged shortly afterwards.

STUPOR.

The results obtained in cases of benign stupor failed to support the contention of Mann that in such patients sustained hyperglycæmia is obtained with great constancy and in its most severe forms.

The present remarks deal with five cases of benign stupor (Table IV, Cases 48-52, both inclusive), one of them an interesting example of a manic stupor.

Stupor may be regarded as a defensive mechanism which aims at a complete withdrawal from reality, and, if successful, there should be a release from emotional tension, with a resultant normal H.I.

In all our cases normal or low figures were obtained, and in but one was a figure as high as 37 recorded. It would appear, therefore, that the defensive mechanism of the stupor reaction had succeeded in most cases in abolishing the emotional tension.

The following case illustrates the change in emotional tension as expressed by the H.I. in passing from a melancholic to a manic stupor.

CASE 48.—Single, æt. 18; domestic servant. Admitted 26.11.29 with a history of recent, sudden onset.

Diagnosis: Benign stupor.

Physical: Cyanosis of extremities, greasy skin, otherwise *nil* of note.

Mental: On admission she was quite mute, except for infrequent outbursts, such as—"I am on the sea. How can they drink the blood? Oh God! what have I done that I should be left alone in the world?" At times she appeared very agitated and said that she was very miserable, and thought she was going to be punished. She was faulty in habits; resistive to attention; rigid, and resented pinpricks with only partial withdrawal and a look of wonder. Occasionally some slight *flexibilitas cerea*. There was no change, except that her mutism was complete on 6.12.29, when her H.I. was found to be 37. She was rather agitated and resentful of experiment.

Towards the end of January, though still mute, it was apparent from her behaviour that she was no longer depressed, but, instead, had passed into a state of manic stupor. She was mischievous, full of smiles and rather erotic. She would wink and make suggestive faces at any males in her vicinity. While in this condition, on 31.1.30, her H.I. was found to be normal. She was quiet during the test.

On 26.3.30 she was discharged "relieved." In the following September came a report that after a period of "absent-mindedness" she became her normal self, and had remained so.

SCHIZOPHRENIA.

Twenty-nine of the patients came under this category, namely, 11 hebephrenics, 10 katatonics, 5 paranoids and 3 dull demented. The following table shows the results obtained in this group of patients:

TABLE V.

Case no.	Sex.	Age.	Diagnosis.	Hyperglycæmic index.	Remarks.
53	F.	28	Hebephrenia	76, 5, 52	Chronic sinusitis.
54	M.	17	"	49, 56, 93	Deteriorated.
55	M.	26	"	17, 19, 50*, 0, 0	*Very agitated.
56	M.	26	"	36, 0, 11, 91*	*Very unsettled.
57	M.	22	"	10	Deteriorated.
58	F.	33	"	0	
59	F.	27	"	0, 0	
60	F.	26	"	0	
61	F.	33	"	24	
62	F.	54	"	8	
63	M.	35	"	20	
64	M.	18	Katatonica	40, 95, 0, 15	Stupor.
65	M.	34	"	0	"
66	M.	21	"	0, 0, 0	Different phases.
67	M.	24	"	0	Stupor.
68	M.	29	"	0, 0	"
69	M.	47	"	0	Deep, negativistic stupor.
70	F.	26	"	0, 0	Not stuporose at test.
71	F.	22	"	100, 100	Mildly stuporose.
72	M.	25	"	28, 0, 0, 0	Deteriorated.
73	M.	30	"	0	"
74	M.	55	Dementia paranoides	16	
75	F.	30	Ditto	0, 21*	*Menstruating.
76	M.	23	"	35*, 0, 0	*Vaccinated.
77	M.	29	"	0	Deteriorated.
78	M.	35	"	12	Agitated phase.
79	M.	29	Dull dementia	19, 32	
80	F.	49	" "	0	
81	M.	19	" "	14	

An examination of this table shows (in contrast to Table IV) the high incidence of patients with a normal index, and the relatively low incidence (2 out of 29) of patients with an index consistently greater than 50. This is entirely in keeping with our conclusion that emotional tension is accompanied by a rise in the H.I.

There is little doubt, however, that the H.I. does not give the same help to the clinician in diagnosis and prognosis in the schizophrenic as it does in the manic-depressive group.

Schizophrenics under emotional tension certainly show a sustained hyperglycæmia; but, on the other hand, a similar hyperglycæmia is not uncommonly obtained when emotional tension is most certainly not present. In a certain proportion of these latter cases a probable cause of the raised H.I. can be found in such factors as toxæmia; but, in the majority, no such cause is apparent. It is highly probable that the well-known endocrine disturbances of this disease are causal of the disordered carbohydrate metabolism. It is noteworthy that the index often varies at different times in the same patient without any apparent change in the physical or mental condition. A characteristic feature of many of the blood-sugar curves in this group is their low maximum level. This results in a tendency for the index to be high, as it varies inversely with the maximum level; and, as has been stated earlier, this undoubtedly mitigates against the value of the index when applied to cases of schizophrenia. There was no appreciable difference in the sugar tolerance of the various clinical types (see Table V).

Our results with katatonic stupors are distinctly contradictory to those of Mann, in that they fail to show any sustained hyperglycæmia. Of the 10 katatonics, 7 were in a state of definite stupor at the time of examination, and with one exception all these cases gave normal index figures. In the exception (Case 50) the figures varied from normal to high without discoverable reason.

The following cases illustrate some of these points. The first case shows that emotional tension in a hebephrenic can be detected by the H.I. so long as actual emotional dementia has not supervened.

CASE 55.—Single, æt. 26; painter. Admitted 4.12.28 with a history of two previous certifications.

Diagnosis: Hebephrenia.

Physical: Nil of note.

Mental: He was a typical irrational, fatuous, giggling hebephrenic, subject to confused, depressed phases. Thus, in December, 1929, he passed into a depressed phase, in which he talked in an inconsequent way of funerals, and voiced vague persecutory delusions of a childish nature. Emotional deterioration was shown by his frequent giggles, even as he was relating his depressive thoughts. He used to say, "I am in a knot, a tangle, and I cannot straighten myself out."

This was his state on 29.1.30, when his H.I. was found to be 19. During both these tests he was quiet and cooperative.

On 16.5.30 his H.I. was 50, and at this time he was much more agitated and restless and very hallucinated. He continued to vary much from day to day; and on one of his quiet days (*viz.*, 17.6.30) his H.I. was 0. He gradually passed into a quiet phase, in which he was able to occupy himself and take part in games. While in this condition on 4.9.30 his H.I. was 0.

The next case is one of the two katatonic stupors in the series of 7 who had a high index. This was given in the absence of any emotional tension and without any overt physical cause. The case also shows how in the schizophrenic great variations in the H.I. can be obtained without apparent cause.

CASE 64.—Single, æt. 18; labourer. Admitted 1.11.20.

Diagnosis: Katatonia.

Physical: Pupils dilated, oculo-cardiac reflex positive, slight exophthalmos. These signs, suggestive of sympatheticotonus, might be associated in some way with his high H.I.

Mental: His psychosis started with marked depression, with the delusion that he and his relatives all had venereal disease, and that because of this people were after him to put him in gaol. He passed into a state of mild katatonic stupor, totally uninterested and solitary, at one time faulty in habits and given to eating rubbish; occasionally impulsively violent; did a little routine ward-work.

At the time of the various tests his mental state did not change, and was as follows: Had a worried, staring expression, and never looked anyone in the face; never took spontaneous notice of anyone; quite inaccessible, and continually mumbling incoherencies. It was abundantly clear that he was not under any emotional tension. The following are the dates and results of the various sugar tolerance tests made: 26.2.30 H.I. = 40; 28.2.30 H.I. = 95; 20.3.30 H.I. = 0; 3.9.30 H.I. = 15.

The following case demonstrates the common finding that changes of phase in the katatonic are usually unaccompanied by any change in the H.I.

CASE 66.—Single, æt. 21; baker. Admitted 25.9.25.

Diagnosis: Katatonia.

Physical: Vasomotor disturbances common in his psychosis present, *e.g.*, cyanosis and coldness of extremities.

Mental: Periods of stupor with absolute mutism alternate with periods of excitement. These phases last for months or weeks, but stupor predominates. He has sexual delusions, and hears himself accused of "shagging ladies." He claims to be the son of a famous film actor and "not of a cabman named E. A. D—, who shagged ladies in his cab." He also complains of being interfered with sexually, and of having poison injected into the palm of his left hand which passes to his genitals. He is manneristic and given to attitudinizing.

He was in one of his excited phases on 16.10.29 when his H.I. was 0. He was flushed and sweating during the test.

He was in a stuporose phase on 21.10.29, when his H.I. was 0. He was neither flushed nor sweating during this test. He was still stuporose on 7.2.30, when his H.I. was again 0.

He then passed from the stuporose phase into one in which he worked quite well in a routine fashion on the grounds, though still autistic and solitary. At this time he did not volunteer any of his delusional ideas, and when questioned on them he looked vacant and failed to answer. The results of the test agree with the clinical evidence of a marked emotional deterioration.

ARTERIO-SCLEROSIS.

According to Spence (1920), arterio-sclerosis and advancing years are always accompanied by a sustained hyperglycæmia of appreciable dimension. Our results in no way support this contention; and when a raised H.I. is found in such patients, something other than arterio-sclerosis or senility must be found to account for it. In the present series (Table VI) there were 7 cases of arterio-sclerotic dementia showing different mental pictures. In four of these consistently normal figures were obtained. In one (Case 85) an index of 38 was obtained while he was in a confused state; but a normal index was found when his confusion cleared, leaving only a simple dementia. In the other two, more or less consistently high figures were the rule. In one of these (Case 82) the patient while in a stuporose phase gave a normal index figure, but on passing out of this phase into one of apathy with depressive thoughts she gave high figures. We were satisfied that her high figures were not due to emotional tension. In the other case (No. 83), a complete recovery from her confused, agitated state was not accompanied by any fall in the H.I. In spite of these two cases, however, it is clear that arterio-sclerosis *per se* cannot be held to be a cause of a lowered sugar tolerance. This does not preclude the possibility of abnormal sugar tolerance being due in some cases to impairment by advancing age or arterio-sclerosis of the organs specifically concerned in sugar metabolism.

The above remarks apply particularly to cases of cerebral arterio-sclerosis, but others of our patients suffering from different forms of arterio-sclerosis gave results which bear out our present contention. In a recent publication Marshall (1931) purports to support Spence, but a critical examination of his results shows that over 40% of his arterio-sclerotics and senile subjects gave a normal hyperglycæmic index. From our point of view the absence of any reference to the mental state of his subjects makes it impossible properly to evaluate his results. The following table deals with the 7 cases of arterio-sclerotic dementia.

TABLE VI.

Case no.	Sex.	Age.	Mental state.	Hyperglycæmic index.	Remarks.
13	M.	55	Depressed	0, 0	No depression at *.
45	M.	72	Maniacal	0	
82	F.	53	Apathetic	0, 57, 82	
83	F.	70	Agitated	75, 59*, 73*	
40	F.	62	„	0, 0	
84	M.	60	Grossly confused	0, 0	
85	M.	46	Confused	38, 0	

MENSTRUATION.

Owing to the results obtained with the controls, it was considered of interest to see the effect of menstruation on the H.I. of some of our patients, and the results obtained clearly demonstrate how entirely unreliable must be any blood-sugar work on psychotic women where the effects of menstruation have been overlooked. Seven patients were investigated, and in 6 the H.I. was found to be higher during the menstrual as compared with the inter-menstrual period—and this irrespective of the type of mental disease present.

The following table shows the effect of menstruation on the H.I. of these 7 patients :

TABLE VII.

Case no.	Diagnosis.	Inter-menstrual H.I.	Menstrual H.I.
4	Involuntional melancholia	38	86
22	Recent melancholia	12, 0	78
34	Recurrent melancholia	34	80
35	“ “	17	40
36	“ “	0, 0	0
42	Melancholia and mania	77	100
75	Dementia paranoides	0	21

With the exception of Case 34, menstruation had no noticeable effect on the mental state of these patients. The following is a description of this case.

CASE 34.—Single, æt. 39 ; dressmaker. Admitted 23.1.30.

Diagnosis : Constitutional psychasthenia.

Physical : *Nil* of note.

Mental : She has been under certificate on two previous occasions, each time on account of empty suicidal threats. She is an unstable, ill-adapted type, strongly father-fixated, whose neurosis fits in well with the Adlerian view. She settled down very soon after admission, and on 27.1.30 her H.I. was 0.

She was subject to emotional storms, which were particularly frequent during menstruation. Her sugar tolerance was tested on 9.9.30 during a menstrual period coincident with such a storm, and her H.I. was 80. She was quiet and cheerful during the latter half of the test, though agitated at the beginning. To determine how much of the rise in her H.I. was due to the effects of menstruation, and how much to emotional tension, it was decided to apply a test during an inter-menstrual emotional storm. The opportunity offered itself on 24.10.30, and her H.I. was then 34. Her behaviour was the same as during the previous test.

EFFECTS OF VACCINATION ON THE HYPERGLYCÆMIC INDEX.

Vaccination is done as a routine prophylactic measure at this hospital, and it was thought of interest to see how this, as representative of an extraneous type of complication would affect sugar

tolerance. The following table gives the effect on the H.I. of the 3 patients tested. The vaccination had no apparent effect on the mental state of these patients, so that the raising of the index cannot be due to an increase of emotional tension.

TABLE VIII.

Case no.	Diagnosis.	H.I. apart from vaccination.	H.I. during vaccination period.
28	Recent melancholia	12	33
51	Benign stupor	14, 0, 0, 0, 0	100
76	Dementia paranoides	0, 0	35

EFFECTS OF TOXÆMIA ON THE HYPERGLYCÆMIC INDEX.

During the course of this investigation it became apparent that some of the anomalous results obtained, especially in the schizophrenic group, were due to the presence of toxæmia and it is a permissible surmise that some others were due to an undiscovered infection, though, as previously stated, the probability is that in schizophrenia endocrine imbalance is the more usual factor in giving a raised index in the absence of emotional tension. The following case shows clearly the possible effect of toxæmia :

CASE 53.—Single, æt. 28 ; housework. Admitted 18.4.29 with a history of some months' illness.

Diagnosis: Hebephrenia.

She was hallucinated, extremely irrational and almost inaccessible. She had regressed to a childish state, and was always playing with dolls and attempting to kiss other patients. She was not under emotional tension.

On admission the rhinologist reported pus in the right antrum. On 24.9.29 intra-nasal drainage of right antrum was performed ; left antrum showed mucus on proof-puncture ; left middle turbinate was removed and ethmoids drained ; sphenoids were clear. This operative treatment resulted in no appreciable mental improvement, but her physical health improved and her weight increased from 6 st. 7 lb. to 7 st. 8 lb. The sinusitis not having cleared up it was decided to operate again. On the day previous to operation (*viz.*, 10.2.30) her H.I. was 76. Examination showed pus on floor, both sides of nose, and high up in posterior ethmoidal region ; X-ray showed some opacity of both antra ; frontal and sphenoidal sinuses appeared normal.

At operation, wash-out of antra gave muco-pus ; swab of ethmoids was taken after removal of polypi and ethmoidal labyrinth was opened up ; organism of Friedländer type was later isolated from swab, and autogenous vaccine prepared.

She again showed some physical improvement, and on this occasion there was a slight mental improvement also. Her sugar tolerance was tested on 16.4.30, and the H.I. had fallen to 5.

Improvement only lasted a very few months, and by the time of the next test on 29.8.30 she had relapsed to her former mental state ; and she now had

an unpleasant discharge from her nose and other evidence of a recurrence of her sinusitis. Her H.I. had now risen to 52. There is, therefore, little doubt that in this case the two abnormal sugar figures were due to the toxæmia present.

CONCLUSION.

While theorizing on insufficient premises is to be deprecated, it is permissible to offer a tentative explanation of the parallelism between the emotional tension and the H.I. in manic-depressives. The interference with carbohydrate metabolism is doubtless a secondary phenomenon incidental to the bodily changes which accompany emotion, and the following hypothesis falls into line with the theories of Cannon on this subject. Emotional tension may be accompanied by an outpouring of adrenaline as a defensive mechanism, and the presence of this substance in the blood would certainly account for a sustained hyperglycæmia after sugar ingestion. Whether the same mechanism accounts for the hyperglycæmia in toxæmia and other conditions and during menstruation is, of course, more doubtful; but it can at least be surmised that the abnormality is due to some endocrine imbalance. Still more is it likely that in dementia præcox we are dealing with various factors in the causation of the abnormal sugar metabolism; though, again, the most likely explanation probably lies in an endocrine imbalance.

Whether this explanation is right or not remains a matter for further investigation. The practical issue, however, is clear—the parallelism which exists between the emotional tension and the magnitude of the H.I. offers a most useful means of study of, particularly, the manic-depressive disorders. It is most valuable as an aid in following the treatment and the progress of this class of psychotic subject.

Possibly the times at which a determination of the H.I. is of greatest service to the clinician are—

(a) On admission of the patient: A high index in a frankly manic-depressive disorder would indicate considerable emotional tension. If the index and the clinical behaviour did not coincide there would be reason to suspect a hysteroid element in the patient, which, from the results stated in this paper, would indicate a bad prognosis.

(b) Just prior to discharge of the patient: The index should be zero at the time of discharge. It may happen—as shown in this paper—that the index is high, although the clinical condition would seem to warrant the patient's discharge; and in such a

case discharge would be attended with considerable risk. A zero index which remains unaltered on repeated examination appears to be the most reliable indication of the recovery of the patient.

It is essential in work of this description that there be the closest cooperation between clinician and laboratory worker; for, often enough, an anomalous result is obtained the interpretation of which is only clearly seen in the light of the experience of both workers. There is little question that an unexpected result sometimes gives a most valuable insight into the mental and physical condition of the patient.

SUMMARY.

1. A study of the sugar tolerance curves of 85 psychotic subjects has been made.

2. The hyperglycæmic index is defined, and is a quantitative measure of the departure of a sugar-tolerance curve from that found normally. It is an expression of the sustainment of hyperglycæmia found in many psychotic cases. The index is referred to as H.I.

3. It is shown—

(a) That in the manic-depressive group there is the closest parallelism between the magnitude of the H.I. and the emotional tension of the patient. Out of 43 melancholic patients examined, only 10 gave a normal or slightly abnormal index. An explanation is given for this anomalous behaviour of the 10 patients.

(b) That in the schizophrenic group there is a relatively low incidence of patients (2 out of 29) showing an index consistently greater than 50. High figures in the schizophrenic group are associated with toxæmia, endocrine imbalance or other physical disorder.

4. In cases of mania a low index is recorded, except when the excitement is accompanied by an aggressive, paranoid mood.

5. In cases of benign stupor a low index has been recorded, showing that the defence mechanism of the stupor reaction has abolished the emotional tension.

6. Arterio-sclerosis *per se* is not a cause of a high H.I.

7. During menstruation there is a departure from the normal sugar tolerance curve in both normal and psychotic cases.

8. Practical use is made of the H.I. in determining prognosis, progress and recovery of the patient.

We would like to express our acknowledgement of the cordial help given us by the medical officers in charge of the patients, our indebtedness to the Medical Research Council for a grant in aid of equipment, and our appreciation of the services of Mr. A. Dignam.

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MENTAL DISORDERS ASSOCIATED WITH PERNICIOUS ANÆMIA.*

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SINCE the introduction of the liver treatment for pernicious anæmia some four years ago that disease has received considerable publicity. It has been generally recognized as having three main clinical manifestations. Thus it may show itself as a blood disease, as a gastro-intestinal disease, or as a nervous lesion (subacute combined degeneration of the cord). It is, however, by no means generally recognized that pernicious anæmia has yet another way of manifesting itself, *viz.*, by the occurrence of mental disorder. The object of this paper is to emphasize this fourth aspect of pernicious anæmia. In this country the subject has not hitherto received the consideration which is due to it. Nevertheless, a number of observers in other countries have shown, both by their own personal observations and from statistics, that mental disorders are frequently met with in the course of pernicious anæmia. The degree of mental affection varies in different cases. There may be merely a modification of character, with irritability and changing mood. W. Richardson would include in this mild group many patients described as uncooperative.

In cases where the mental disturbance is more pronounced, the psychosis most frequently met with is of the paranoid type, with delusions of persecution and suspicion, these delusions being more particularly directed against those who are responsible for the patient's welfare.

What is very remarkable is the frequency with which delirium occurs in this disease. Cabot found it in 44% of his cases. The delirium is especially marked at night. The patient develops terrifying hallucinations, with extreme agitation and restlessness; he reacts to his delusions and hallucinations by becoming grandiose, abusive and aggressive. There is nearly always some clouding of consciousness. It will be noted that this mental syndrome resembles that of the toxic group of psychoses.

The relationship of pernicious anæmia to the psychoses has been

* A paper presented at the Quarterly Meeting held in London, February 25, 1931.

exhaustively studied from the medico-legal point of view. If one bears in mind the mental symptoms enumerated, it is easy to understand how the testamentary capacity of the patient may be called in question. As an example I may quote from the case recorded by Dr. A. G. Hulett, of New Jersey, who was called upon to act as medical witness in a disputed will case. The testator had died of pernicious anæmia, and a certificate was given to that effect. During the latter months of his life he had turned against his favourite daughter, who had always been his devoted companion and had been in constant attendance on him. In a codicil to his will, made just before his death, this daughter was disinherited, the estate being left to distant relatives. In the litigation that ensued Dr. Hulett was fortunately able to convince the court, not only of the frequency with which mental complications may arise in the course of pernicious anæmia, but also of the particular form of psychosis most commonly met with in that disease.

The time of onset of the mental disorder is variable. It was formerly thought to be a terminal condition, but it is now realized that it may occur at any stage of the disease. It has been known to supervene during treatment. Sometimes it occurs in the early stages of the disease, as in the case reported below. When this happens errors of diagnosis are liable to be made. Thus the patient may be labelled as "hysterical" or "neurasthenic" while the underlying disease escapes attention. The results of such mistakes are disastrous for the patient, who is denied the benefit of modern methods of treatment.

The following case is interesting in that it demonstrates the presence in one subject of all the four manifestations of pernicious anæmia referred to above. Moreover, what seems to me particularly worthy of note is the fact that the mental symptoms correspond closely to the specific mental syndrome described by the majority of observers.

CASE 1.—Miss A—, æt. 43, was admitted to St. Andrew's Hospital as a voluntary patient in February, 1930.

Family history.—Uncle died of pernicious anæmia, eldest sister died of phthisis.

Personal history.—For some years she had suffered from poor physical health and "neurasthenia," with occasional attacks of pyrexia. Appendicectomy in 1926. In April, 1929, had severe attack of influenza; also a severe attack of cystitis; complete physical breakdown. Queer feelings in the head; insomnia; unable to concentrate. In August, 1929, paraplegia said to be "hysterical." Cystitis improved. In October, 1929, condition diagnosed as "astasia-abasia"; slight pyrexia (? toxic); delusions of persecution; thought food was poisoned, refused food in consequence; mentally confused; delusions of unseen agency; irritable and lacking in control; abusive to her nurse. For some time before admission she had complained of numbness of the feet; her ankles became puffy on occasion. Wassermann reaction negative.

State on admission.—Mental: She was mildly confused and depressed; sometimes said she wished she were dead; kept her eyes shut when speaking; frequently became restless and agitated. Delusions of persecution; imagined her food was poisoned; blamed her nurse without cause. She had periods of tranquillity, when she showed insight into her condition.

Physical: She was emaciated; weight 6 st. 11 lb. Anæmic. Skin had a lemon tint; glossitis present. Teeth—some fairly recent extractions, but X-ray examination showed apical infection of three teeth. Heart—hæmic bruit over apex and pulmonary areas. Lungs clear; spleen enlarged; scar over appendix region.

Central nervous system: Functions of cranial nerves normal; some pallor of discs. Muscles of legs small and soft; extreme weakness of both lower limbs; ataxia very marked—patient unable to stand without support on either side. Knee-jerks and ankle-jerks +; plantar reflexes extensor on both sides; lower abdominal reflexes absent; loss of joint sense in both limbs. Sensation to cotton-wool and pin-prick unimpaired; tuning-fork vibration sense absent up to knee (both legs). There was no loss of tone of the muscles of the upper limbs; muscles of the trunk moderately strong; there were scars over the left buttock (from recent bed-sores). A blood-count showed: Red blood-cells, 1,056,000 per c.mm.; white blood-cells, 3,000; hæmoglobin, 55%; colour index, 2.6; anisocytosis and poikilocytosis marked; microcytes, megalocytes, megaloblasts, normoblasts, polychromasia all present. A test meal confirmed the presence of achylia gastrica. Examination of the fæces showed the presence of those streptococcal elements characteristic of pernicious anæmia.

Diagnosis.—The case was clearly one of pernicious anæmia with achylia gastrica, subacute combined degeneration of the cord and mental disorder.

Treatment.—Fresh liver treatment was started at once, $\frac{1}{4}$ lb. of liver being given daily in various forms. As the patient did not tolerate this treatment well, liver extract had to be substituted. She was also given liquor arsenicalis, beginning with small doses, gradually increased. She also had dilute hydrochloric acid (5j doses) with glycerin of pepsin *t.d.s.* She was given plenty of fresh fruit. The bowels were regulated, and medinal was given for insomnia when required. The patient's health was too poor to justify the extraction of the infected teeth at this stage.

Progress of the case.—Mental: The patient's mental state varied considerably, periods of agitation alternating with periods of comparative tranquillity. Delusions of persecution were very persistent. She said we used hypnotism, mesmerism or suggestion, and that we could read her thoughts and influence her conduct. She would become restless, noisy and abusive under the influence of her delusions. In June she developed delirium of a persecutory type. There were terrifying hallucinations affecting all the senses, especially marked at night. She complained that all kinds of horrible animals—spiders, wasps, insects, bats, mice, etc.—came through her window and got into her bed. She told me she could hear, see, feel, and sometimes even smell them. It was this, she said, that caused her to scream with fright. She believed that the hospital authorities staged all these things in order to test her sanity. She would rage and storm at the nurses, and sometimes at the doctor. Everybody, she said, was against her. Though sometimes threatening, she was never actually violent. The delirious state lasted with varying intensity for some weeks, when it gradually abated. The delusions of persecution persisted, but she reacted to them differently. Thus she became domineering and dictatorial. She would shout out orders to the nursing staff and generally abuse them. In October the patient began to show some improvement in her mental state. The tranquil intervals became more prolonged, and the periods of agitation shorter and less marked. The mental confusion was also less obvious, and she took more interest in her surroundings. As her general health improved, her outlook on life became happier. In November there was still further improvement. The delusions of persecution gradually disappeared, and she showed much better insight into her condition. About the middle of December not only had all the patient's suspicions and delusions disappeared, but she began to express her gratitude for the kindness and attention she had received during her mental illness. From that time the patient's insight has been perfect and she has cooperated in the treatment to the best of her ability. She displays a very keen interest in her increasing weight, and rejoices in her

renewed health and strength. She is rational in conversation. She reads a good deal and enjoys the various entertainments. In short, the patient's mental state is now normal. She realizes, however, that if she were to stop taking liver she would have a relapse. She is therefore willing to stay on at this hospital until suitable arrangements can be made for the continuance of the treatment elsewhere.

As might be imagined, there have been many difficulties in the treatment of this case. In her more irritable moods she would refuse the special diet prescribed; and on occasions she would even refuse all food and medicines. However, during her more tranquil periods she was open to persuasion, and was more willing to cooperate. Advantage was taken of this fact to explain to her as fully and discreetly as possible the nature of her illness and the object of the treatment. It is all-important to gain the patient's confidence. In one of her reasonable moods she herself volunteered to return to the fresh liver treatment instead of continuing with the liver extract. It was found that her variations of mood were in some way related to the intermittent character of the blood counts. In spite of ups and downs the blood picture gradually improved, as is shown in the accompanying table:

Table (abridged) showing Improvement in the Blood Count.

Date.	Red blood-cells.	White blood-cells.	Hæmoglobin.	Colour index.
11.2.30	1,056,000	3,000	55%	2·6
26.2.30	1,432,000	2,100	55%	1·9
12.3.30	1,920,000	3,300	65%	1·6
24.3.30	1,420,000	4,200	64%	2·0
23.4.30	3,320,000	2,500	55%	0·8
20.5.30	3,920,000	4,700	62%	0·8
4.6.30	3,696,000	7,900	85%	1·1
11.7.30	3,728,000	4,600	64%	0·8
21.8.30	3,392,000	4,800	65%	0·9
25.9.30	3,456,000	4,500	68%	1·0
3.11.30	4,160,000	3,800	78%	0·9
15.12.30	4,592,000	4,000	91%	0·9
23.1.31	4,400,000	3,800	89%	1·0

By degrees the red cell count increased from 1,056,000 to 4,592,000 per c.mm. Meanwhile there was remarkable improvement in the general health, as is shown by the increase of the patient's weight from 6 st. 7 lb. to 9 st. I may mention that hydrochloric acid was discontinued early in the treatment, and only given when some digestive symptoms seemed to indicate its use. Arsenic also was not given continuously, but it was found a useful adjuvant when there was a slight fall in the red cell count. The infected teeth have been removed after local anaesthesia. From the commencement of the treatment the patient has been as much as possible out of doors. The amount of open-air exercise has, of course, increased in proportion as her health and strength have improved. At the present time the patient's general health is remarkably good. She has a fresh complexion; her tongue is clean. The hæmic murmur disappeared early in the treatment; the lungs are now clear: there is no enlargement of the spleen.

Remarks.

Central nervous system.—The severity of the disease of the spinal cord is shown by the fact that the patient had been bedridden before admission (she had actually had bed-sores), and she had also had a severe attack of cystitis. The outlook, so far as the combined degeneration of the cord was concerned, seemed anything but "rosy." The œdema of the feet and ankles which had been noticed before admission recurred from time to time. Retention of urine

also re-appeared on one occasion. This was relieved by catheter, and has not since returned. The slight pallor noticed in the optic discs disappeared with the improvement in the blood picture. In contrast to the experience of certain observers the paræsthesiæ have extended, the hands becoming involved as well as the feet. Moreover, the area over which vibration sense was absent has also increased—it now involves both the lower limbs and the pelvis. The ankle-jerks and knee-jerks are now only slightly exaggerated; the abdominal reflex is still absent; the plantar reflexes remain extensor on both sides; there is no loss of sensation to cotton-wool or pin-prick; joint sense is lost in the joints of both lower limbs.

With regard to the ataxia there has been very marked improvement. It must be remembered that on admission the patient could not stand without support on either side; movements of the lower limbs were most uncertain and irregular; muscular weakness was extreme. The patient's progress in this respect is probably due to the great improvement in her physical strength as well as to muscle re-education. The patient has been encouraged to do Frenkel's exercises. In the summer she was provided with a walking-machine which has enabled her to get about, both indoors and in the grounds, without the assistance of a special nurse.

General.—Dr. Gordon Holmes examined the case in April, 1930. Speaking generally on the subject of the prognosis in cases of sub-acute combined degeneration he said: "Some cases of combined degeneration of the cord improve considerably under treatment; in others treatment at the most arrests the progress of the disease, while in some cases the spinal disease advances despite the treatment." W. Richardson says that when the disease involves the central nervous system there is call for extra large amounts of liver substance. It is exceedingly important, he adds, to maintain the red cell level above 4,500,000 per c.mm. in order to prevent the progress of the degenerative process in the spinal cord. I consider that the extension of the subjective and objective phenomena, noted in this case, probably occurred during those periods of excessive agitation when the patient refused to submit to the liver treatment, and when there was a reduction of the red cell count in consequence.

CASE 2.—Miss C—, æt. 43, a certified patient, admitted in March, 1929.

Family history.—One sister insane.

Personal history.—First attack in January, 1927. In 1928 pernicious anæmia diagnosed whilst in a mental hospital. Her mental state improved with liver treatment, and she was discharged from certificates. Unfortunately the treatment was discontinued, and she relapsed.

State on admission.—She was suffering from delusions of persecution. She was confused and had auditory and visual hallucinations. Later this condition merged into a delirious state. Blood examination showed that she was suffering from pernicious anæmia. C.N.S. examination showed the presence of subacute combined degeneration of the cord.

Treatment and progress.—This patient has been on liver treatment. She has shown considerable improvement at times, but there is an undoubted tendency for the mental symptoms to recur at intervals. The fact that this case has not responded to liver treatment in such a striking manner as the other two cases reported may be accounted for by the family history, which indicates a predisposition to mental disease.

The following case is of interest as being one of secondary anæmia associated with mental symptoms and treated successfully with liver diet.

CASE 3.—Miss B,—æt. 46. Admitted as a certified patient on August 10th, 1930.

She was suffering from delusions of persecution and marked auditory hallucinations. There was confusion, and she was depressed. She had attempted suicide recently. Shortly after admission she became delirious, with grotesque hallucinations. Blood examination showed her to be suffering from definite secondary anæmia with a reduction of hæmoglobin out of proportion to that of red blood-cells. There was slight anisocytosis, microcytes were present, and poikilocytosis was marked. Red blood-cells were 4,352,000.

Treatment and progress.—The patient was put on liver treatment. About the middle of September she showed considerable improvement. Insight into her condition became very good, and she was able to realize the absurdity of her former delusions. From that time on she made an uninterrupted recovery, and on November 6th she went out on trial, *i.e.*, 3 months after treatment began. She was discharged recovered a month later.

There is ample evidence to show that mental disorder is liable to occur in the course of pernicious anæmia, as also in the secondary anæmias. The mental symptoms are secondary phenomena, and when treated by modern methods they are curable, just as the underlying condition is curable. The mental disorder may disappear before the blood is completely regenerated. It is of the greatest importance to bear in mind that the mental symptoms may be so pronounced as to obscure the original blood disease. Hence a systematic examination of the blood should be undertaken in all cases where there is the least suspicion.

My thanks are due to Dr. D. F. Rambaut, Medical Superintendent of St. Andrew's Hospital, Northampton, for permission to publish these cases, to Drs. D. J. O'Connell and Bielenky for assistance in my investigations, and to Dr. W. M. Ford Robertson and Mr. C. Webb for carrying out the examinations of the blood.

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ANTI-MALARIAL WORK AT THE CENTRAL MENTAL HOSPITAL, TANJONG RAMBUTAN, MALAYA.

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THE subject of anti-malarial work in the tropics is one of paramount importance, but I am somewhat diffident in bringing such a subject before the Royal Medico-Psychological Association. However, if not of value, the paper may be of interest.

In dealing with anti-malarial work one can more or less confine one's attention to the anopheline mosquito. It is, however, advisable to deal with other varieties as well, since, though they do not carry malaria, they carry other diseases, for instance *Culex fatigans* carries filaria, and *Stegomyia* carries yellow fever. Fortunately, there is very little filaria in Malaya, and no yellow fever; but it has been found that *Stegomyia fasciata* carries dengue. Also with the opening up of fast new air routes, one has no guarantee that yellow fever will not be introduced into the country, and, seeing the large number of *stegomyia* there is in Malaya, the result would be disastrous.

However, when I first started drainage, it was as an anti-malarial measure pure and simple.

The breeding-grounds of the different mosquitoes vary. The anophelines prefer clear running water, so that they are found in the edges of small streams and in seepage. Again, the various species of anopheline differ in the stream they prefer. Some like open streams where there is plenty of light—*maculatus*, for instance, the most dangerous of the Malayan anopheline. Others, e.g., *A. umbrosus*, prefer shady places—streams in light jungle.

It has been found by Strickland, late entomologist to the Federated Malay States, that if heavy jungle is undisturbed, the anophelines do not breed in it. Even in thick blukar they do not breed. The anophelines, however, are capable of changing their habits as *A. maculatus* has actually been found breeding in cisterns in Kuala Lumpur.

The *Culex* and *Stegomyia* prefer still water, and that frequently brackish—old tins, large leaves, neglected latex cups, coconut

shells, etc.—so that it is up to the householder to see that nothing which will hold water is left lying about. However, even when the householder has done his best, there are still places where the mosquito can breed; *e.g.*, a badly fitted gutter which holds water for a few days after rain. For this reason I had all the gutters removed from the existing building, and refused to allow gutters on any of the new ones.

Some very large leaves hold water for an indefinite time. Holes in trees which are capable of holding water are also breeding-grounds. These holes can be filled up with cement.

From this it will be seen what a problem it is to deal with the mosquito.

When I first moved into Tanjong Rambutan, I found that rain-water from my quarters merely drained into a swampy stream at the foot of the small hill on which the house was built.

I was fortunate in persuading the P.W.D., although the budget for 1912 had already been sent in, to see the necessity for making a drain through this swamp, and they managed to get the work included in the 1912 estimates. Nevertheless, when they made the drain they did not cut it nearly deep enough, since they only aimed at draining the surface water and carrying it from the house to the river, instead of turning it loose in the swamp, as was previously done. Still, things were greatly improved.

I next began filling holes where water lay in spite of the drain, and then noticed seepage round the edge of the drain. I had no pipes and no money wherewith to buy them, so I had to find a substitute to remove the seepage.

We consumed, even in those days, a considerable amount of tinned milk, and the disposal of the tins was rather a problem, but the seepage provided a method of disposal.

I here made my first attempt at subsoiling, and dug small trenches above where the seepage first showed, to a depth of 4 or 5 in. below the top of the concrete drain. I then placed end to end rows of tins, the bottoms and tops of which had not been cut out, and thus did not collapse. The bottom row consisted of 4 tins, the next of 3, the top row of 2 tins, the gaps between the various rows forming the channel for the water. These tin subsoil-drains proved most efficient, and lasted for years. Of course, they would be only satisfactory where there was only a short distance with which to deal, and not too great a flow of water.

However, their cheapness was a recommendation, as Government was not anxious to vote money for this sort of thing to an amateur,

and the P.W.D. had so much other work to do that it could not be induced to ask for money to do anti-malarial drainage.

As things progressed and we opened up more and more land and our farms began to spread to distant parts of the reserve, which contains 573 acres, we were faced with new problems.

In 1914, when Horton farm was being built, I came up against the Sungei Bulat, which was a very swampy stream, in parts more swamp than stream, flowing right through the reserve from the railway line on the north-east to a neighbouring rubber estate on the south. After passing through the estate the stream again passed under the railway line, which I may explain is on three sides of us, and thence to the Kinta river.

If we built farms there it would be necessary to deal with the Sungei Bulat and its tributaries, of which there are five.

At first we merely cut a channel in which to confine the stream; this dried up a considerable part of the swamp. We cleared the bed of the stream through the estate as well as through our own reserve—a work for which the manager of the estate readily gave permission.

It was not long, however, before we discovered that the clearing of the bed of the stream was not sufficient, as, when rain-storms occurred—storms in which 2 in. of rain might fall in one hour—sand was washed down the stream, and the banks, if at all high, would be scoured out and collapse, with the result that in a very short time the stream would return to its old zig-zag, swampy course.

Something had to be done, so I decided to invert the stream with concrete inverts and slope and sod the banks. The next question was how to procure the money, as we had no vote for such work. The moulds for the inverts were made in the carpenter's shop, sand and metal were to be had on the reserve, but it would be necessary to buy cement. We managed to make a saving on one of our votes, known as "Equipment," and from this saving bought cement, and braved the audit department, which eventually found us out and queried the purchase.

However, this action of the audit department was a blessing in disguise, as it became necessary to ask Government for a vote to purchase cement. Fortunately, we could point to the work already done. By that time, too, people in authority had seen some of the inverts, with the result that Government approved a small vote which was sufficient for the purchase of all the cement we could use to satisfy our labour, which was wholly patient, save for the

attendants in charge of the working parties. As time went on the patients and attendants became quite adept at the work.

We began our inverted stream about six chains below our boundary. The method we followed was first to lay a concrete invert 2 ft. long by 1 ft. deep by 1 ft. wide, and having filled round this we laid a cement shelf 2 ft. wide, sloping slightly upwards, and outwards from the invert; outside each of these shelves we built a wall 6 in. in height. From the top of the wall the bank was sloped and sodded. We thus had a pilot drain with a storm channel, which, with the bank, would carry all the water that was likely, except in the heaviest rain, to travel down the stream. It must be mentioned that in the first place where the original stream was, we lowered the bed about 18 in. or 2 ft. Now we lowered the bed another 3 to 4 ft. It can thus be seen that the stream should drain the land well, and at the same time be deep enough to allow of subsoil pipes being put in when necessary. It may be of interest that, as we had no one to give us levels, we had to depend on a spirit level to get the fall.

Trouble was soon experienced along the banks, but it was easily dealt with by the tin method.

In places our cuttings were 10 ft. deep, so it can be seen that the work was heavy and tedious; nevertheless, it progressed steadily.

In the course of this first section we had to build a bridge to carry the road to Horton Farm and Highfield. This was done successfully to Mr. Ah Fatt's design. Those of you who read the paper I published some years ago on Tanjong Rambutan will remember the name of Mr. Ah Fatt, Inspector at the Central Mental Hospital and my right-hand man. This bridge is still in existence, and is carrying lorries.

All went well until 1925, when I went on leave. On my return I found that the work, instead of going ahead, had retrograded. I understand that there had been a very heavy rainy season, which impeded the work, but the chief trouble was that long sections of channel were cut at a time, and a large number of inverts put in before any attempt at dealing with the sloping and sodding of the banks was made. The result was that when heavy rains came the banks were undercut and collapsed, burying the inverts. Also, sand from the bank was washed down and buried the work already done. The net result was, that not only the section in hand, but part of the work that had been completed before I went on leave was buried.

I collected all the available working parties and put them on to clearing the inverts of sand. Fortunately the weather dried up just then, so we were able to get the sand removed, though it took us nearly three months. In places there were 3 ft. of silt over the inverts.

When the channel was clear, I gave strict orders that no more than six inverts (12 ft.) were to be laid at a time, and that the banks of each section should be sloped and sodded before another section was begun.

Previous to this we merely diverted the stream immediately above the spot where we were at work, but we now looked about for a possible diversion of a considerable length. A suitable channel was found; this was deepened, and a diversion of about a quarter of a mile was made. It was also necessary to take precautions against silt collecting in the new channel when heavy rain came. This was done by building a series of bunds across the stream in order to hold up the silt. These proved satisfactory so long as the spaces above the bunds were regularly emptied of silt.

On one occasion we had a very narrow escape from having a great part of our work undone. During a heavy downpour of rain the extern head attendant began to feel anxious about the bund which turned the stream into the diversion. He went to examine it, and found that it was giving way. He was just in time to collect a band of helpers, and by dint of piling up logs and bundles of lalang (coarse grass), they succeeded in saving the bund. Had the bund given way, six months' or possibly a year's work would have been undone.

As the work progressed we learned quite a number of things that we should not do, as well as the best way to do other things, and our attendants and patients became more and more expert at the work.

About this time Mr. Ah Fatt discovered a deposit of China clay in the reserve, not far from the Sungei Bulat. This was a great find, as we could now make porous pipes for subsoil drains. We built a kiln, and in a very short time were turning out subsoil pipes of 2 in., 4 in. and 6 in. diameter. Later we made 8-in. pipes. This enabled us to tackle some of the places which needed subsoiling, and which were beyond the capacity of our milk-tin method.

For us 1925 was a bad year, as from then dates our worst malaria-producing spot.

When it was decided to build a first-class ward, considerable care was expended in the selection of the site. The Chief Secretary, the Principal Medical Officer and the Senior Health Officer tramped the reserve with me, and we decided on one. A mosquito survey was then made, and it was declared the chosen site was healthy. The only doubtful point was that a potentially dangerous ravine which was thickly grown with blukar lay within a furlong of the wards. This ravine was in a neighbouring estate, owned by a Chinese—a very good neighbour. As long as the ravine remained in thick blukar it was safe, so the owner of the estate was approached, and readily agreed not to interfere with it.

Unfortunately, in 1925 the estate was taken over by a British company, which promptly cleared and planted the ravine. Since then we have had endless trouble with malaria in the neighbourhood of the first-class wards.

This ravine was much too big a proposition for us to tackle, so the Public Works Department got out a plan and an estimate. Then a discussion arose as to whether Government or the estate should pay for the work, and as the point has not yet been decided, the fever goes on.

Now the work has been taken over by the Anti-Malarial Engineer, who, during all the years I had been at work, never visited the place. The Public Works Department's plan has been scrapped, and the Anti-Malarial Engineer's Department has begun again at the beginning making surveys.

Meanwhile we have carried on steadily. Early last year we completed the Sungei Bulat, while later in the year two of the tributaries were completed. In the tributaries we merely laid inverts, and sloped the banks without building a concrete storm channel. Having completed the inverting of the streams, we worked back along the banks and dealt with seepage by means of subsoil pipes. We also drained any persistently swampy places by subsoiling.

A difficulty found in some places was that we could not stop seepage where the banks consisted of very heavy clay. In such places, after digging the trench and laying in the pipes, we did not put back the clay which had been removed, but replaced it by stones, milk tins and sand.

A discovery made at about the same time was that if one wished to deal with seepage in a sloping bank, it was necessary to remove all dead stumps which happened to be buried in it. While dealing with a spot of obstinate seepage we found an old stump

buried in the bank below where the pipes were being put; a previous row of pipes had been a failure. We removed every trace of stumps, and every trace of seepage disappeared also. Now we make a point of looking out and removing all such old buried stumps.

Another point to remember is that even if pipes are buried sufficiently deep to avoid grass-roots, etc., they may get blocked by roots of trees. I have here a photograph of a mass of matted roots taken from a subsoil pipe. Trees are now cleared away for at least 20 ft. on each side of a line of subsoil pipes. It remains to be seen if even this is sufficient.

The work is now almost finished, and could be completed by our own labour in eighteen months to two years. It is rather amusing that the Anti-Malarial Engineer has now discovered there is work to do, and has decided to do it.

I should be distinctly annoyed were I remaining in Tanjong Rambutan, but, seeing that I am retiring, I am merely amused that the crown of the edifice should be erected by an expert on the foundation of an amateur.

THE CORRELATION OF CAUSE OF DEATH WITH TYPE OF INSANITY.

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IN the following investigation an attempt is made to regard the subjects of mental disorder from a synthetic rather than from an analytic standpoint, in other words to envisage the patient as an entity, a complete individual who reacts as a whole to his environment, rather than to look on him as a mere collection of systems, and, in doing so, to pay no heed to his total response. Our present knowledge of mental disease results from skilled work in histological, physiological, biochemical and psychological spheres, and there is thus, of necessity, a tendency among individual workers in the various fields to concentrate their attention almost exclusively on their particular line of work, and so to lose sight of the patient as an individual.

This communication is intended to emphasize the essential unity of each individual, and to suggest that yet another way of studying mental disorder may be from the point of view of comparable reactions in each patient in the mental, physical and social spheres. It is further suggested that there is a dominating method of reaction, common to all these spheres, peculiar to each individual. An attempt is made to support this proposition by inquiry into the mode of death of each patient, death being regarded not as a sudden, haphazard termination of life, but as the inevitable end-result of each person's life processes, and determined by those processes as to its mode and time.

METHOD OF THE INVESTIGATION.

In the course of the last two years the case-sheets of all patients dying within the last twenty years at Parkside Mental Hospital have been gone through, and 768 cases selected as suitable for tabulation and comparison. As a point of further interest they were divided into two groups, the first group comprising deaths between

1910 and 1920 (including both these years), and the second group comprising the deaths from 1921 to the end of the first quarter of 1931. This was done so that any effect of the improved conditions of detention since the war could be noted. There were 361 cases in Group I and 407 in Group II. Cases of senile dementia, general paralysis, puerperal and confusional insanity and all cases with a doubtful diagnosis were omitted. In Group I the year of the influenza epidemic (1918-19) was neglected, but in Group II it was decided to include the year 1929, in the early months of which there was another influenza epidemic, for a reason which will be mentioned later. The study of the cases in Group I indicated the

TABLE A.

<i>Group I (1910-1920).</i>	<i>Group II (1921-1931).</i>
Schizophrenia 68	Schizophrenia 53
Paranoid state 41	Paranoid state 60
Melancholia 67	Melancholia 88
Mania 33	Mania 43
Manic-depressive insanity 2	Manic-depressive insanity 19
Insanity with epilepsy 41	Insanity with epilepsy 46
Idiocy and imbecility with epilepsy 60	Idiocy and imbecility with epilepsy 39
Idiocy and imbecility 49	Idiocy and imbecility 40
	Post-encephalitic insanity 5
	*Dementia 14

* In connection with the influenza epidemic, 1929.

desirability of noting the age at death in each case, and this was done in Group II.

Table A shows the groups of cases dealt with.

With regard to the classification "paranoid state," this includes cases of paranoia (which, in its pure state, without hallucinations, seems to be rare), paraphrenia and cases of dementia paranoides, which should, perhaps, have been included under the heading "schizophrenia," but which, when delusions of persecution have been the most prominent feature and dementia has been long delayed, have been included in the paranoid group. This procedure was decided on at the beginning of the investigation, on the assumption that patients who are able to build up a delusional system as a protection against the stress of their environment are of a more active type, and have a more tenacious grip on life, than those who

quietly, passively and rapidly regress into a state of fatuous dementia. The results appear to justify this assumption.

The melancholic group consisted largely of climacteric and involuntional types. In this connection a number of young adults admitted many years ago in a depressed state were classified at that time as melancholics, but were seen from their after-history to be depressed hebephrenics. These were, accordingly, included in the schizophrenic group.

The cases of dementia in Group II were included only in relation to the influenza epidemic of 1929, and have no relation to the general argument. In the same way the post-encephalitic cases, which, being the result of an infection of the central nervous system, should, like cases of general paralysis, have been excluded, have no relation to the general argument. These were noted merely from curiosity as to the causes of their deaths, which may be mentioned now in passing so as to finish with this group. They were myocardial degeneration, primary pneumonia, typhoid fever, pyelonephritis and bronchiolectasis. The last case was a boy of 15 who was subject to paroxysms of rapid breathing, made worse by emotion.

In the two groups of 768 cases, death was found to be due to thirty-eight different causes, which are shown in Table B.

The cause of death has been determined by *post-mortem* examinations in between 80 and 90% of cases. The disease actually causing death has been recorded in all cases, and mere terminal conditions neglected; e.g., in a case of myocardial degeneration with terminal pulmonary congestion and œdema, "myocardial degeneration" has been recorded as the cause of death. Otherwise the causes of death need no comment apart from the mention of the facts that in Group I "cardiac disease" was undifferentiated, whereas in Group II it was divided into the two sub-groups of myocardial degeneration (mostly arterio-sclerotic) and valvular disease, and that in Group I only primary pneumonia was dealt with, but in Group II pneumonia was subdivided into (1) primary pneumonia, mostly lobar, and (2) secondary pneumonia, mostly bronchopneumonia and including the influenzal pneumonias.

THE GENERAL ARGUMENT.

It is first proposed to refer at some length to an article by W. A. White.* Writing on the significance of 1,000 death records, which

* "The Social Significance of Mental Disease." W. A. White, *Arch. of New. and Psychiat.*, xii, No. 5, p. 873, November, 1929.

were examined in America, he states, "It is a fascinating concept which carries the peculiarities of mental reaction down through the whole living organism as it were, to all its parts and functions." In that investigation, cases were divided into schizoid, paranoid and cycloid types, cases with schizophrenia being regarded as suffering from a non-compensatory psychosis, *i.e.*, one in which the patients show little active tendency to get well or to develop a compensatory type of psychological reaction. They deteriorate, *i.e.*, become demented. This type of psychosis was compared with the compensatory types—the paranoid and cycloid forms of insanity—in which the patients tend to get well or to develop a compensatory type of reaction, *e.g.*, delusions of persecution. White compares this reaction at the "psychic level" with the type of reaction at the "somatic level." The steadily deteriorating mental reaction of the schizophrenics is stated to go *pari passu* with an inability to react to chronic infections, especially tuberculosis, in which they

TABLE B.
Group I (1910-1920).

Schizophrenia.	Paranoid state.	Melancholia.	Mania.	Manic-depressive insanity.	Insanity with epilepsy.	Idiocy or imbecility with epilepsy.	Idiocy or imbecility.	Total.	
46	6	7	1	1	4	13	20	98	Tuberculosis.
2	12	22	8	0	9	5	8	66	Cardiac disease.
3	8	19	10	0	2	2	7	51	Chronic Bright's disease.
5	4	5	6	0	4	17	7	48	Primary pneumonia.
9	6	6	4	0	4	11	5	45	Colitis.
..	..	..	..	..	13	8	..	21	Status epilepticus.
1	3	2	3	0	1	0	1	11	Malignant growths.
0	0	2	1	1	1	1	0	6	Intestinal catastrophes.
..	..	..	..	..	3	1	..	4	Epilepsy.
0	1	1	0	0	0	1	..	3	Cerebral hæmorrhage and embolism.
1	0	0	0	0	0	0	1	2	Abscess of the kidney.
1	0	1	0	0	0	0	0	2	Ischio-rectal abscess.
0	0	1	0	0	0	0	0	1	Empyema.
0	1	0	0	0	0	0	0	1	Abscess of the parotid.
0	0	0	0	0	0	1	0	1	Erysipelas.
0	0	1	0	0	0	0	0	1	Hydatid of the liver.
								361	

Group II (1921-1931).

Schizophrenia.	Paranoid state.	Melancholia.	Mania.	Manic-depressive insanity.	Insanity with epilepsy.	Idiocy or imbecility with epilepsy.	Idiocy or imbecility.	Post-encephalitic insanity.	Dementia.	Total.	
6	20	33	16	7	12	3	2	1	..	100	Cardiac disease.
2	13	21	2	3	4	3	2	1	..	[51]	Myocardial degeneration.
4	7	12	14	4	8	0	0	0	..	[49]	Valvular disease.
7	9	6	5	2	5	12	11	1	7	65	Pneumonia.
6	5	5	5	2	4	7	7	1	..	[42]	Primary.
1	4	1	0	0	1	5	4	0	7	[23]	Secondary.
26	6	6	0	1	2	2	11	0	..	54	Tuberculosis.
3	3	18	12	3	4	3	1	0	..	47	Chronic nephritis.
2	12	7	2	2	1	1	1	0	..	28	Malignant growths.
..	..	..	..	..	11	8	..	..	..	19	Status epilepticus.
0	4	6	3	0	0	0	1	0	..	14	Cerebral hemorrhage.
3	1	1	1	1	0	4	3	0	..	14	Colitis and dysentery.
0	2	0	0	1	1	1	0	0	7	12	Influenza.
3	1	1	0	1	0	2	1	1	..	10	Typhoid fever.
0	0	2	1	0	0	1	2	0	..	6	Intestinal catastrophes.
..	..	..	..	..	4	0	..	..	..	4	Epilepsy.
1	1	1	0	0	1	0	0	0	..	4	Acute cholecystitis.
0	0	1	0	0	0	0	2	1	..	4	Pyelonephritis and pyonephrosis.
1	0	0	0	0	1	1	0	0	..	3	Meningitis.
0	0	1	2	0	0	0	0	0	..	3	Cellulitis.
0	0	1	0	0	1	0	0	0	..	2	Ischio-rectal abscess.
0	0	1	1	0	0	0	0	0	..	2	Diabetes.
0	0	1	0	0	0	0	1	0	..	2	Acute spreading gangrene.
0	0	0	0	0	0	0	1	0	..	1	Scarlet fever.
0	0	0	0	0	0	1	0	0	..	1	Bronchitis.
0	0	0	0	0	0	0	0	1	..	1	Bronchiolectasis.
0	0	0	0	0	0	0	1	0	..	1	Empyema.
0	0	1	0	0	0	0	0	0	..	1	Cystitis.
1	0	0	0	0	0	0	0	0	..	1	Gastro-intestinal intoxication.
0	1	0	0	0	0	0	0	0	..	1	Acute exfoliative dermatitis.
0	0	0	0	0	1	0	0	0	..	1	Acute suppurative parotitis.
0	0	0	0	0	0	0	1	0	..	1	Ovarian cyst.
0	0	1	0	0	0	0	0	0	..	1	Acute hemorrhagic pancreatitis.
0	0	0	0	0	1	0	0	0	..	1	Pernicious anæmia.
0	0	0	0	0	0	0	1	0	..	1	Pulmonary apoplexy.
0	0	0	0	0	1	0	0	0	..	1	Lymphadenoma.
0	0	0	0	1	0	0	0	0	..	1	Perinephric abscess.
										407	

show little tendency to fibrosis. Thus fibrosis at the somatic level is compared with compensation at the psychic level. From the same standpoint it would be expected that cases of mania and manic-depressive insanity would show little tendency to die from tuberculosis, as they suffer from a compensatory form of psychosis and tend to put up a fight at both mental and physical levels and return to normal. Paranoid cases, too, are not prone to die from tubercular infection, owing to defensive fibrosis.

Paranoid cases, however, are stated to be particularly liable to die from malignant growths, and White postulates a "proliferative type of reaction," at both the psychic and somatic levels, and compares a delusional system which grows at the expense of the personality with a group of cells growing at the expense of the body.

At first sight this theory of White seems to be pushed rather far, but, if it be divested of such terms as "psychic" and "somatic" "levels," and the order of the postulation be reversed, *i.e.*, that patients with a certain type of physical make-up—with similar endocrine and sympathetic systems, with similarly shaped chests and heads and similarly functioning organs—are liable to react mentally to life in much the same way, and, if they react in a faulty way, to develop much the same form of insanity, then the theory sounds at least possible. The fact that patients of a similar type—with a similar diathesis—are liable to develop similar types of physical disease, is widely accepted, and this, allowing that physical disease may result in death, is the whole theory, looked at—and this is the important point of difference—with the stress on the physical rather than the mental as the first link in the chain of events. It is little more, in fact, than an elaboration of Kretschmer's work on the correlation of physique and character, and his description of the asthenic and dysplastic physiques as being related to schizophrenia, and of the pyknic constitution as being related to the cycloid type of insanity.

Our investigation, then, is believed to support the following contention (divested of all technical terms): That patients suffering from certain types of insanity are liable to die from certain types of physical disease, that the form of death is the final expression of the vital activities of each organism taken as a whole, and serves as an illustration of that organism's physical and mental tendencies, which are, of necessity, closely bound up with each other.

In addition, any other points of interest arising from the method of the investigation, *e.g.*, the alteration in the order of

frequency of the main causes of death during the last ten years, have been briefly referred to.

THE FINDINGS.

It has long been recognized that cases of dementia præcox are peculiarly liable to tubercular infection. This is well illustrated in the present series, 72 of the 121 schizophrenics having died from this cause. On the other hand, only 12 out of 101 paranoid cases died of tuberculosis, and only 3 out of 97 cases of mania and manic-depressive insanity. This is illustrated in the accompanying diagram, and certainly fits in with the suggestion just outlined of concurrent mental and physical reactions of compensatory or non-compensatory types.

The diagram also illustrates the death-rate from malignant growths, which account for a relatively small number of deaths, compared with heart, kidney and lung complaints. The incidence, however, was undoubtedly highest in the paranoid and cycloid types of insanity, and, in addition to the diagrammatic representation of deaths from this cause in the schizoid, paranoid and cycloid groups, the percentage of deaths from this cause is shown in all the mental disorders considered. Deaths from malignant growths are seen to be more frequent in paranoid conditions and in mania and manic-depressive insanity than in any other group of mental illness, and more than twice as frequent in the paranoid group as in the melancholic group, although the average age at death is the same for both groups.

Turning to the more acute infections of primary pneumonia and colitis and dysentery, it was found that the class of patient succumbing most easily to these diseases was that of the epileptic imbeciles. Of 99 cases, 15 died of colitis and dysentery and 24 of primary pneumonia. Thus 39% died from common infections, as compared with 19% of schizophrenics, 16% of paranoid cases, and 19% of cycloid cases. The non-epileptic imbeciles showed a death-rate next highest to the epileptic imbeciles, 25% compared with 39%. Thus an inherent weakness of mind can be regarded as a concomitant of an inherent weakness of physical constitution, the extra strain of the epilepsy resulting in a rather greater percentage of deaths from infection. This suggestion of an inherent weakness of constitution on the part of the imbeciles is supported by a glance at the average ages at death, shown in Table C. These are just what would be expected. The epileptic

TABLE C.—Average Age at Death.

	Years.
Idiocy and imbecility with epilepsy	35
Post-encephalitic insanity	36
Idiocy and imbecility	40
Schizophrenia	41
Insanity with epilepsy	48
Mania	56
Manic-depressive insanity	58
Paranoid state	66
Melancholia	67
Dementia	70

MALIGNANT GROWTHS.

Schizophrenia.	Paranoid state.	Melancholia.	Mania and manic-depressive insanity.	Insanity with epilepsy.	Imbecility with epilepsy.	Imbecility.
2.5%	15%	6%	7%	2%	1%	2%

SCHIZOPHRENIA.



3 of 121 (2.5%).

PARANOID STATE.



15 of 101 (15%).

MANIA AND MANIC-DEPRESSIVE INSANITY



7 of 97 (7%).

TUBERCULOSIS.

SCHIZOPHRENIA.



72 of 121 (60%).

PARANOID STATE.



12 of 101 (12%).

MANIA AND MANIC-DEPRESSIVE INSANITY.



3 of 97 (3%).

imbeciles die earliest, the non-epileptic imbeciles die at about the same age as the schizophrenics, whose life-force seems to peter out round about forty. Finally, among the patients suffering from congenital defects affecting the organism in early life are the

epileptic insane, who appear unable to withstand the strain of epilepsy beyond the fifth decade. Cases of mania and manic-depressive insanity, paranoid cases and melancholics have been able to react, with varying degrees of efficiency, to the stress of their environment, and their length of life seems to be to some extent proportional to the degree of this reaction.

As would be expected, epilepsy claims a greater proportion of victims among the cases of epileptic insanity than among the epileptic imbeciles (36%, compared with 17%), many of the latter dying earlier of acute infections.

Turning now to deaths from cardiac disease and chronic nephritis, a point of some interest is the difference in the death-rate from chronic nephritis between melancholics and paranoid cases, although the average age at death of each group is about the same: 11 paranoid cases (11%), but 27 melancholics (24%), died from this cause. The majority of the cases of melancholia were of the involuntal type, who had withstood the buffets of life until that period; the age of incidence of the paranoid cases, however, is earlier, and possibly the absence of excess nitrogenous material and alcohol from the diet of these cases, and the regular life in hospital, compared with the often casual and unbalanced diet and life of the melancholics while out of hospital, may account for the difference. This finding agrees also with the statement that the blood-pressure of melancholics is raised compared with other types of case (apart from periods of agitation, when it tends to fall).

Deaths from heart disease of the myocardial (arterio-sclerotic) type were greatest in the melancholic and paranoid groups, as would be expected as a result of the average age at death. From valvular disease of the heart, however, the greatest number of deaths was among patients suffering from mania, 32% of these cases dying from this cause, as compared with 17% of cases of insanity with epilepsy, the next largest group of patients to die from cardiac valvular disease. Further research is necessary to confirm this co-existence of mania and cardiac valvular disease.

White states that schizoid patients are peculiarly liable to intestinal catastrophes (such as appendicitis, volvulus, non-malignant obstruction, and gastric and duodenal ulcers), owing to these patients being of an asthenic type, which includes a long intestinal tract and flabby musculature. This was not confirmed, for in our records of the last twenty years there is no case of a schizophrenic dying of an intestinal catastrophe.

This, then, is a short statement of the evidence brought forward in the present investigation to support the proposition that sufferers from mental disorders may be classified in several large groups, that members of these groups tend to react to their environment in a manner peculiar to each group, both in the mental and physical spheres, and that this specific tendency of each group may be traced even as far as the mode of death. Within the groups each patient is regarded as an individual, the close inter-relation between mind and body is emphasized, and the desirability of an holistic view of the patient, even in specialized research, is suggested, in so far as the patient as a whole is something more than the sum of separate systems and symptoms.

In so far as insanity is merely an accentuation of normal characteristics, similar findings among groups of people with varying temperaments outside mental hospital would probably be made.

OTHER POINTS OF INTEREST.

The following are a few noteworthy points in Group II (the 1921-1931 group) as compared with Group I (the 1910-20 group). First, tuberculosis is displaced from its position as principal cause of death; secondly, colitis and dysentery have greatly diminished as causes of death (45 of 361 deaths in Group I compared with 14 of 407 deaths in Group II); and finally, the percentage of deaths from malignant growths has risen from 3% to 7%.

Had the arbitrary periods covered by the investigation been fixed so that the second period commenced after 1923, the decline in the death-rate from tuberculosis and colitis would have been very much more marked, for of the 54 cases in Group II dying of tuberculosis, 32 died in the three years ended 1923, and only 22 in the seven and a quarter years since then; and of the 14 colitis cases in Group II, 12 had died by the end of 1923, so that colitis and dysentery as causes of death have been practically non-existent for the last seven and a quarter years. The beginning of the great decline in deaths from these two causes coincides with a substantial increase in diet at Parkside Mental Hospital made in 1922, when, among other increases, butter, bacon and porridge were added to the dietary. The large heated verandahs for the open-air treatment of cases of tuberculosis, which have come into use during the same period, have also contributed largely to the present happy state of affairs.

The increased death-rate from malignant growths agrees with the increase shown for the whole population by the Registrar-General.

Finally, with regard to the deaths from influenza and influenzal pneumonia in the epidemic in February, 1929, a point of some interest is that the mortality was almost confined to aged and demented patients and to imbeciles. Of the 23 deaths recorded, 14 were those of demented (mostly admitted in a demented state), and 5 were imbeciles. The average age at death of the cases dying during the epidemic was 70 for the demented cases and 35 for the imbeciles.

TERMINAL URÆMIA: WITH NOTES ON THE PRE- VALENCE OF RENAL DISEASE AMONGST THE INSANE.

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PART I.—TERMINAL URÆMIA.

THE high incidence of chronic interstitial nephritis at *post-mortem* examinations at the East Sussex County Mental Hospital prompted an investigation into the urea content of the cerebro-spinal fluid. In the years 1926–29, some 68% of all deaths have had *post-mortem* examinations performed, totalling over 200 autopsies, and a series of 60 successive results are tabulated below (Table I), giving the following details:

- (1) The sex of the patient.
- (2) The age.
- (3) The interval between death and the estimation of the urea content of the cerebro-spinal fluid.
- (4) The result of the estimation.
- (5) The mental diagnosis.
- (6) Macroscopic evidence of gross renal disease (+ or —).
- (7) Other gross macroscopical abnormalities.

(1) *The sex of the patient.*—This does not seem to be important.

(2) *The age of the patient.*—This is clearly important. Patients over 60 years of age will tend to show senile decay, and with it probably—although not invariably—some degree of renal cirrhosis. Approximately half this series were 60 years of age or over.

(3) *The interval between death and the estimation,* at any rate up to twelve hours, is unimportant, as shown by Case 9, where the blood urea just before death was the same as the cerebro-spinal

fluid urea twelve and a half hours after death. One wondered whether decomposition of urea, giving lower readings than the true figure, might occur. Apparently this is not so. No falsification of high values can be suggested in this series, because it contains at least thirteen normal readings.

(4) *The estimation of urea in the cerebro-spinal fluid.*—Kennaway's (1) method was used, with alcoholic precipitation, neutralization, and fermentation by soya-bean extract. The method is extremely accurate with weighed amounts of urea in solution. Occasionally there was, unavoidably, a little blood admixed with the cerebro-spinal fluid (taken from the lateral ventricles as a rule before the brain was removed). This matters not at all, since the urea content of the blood and fluid are equal (2), averaging 30–50 mgrm. %, and this introduced no error. It is of great interest to note that with high urea readings the fluid was invariably *under pressure* and greatly increased in total volume, and the brain showed obvious signs of recent compression and œdema. This was not so in those cases yielding normal readings of urea.

It is of moment to digress somewhat. The abnormal intracranial pressure which is so obvious *post-mortem* had certainly been operative for some time—just so long, to my mind, as there had been nitrogen-retention. This chronic mechanical compression and œdema must have inhibited the proper working of the brain, particularly affecting the grey matter on the surface. May not some of the mental changes in the senile demented and uræmic patients have well been due to such mechanical pressure, leading as it must, eventually, to pressure atrophy of the convolutions?

Macroscopic and microscopic examination of the cerebral cortex in such cases show relevant changes in the form of (1) reduction in depth, and (2) reduction in nerve elements. This is, however, a separate line of investigation which we have only followed up in a few instances.

(5) *The diagnosis of the mental condition* was taken from the clinical records.

(6) *Gross renal disease*, usually of the cirrhotic type, but sometimes with fatty (? lipid) degeneration, was found in 65% of autopsies.

A combination of fatty degeneration of the heart muscle, liver and kidneys, such as is sometimes seen in the chronic alcoholic subject, was found in some 15%. Many livers show gross lipid abnormality in some form.

(7) *Other gross abnormalities* are tabulated as being of interest.

TABLE I.

No.	Sex.	Age.	Interval (in hours).	Cerebro-spinal fluid urea % in mgms.	Mental diagnosis.	Chronic renal disease.	Morbid anatomy.
1	M.	4	31	125.4	Imbecility	F.+	Fluid under pressure; hydrocephalus; fatty heart, liver and kidneys.
2	M.	84	25½	34.2	Dementia	C.+	Arterio-sclerosis; myocardial failure.
3	M.	81	52	97.2	..	C.+	Convulsions prior to death; cardiac failure and bronchiectasis.
4	F.	68	45	177.3	..	O.+	<i>B. coli</i> ascending nephritis; uræmic convulsions; myocardial degeneration.
5	M.	51	?	59.4	G.P.I.	..	..
6	F.	38	10½	139.5	Acute delirious mania	C.+	Urine shows albumen and casts; uræmic.
7	F.	43	23½	148.0	Melancholia	..	Myocardial degeneration; broncho-pneumonia.
8	F.	79	19½	33.3	Delusional insanity	C.+	Arterio-sclerosis; myocardial degeneration.
9	M.	?	12½	100.0 (Just before death 100.4)	..	C.+	Pleural effusion; uræmia.
10	M.	42	5½	100.8	Imbecility	..	Strangulated hernia; ileus; general peritonitis.
11	F.	47	11	168.75	Melancholia; secondary dementia	C.+	Arterio-sclerosis; broncho-pneumonia.
12	M.	62	11½	132.75	Secondary dementia	C.+	Myocardial degeneration.
13	F.	63	33	101.7	Dementia	C.+	Arterio-sclerosis; double broncho-pneumonia.
14	F.	44	9	170.55	Imbecility	C.+	Pulmonary tuberculosis.
15	F.	62	?	26.1	Delusional insanity	..	Endocarditis; coronary thrombosis.
16	M.	50	?	178.0	Hallucinatory insanity	..	Gastric fibro-sarcoma; shock of operation.
17	F.	57	28	63.9	..	..	Pleurisy; perirenal abscess; septic endocarditis.
18	F.	69	11	246.6	Dementia	O.+	Ascending nephritis; B.U. three days before= 133 mgm. %.
19	M.	53	55	238.5	G.P.I.	C.F.+	Died during malarial treatment; fatty degeneration of liver.
20	F.	63	31	387.1	..	C.+	Cardiac hypertrophy; uræmia.
21	M.	4	9	67.5	Mongolian imbecility	..	Acute septic broncho-pneumonia.
22	F.	1½	?	76.5	Congenital syphilis	..	Pleurisy and broncho-pneumonia.
23	F.	51	12	144	Acute delirious mania	C.+	Exhaustion.
24	F.	68	21	33.3	Acute mania	..	Dropped dead; atheroma of coronaries; mitral disease.
25	M.	?	?	387	G.P.I.	F.+	Confluent broncho-pneumonia; fatty degeneration of liver and kidneys.
26	M.	77	21	261	Senile dementia	C.+	Senile decay; arteriosclerosis.

TABLE I.—*continued.*

No.	Sex.	Age.	Interval (in hours).	Cerebro-spinal fluid urea % in mgms.	Mental diagnosis.	Chronic renal disease.	Morbid anatomy.
27	M.	60	34	166.5	Senile dementia.	C. +	Paralysis agitans; uræmia.
28	F.	48	41	185.4	Mania	C. +	Goitre; confluent broncho-pneumonia.
29	F.	61	27½	109.2	Dementia	C. +	Chronic bronchitis; cardiac failure.
30	M.	73	19½	105.3	Senile dementia	C. +	Arterio-sclerosis; uræmia.
31	F.	7	7	158.4	..	C. +	Myxœdema; pneumonia; fractured femur.
32	M.	69	28	25.2	Delusional insanity	C. +	Arterio-sclerosis; cardiac failure.
33	F.	77	20½	106.2	Senile dementia	C. +	Lobar pneumonia; renal heart.
34	M.	65	33	81.0	Dementia	F. +	Carcinoma of stomach; peritonitis.
35	F.	44	26	182.25	Delusional insanity	C. +	Lobar pneumonia; toxic heart, liver and kidneys.
36	M.	7	7	193.0	Status epilepticus	C. +	..
37	F.	47	64	63.0	Mania and epilepsy	C. +	Old cerebral hemorrhage; confluent broncho-pneumonia.
38	F.	74	47	89.0	Secondary dementia	..	Influenzal broncho-pneumonia.
39	F.	7	35½	163.8	..	..	Acute double lobar pneumonia and pleurisy.
40	M.	46	9½	41.5	Delusional insanity	..	Double broncho-pneumonia.
41	F.	7	7	90.0	..	..	Influenza followed by lobar pneumonia.
42	F.	33	20	26.1	Dementia	..	Influenzal pneumonia.
43	F.	2½	47½	59.5	Idiocy	..	Fulminating meningitis.
44	M.	61	7½	85.5	..	..	Confluent broncho-pneumonia.
45	F.	79	7	137.7	..	..	..
46	M.	68	23½	59.5	Senile dementia	..	..
47	F.	57	7	160.2	..	..	Pleurisy; broncho-pneumonia.
48	F.	51	4	321.3	Acute mania	C. +	Acetonuria.
49	F.	73	19	243.0	Recurrent mania	C. +	Erysipelas; lobar pneumonia.
50	F.	54	14	234.7	Melancholia	C. +	Acute broncho-pneumonia.
51	F.	51	23	80.4	Epileptic insanity	C. +	Pulmonary tuberculosis.
52	F.	51	13½	214.2	Mania	..	Septicæmia; erysipelas; septic pneumonia.
53	M.	47	26½	83.7	G.P.I.	C. +	Septic pneumonia; aortitis.
54	F.	50	28	503.1	Mania	F. +	Fatty degeneration of heart, liver and kidneys.
55	F.	61	19	59.4	Dementia	C. +	Cervical cellulitis; toxæmia.
56	M.	45	21½	107.4	G.P.I.	C. +	Myocardial degeneration; aortitis.
57	F.	40	43	124.8	Melancholia	C. +	Broncho-pneumonia; pleurisy.
58	F.	61	34	103.4	Confusional insanity	C. +	Pulmonary thrombosis.
59	M.	65	12½	195.3	..	C. +	Lobar pneumonia.
60	F.	77	8½	167.3	Senile dementia	F. +	Broncho-pneumonia; fatty degeneration of heart, liver and kidneys.

N.B.—C. = Chronic interstitial nephritis, F. = Fatty cirrhosis, O. = Other forms of renal disease.

SUMMARY OF RESULTS.

Urea in cerebro-spinal fluid (mgrm. per 100 c.c.): Normal 21·66
 Abnormal 78·34

 100·00%

36·7% were *below* 100 mgrm. per 100 c.c.

63·3% „ *above* „ „ „

The highest reading was 503·1 mgrm.

The lowest reading was 26·1 mgrm.

Percentage of cases showing gross renal disease at autopsy : 65%.

Of these, 80% showed chronic cirrhosis.

15% „ fatty cirrhosis.

5% „ other forms of renal disease.

 100%

DISCUSSION.

A marked degree of nitrogen retention was found in a majority of 60 successive autopsies on insane patients. Uræmia is therefore a terminal event, probably not merely a mode of death, but also a cause. The high incidence of renal disease, which corresponds pretty closely with that of terminal uræmia, is even more remarkable.

It will be seen from the above results that whereas 78% of the cases show terminal uræmia, yet only 65% show gross macroscopic renal disease, leaving a difference of 13% unaccounted for. These cases are mostly those dying of acute infection, generally pneumonia, and it is not unreasonable to suppose that they died from an acute renal toxæmia too sudden to produce gross macroscopical lesions.

Before discussing the mode of origin of this condition and its relation to mental disease, I will pass on to the second stage of the investigation, which these findings very naturally prompted, *viz.*, the average state of the kidneys in the living mental patient.

PART II.—RENAL EFFICIENCY INVESTIGATIONS IN THE LIVING MENTAL PATIENT.

I. *Combined Clinical and Laboratory Tests.*

This investigation was performed in three different ways, that is, firstly by taking 57 patients and investigating them according to

Macleay's (3) scheme with certain additions. The following points were noted :

The age.

The sex.

The clinical diagnosis.

Presence of œdema.

Position of the heart's apex.

Condition of the arteries.

The blood pressure (on two separate occasions).

The blood urea estimation.

The urea concentration test (two readings if the first was below 2%).

The blood chlorides.

The presence of albumen and globulin (the former by the salicyl-sulphonic and heat tests).

The examination of the centrifuged urinary deposit for blood, casts, cells and organisms.

Of these 57 cases, 22—or 38·6%—were over 60 years of age. Of the whole series, no less than 35·8% showed definite evidence of renal disease.

Cases were considered as a whole, and were not condemned merely by the presence of either albumen or hyaline casts. At least two mutually confirmatory findings were required.

2. Urea Concentration Tests Alone.

In a further series of 94 cases the urine urea was estimated. If it read below 2% a urea concentration test was done, and if this at the two-hour reading read less than 2%, the case was considered as renally inefficient. Of these 94 cases, 13 were below par, *i.e.*, 13·8%.

It must, however, be remembered that tests of the excretory function of the kidney are relatively coarse. They detect no abnormality unless the damage involves more than two-thirds of the whole renal tissue. Therefore, this series is a less searching one than the last, where combined clinical and laboratory data were sought.

3. EXAMINATION OF THE URINE FOR ALBUMEN AND CASTS ALONE.

In the course of routine investigations of new admissions (chiefly) and others, a series of 1,248 specimens are analysed in Table II.

TABLE II.

	Males.	Females.	Total.
(1) Albumen absent .	231 (64%)	625 (68%)	856 (66%)
(2) Albumen +. No casts, but pus or blood +	33 (9%)	138 (15%)	171 (12%)
(3) Albumen +. No casts and no pus or blood	48 (14%)	107 (11%)	155 (12.5%)
(4) Albumen + with casts	29 (8%)	37 (4%)	66 (6%)
Total examined .	341	907	1,248

If items (2), (3) and (4) are combined, we get 34% of suspicious cases; (3) and (4) together give us 18.5% of almost certain nephritis, inasmuch as functional albuminuria will be rare, although spermatorrhœa is not uncommon in mental patients.

There are at any rate at least 6% of certain cases of renal disease.

DISCUSSION AND CONCLUSIONS.

We may summarize the findings in this renal survey as follows:

60 <i>post-mortems</i>	Renal inefficiency	78.34%.
57 combined clinical and laboratory tests (all ages, 50% infirm cases)	„ „	38.6%.
94 urea concentration tests only (all ages)	„ „	13.8%.
1,248 urine examinations (all ages, mostly new admissions)	„ „	18.5%.

It will thus be seen that uræmia as a mode of death is extremely common in the insane, that renal disease shows a serious degree of incidence in a mixed series of cases, that no less than 13.8% show more than two-thirds of their renal tissue to be damaged, and that at least that number show lesser degrees of damage.

It is of great interest to note that by far the most accurate results are given by the combined clinical and pathological research, in which findings on one side can be balanced with those on the other, and also that the time-honoured method of search for albumen and casts is probably the most delicate method still for our first acquaintance with renal disease, which, of course, precedes renal inefficiency, the latter not appearing until the damage involves about two-thirds of the kidney.

It would leave a gratuitous gap if one did not indicate a possible *modus operandi* whereby the incidence of renal disease becomes the serious problem that it is in mental work. My own view coincides with that of Major F. H. Stewart, so that I may be forgiven the liberty of quoting some of his remarks bearing on this matter. The origin of the renal disease I firmly believe to be intestinal toxæmia, first and last and all the time. It is well enough known how the epileptic, feeling a fit imminent, will ask for castor oil to ward it off. This happens quite commonly. Or a patient who has been working well will become confused and troublesome, and having been duly purged, will become quiet and useful once more. These things are everyday occurrences in mental work.

Again, many of the livers we see *post-mortem* are either under weight or fatty—sure signs of being stressed by having too much detoxication to perform.

Stewart's explanation of the vicious circle which begins with (? congenital) deficiency of lactic acid bacilli in the intestine (5) and ends with premature renal cirrhosis is well worth attention. His work in this field has been highly technical, highly skilled and brilliant :

“ Owing to some change in the conditions of life in the intestine the bacterial flora is altered, the *acidophilus* group is reduced in numbers, while the coliforms are increased, and unusual types, such as paracolon and Morgan's bacillus, appear in varying proportions. As a consequence the contents of the colon become alkaline, and such substances as phenol, indole, skatole and histamine are produced in increasing quantities. At the same time the coliform bacteria spread and migrate up the small intestine to regions where they find a mixture of amino-acids, glucose and glycerin in the chyme. Here they form the poisonous bases histamine, tyramine and indolethylamine, which are readily absorbed in an active form from the small intestine, although not from the colon.

“ The theory that mental disease may be caused by this condition has again come into prominence, largely through the work of Italian psychiatrists such as Buscaino and Scheiner. It has been criticized on the following grounds: (1) That poisonous bases and other decomposition products are detoxicated immediately after absorption into the body and therefore can produce no effect. (2) That the symptoms of mental disease do not correspond with the pharmacological action of the bases. But (1), it has been shown by Meakins and Harington that histamine introduced into the small intestine of experimental cats causes a marked fall of blood-

pressure, and consequently must have been absorbed in an active state, while Dale and Laidlaw found that the detoxicating power of the liver was exhausted by a dose of 10 mgrm. of this substance. Harvey has caused arterio-sclerosis in rabbits by the prolonged administration of tyramine. The very process of detoxication may be harmful, and it is hardly credible that an individual can deal for a long period with excessive quantities of substances which call for detoxication, without ill-effects. (2) That the symptoms of mental disease do not correspond with the pharmacological action of the poisonous bases. Now even granted that this is so, we can be assured that the action of those substances in the complex world of the human body and mind may be very different from their action on an isolated organ, or even on an entire experimental animal. Take histamine: if it is introduced into the bowel there follows—(i) a fall of blood-pressure, (ii) a recovery due to the mobilization of adrenaline, and (iii) a prolonged slow fall from adrenaline exhaustion, or perhaps, in time, of adrenaline over-production. It would take a courageous man to assert that neither of these is to be found in mental disease."

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ON FREUD.

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It is my intention in the present communication to attempt to bring part of the philosophy of Freud into line with the psychic machinery outlined by me in previous papers, and I start by briefly re-describing that machinery.

We distinguish in every organ two sub-structures—the responding organ and the exciting organ respectively. The latter is the intermediary between the whole and the environment, and it frames excitation processes which evoke the proper activity of the responding organ. So far as thoughts are concerned, I have assumed that the excitation processes mediating them occur in cerebral nerve-cells, but have left undefined the nature of the organ in which the responses occur. But I have pointed out that the excitation processes probably evoke the response by “action at a distance,” the relation between these excitation processes and the response being somewhat similar to the relation between the electric currents in a telephone wire and the resulting “response” of sound-waves (1, 2, 4, 5, 6,).

An excitation process results from the interaction of two independent sources of potential, salts and colloids, possessed by all living tissues. And we find from experiments on hearts that if the amount of energy coming from the one source be designated H , and the amount of energy coming from the other be designated L , then the sum of H and L cannot exceed the value of a third factor, T , the maximum capacity of the responding organ to give a response without spasm (2). Hence we arrived at the fundamental equation $H + L = T$.

This equation, when applied to mental phenomena, implies that every thought or idea possesses both size and intensity, its intensity being denoted by T , and quality by the proportions of H and L . Also, for the idea or judgment T , H provides judging capacity and L the data for judging (1).

These two factors H and L , I now suggest, are to be identified with Freud's “reality principle” and “pleasure-pain principle”

respectively. The evidence for this may be taken from two sources, *vis.* :

1. The drugs, alcohol and cocaine, which are used on the psychic side to increase the pleasure principle and decrease, or take away from, reality, and are found on the experimental side to decrease H and increase L (7, 8).

2. The changes with age. Ageing implies increased H and decreased L , or, according to Freud, more "reality" and less "pleasure" (1).

The identification having been made, there is next found a general agreement between my own results and Freud's in that these factors are inversely proportional to each other, but I have to point out that this relationship does not necessarily imply antagonism. On the contrary it may imply synergism, because any two synergic factors kept within a limit acquire through the limitation the secondary relationship—the more of the one, the less of the other. This last proposition may be put more concretely by considering the case of an observer, capable of distinguishing between petrol-vapour and air, situated in the inlet pipe of a motor. Such an observer would find in due course that the greater the amount of petrol-vapour the less was the amount of air, and *vice versa*. If the observations went no further than this, a reasonable inference from the results would be that petrol and air are antagonistic, whereas, in fact, they are synergistic, acquiring this secondary relationship from the limitation imposed by cylinder capacity.

Now concerning thoughts there are two postulates which I think would be generally granted. They are (1) that thoughts are somehow or other mediated by energy, (2) there are limits to thought intensity. Granting these postulates, and the granting is inferred from the common application of such adjectives as "large," "immense," "intense," "deep," "shallow," etc., to minds and thoughts, then, by adding this new factor of a limitation of thought-intensity, it can be deduced from the evidence presented by Freud that the two principles are synergistic and, through limitation to the intensity of their combined effort, acquire the secondary relationship, the more of the one the less of the other.

This result is also directly deducible from my own experiments, the results of which are summed up in the formula $H + L = T$. It indicates, as already pointed out, that thoughts are "alloys" made up of two ingredients, each ingredient contributing a common factor of size or intensity and their proportions determining its

quality (1). From the two metals, copper and tin for example, one could make a number of coins having the same weight, or size, as a penny, and to that factor of size, or weight, each metal would add its own independent contribution. But within this limitation of combined weight, or size, there could be, by varying the proportions of the two metals, infinite gradations of quality.

Freud's philosophy, however, does not embrace this finiteness of intensity of ordinary thoughts, within whose limits, as our formula shows, there is infinite gradation of quality. Each factor, or principle, we find to make its own independent contribution to intensity, and so they are here synergistic. I think also this synergism should be regarded as the primary relationship of the two principles and ideas of antagonism replaced by others concerning the quality of the resultant mixture, because, while there are many other alloys of two constituents known, in which each factor contributes its own independent quota to the weight, size, or intensity of the whole, and in which the quality of the whole is determined by the proportions of the two constituents, I do not know of any other instance where such two ingredients of an alloy are regarded as antagonistic principles.

In Freud's observations, then, I find confirmation of my own that there are two independent sources of potential for framing those psychic responses we call thoughts (1), but I think he has missed the point that these responses are of finite intensity, and that each of us probably possesses his own independent limit of normal thought-strength (1). This has determined what I consider to be an essentially misleading theory of antagonism of two really synergic factors. It has also determined, as I shall presently endeavour to show, another misleading theory which may be summed up in the word "repression."

The theory of repression attempts to explain why certain people are possessed of ideas or memories modifying their conduct, but yet not conscious possessions of their possessors. This loss, according to Freud, is a purposive matter, the individual, as it were, deliberately determining to thrust away from his consciousness some memory or idea which is not in accord with his judgment of what things ought to be. But, according to the mechanism outlined above, this loss, as we shall presently find, is partly determined by the individual's thought intensity capacity.

We get back to our fundamental equation $H + L = T$, by which we imply that the data of any sensation, or idea, are mediated by the factor L , and are made conscious and judged by

addition of the factor H . If, however, we re-write the formula $H + L = T$, in the form $H = T - L$, we learn straightway that the amount of H which can be added is the difference between the capacity of the psychic machine, T , and the amount of data or L which the environment provides. When, then, the environment provides an amount of L approximately equal to the factor T , there cannot be added to those data enough H to make them conscious. My experiments also show that a given amount of L can be developed rapidly by an environmental change of great strength, or more slowly by a weaker change acting for a longer time (1).

When the factor L has become approximately equal to the factor T we call the condition shock, and this condition we are now finding must be associated with a decalcification of the nerve-cells which received the stimulus, because no room for adequate H implies no room for adequate Ca. Unless also these nerve-cells be rendered completely functionless by receipt of such strong impulses, they should reflexly discharge impulses of similar quality. Put differently, shock impulses received from the environment should cause a reflex discharge of similar impulses within the body. Such shock impulses will also have a decalcifying quality. Calcium, however, is an important regulator of cell permeability and, moreover, one cannot decalcify a tissue sufficiently to produce alterations of permeability, *e.g.*, to KCl, without also interfering with other Ca functions (6).

Hence, associated with the approximation of the intensity of the factor L to that of the factor T , and the consequent inability to make those data conscious, we can expect to find many more tangible bodily manifestations of this decalcification, *e.g.*, alterations of permeability of capillary walls, œdema and so on. And these bodily manifestations, because of their very tangibility, as opposed to the non-tangibility of loss of consciousness, would naturally give any investigator of them the impression that he was dealing with something real, and so also that he was on the track of the real cause of shock. Yet we have to suggest that investigators of such tangible realities confuse consequence and cause.

To consider further these other possibilities, however, would be too much of a digression. They have been merely noted in passing in anticipation of possible criticism arising from the confusion of consequence and cause indicated. Reverting to shock on its neural side, we find its essential cause to be an approximation of the stimulus intensity, L , received from the environment, to the maximum thought intensity, T , of the individual who received it.

This result brings, I suggest, shock amnesia into the region of law, whereas the Freudian theory of repression would rather make it a matter of individual will and caprice. But this T factor, while varying from individual to individual, is yet a constant for a particular individual, each of us possessing his own fixed capacity T (3). It follows from this individuality of T that the possessor of the smaller T has, other things being equal, a greater liability to breakdown than the individual with the larger T . Indeed, to get away from this greater liability, we should have to assume the existence of some law making the amount of L developed in us by an event to be inversely proportional to our individual capacities in T ! If such a law existed, then our equation $H + L = T$ shows that any two individuals would always be able to be equally conscious of the same event. But the experiments show that the amount of L generated in a tissue by an environmental change depends on the size and composition of the excitation processes in action at the time the change of environment took place. We also find excitation process composition varied by age, sex and disease (1, 3).

It should, of course, be possible for two individuals differing in T to obtain by chance enough L from the same environment to break both, yet, in the long run, environmental change will tend to pick out for breaking the possessor of the smaller T —for example, women before men (3).

Shock, or breakdown, however, is an extreme event of which we can conveniently distinguish two milder degrees—that of excitement and of “losing one’s head.” If we apply our equation $H + L = T$ to either of these other two degrees, we shall get the same result as we did with breakdown, namely that the individual with the smaller T , other things being equal, is more liable to show excitement or lose his head than the individual with the larger T .

The general conclusion reached here, that conditions of stress tend to pick out the individuals with the smaller T , has, I think, an important bearing on theories of shell-shock. The probabilities from the above are that the majority of break-downs occurred among the possessors of the relatively small T , something each had long possessed. Their previous history should therefore also present other evidence of the possession of this small T in some form of inability to add enough reality to stimuli received from the environment. This inability, however, is ordinarily expressed as “inability to face reality”—a misleading expression according to the analysis above; the inability is rather one of addition. Next,

having obtained such evidence, it would probably be difficult to refrain from adopting the "*post hoc, propter hoc*" conclusion that the previous failures of adaptation were, in part at least, responsible for the present breakdown, whereas we find here that previous and present failures had a common origin in the possession of the small T . Those who gave no previous history of failures probably possessed the large T , or else had never previously been put to the test.

It should next be noted that in the mechanism I have outlined any great sensory stimulus should be able to produce shock, great joy being capable of causing as much disturbance as great sorrow. This life, however, provides so few opportunities of sudden overwhelming good fortune, and so many chances of great disaster, that attention has been chiefly directed to explain conduct in the presence of the latter. When a person faints during disagreeable conditions, it is suggested that he had unconsciously willed to effect at least a temporary escape from an unpleasant reality, and the repression theory does, I think, explain this one point; but it fails to explain the paralysis produced by great terror, this paralysis effectually preventing escape. I think also we have yet to find the individual who wished, even unconsciously, to escape from great joy. The untoward results of these differing emotions, when in great strength, are, however, such as would be anticipated if the psychic mechanism were of the type I have outlined.

All the untoward effects hitherto considered result from the receipt by the individual of stimuli of too strong intensity from the environment. Untoward effects could also arise if the environment failed to stimulate enough to deliver adequate L . Such an environment we should term depressing. A normal environment, however, will fail to deliver adequate L if—

- (1) Excitation processes already in action are of great strength.
- (2) Excitation processes in action have relatively much H and relatively little L (1).

Senile excitation processes are of the type of (2) above, and we find from our experimental results that their adverse influence on the generation of L by environmental change can be, in part, compensated by a reduction in excitation process strength. I consider that in normal ageing there is, in part, compensation for altered composition by reduced strength. Melancholia, on the other hand, I consider to result from alteration in excitation process composition, with

maintained or possibly increased ordinary internal excitation process strength.

This conception of the condition of melancholia when put in Freudian terminology is equivalent to stating that there is excess of the reality principle and deficiency of pleasure-pain, which is what Freud actually suggested. There is, then, here agreement, which, being noted, enables us to pass on to the points where agreement is less.

As we have seen, Freud's antagonism theory implies non-recognition of the point that thoughts, or ideas, are alloys. Wishes, however, are ideas, and so also alloys, and in the mechanism, as I find it, the data of a wish would be mediated by the factor *L* and its conscious appreciation by the factor *H*. Hence one should not expect to find a wish either in the factor *H* or in the factor *L*, any more than one should expect to find bronze in either copper or tin. Hence also one would reject the idea of the existence of a death wish in the reality principle.

In addition to rejecting this theory on *a priori* grounds, the association of suicide and melancholia may also be considered from a different aspect, and in this connection I would first draw attention to the well-recognized difference between logic and sentiment, the difference between the judge's summing-up and counsel's address to the jury.

Now, excepting for any delusion he may possess, the internal and primary change of balance of excitation process composition in the melancholic will secondarily determine, as my experiments show, that the environment shall generate in the patient less *L* than normal (1). Thus it comes about that you cannot make the melancholic see your point of view, because your arguments cannot deliver to him enough *L* to give adequate data for good judgment. You can only deliver to him that little *L* which makes your arguments appear worthless. That same impression of worthlessness will extend to all else received from the environment, and also to his own inner stock of data, except his delusion.

Except for his delusion, then, he has not within himself the data for framing any hope, desire, or fear, nor can he obtain them from his environment. He is, however, strongly reasonable, or coldly logical, because he possesses abundant *H*, but though he has this abundant reasoning capacity, we must realize the lack of data, or *L*, on which to exercise judgment. His essential problem, therefore, is to judge a worthless existence without hopes or desires. The judgment, having been framed, is then duly carried out.

The judgment is purely impersonal, since the judge does not possess the *L* to give a biased judgment. It is, indeed, more impersonal than a Home Secretary's final review of the condemned criminal's case, so that, if a death wish in the reality principle is to be inferred from the association of suicide and melancholia, the existence of a "death wish" in Home Secretaries should be inferred from executions. We should not, I think, make such inferences, but rather realize that duty and logic can lead to action as well as wishes and desires. Also that cold logic and duty can make us do things we have no desire or wish to do.

We may now temporarily leave Freud, and attempt to bring McDougall's conceptions of the instincts and emotions into line with the machinery noted above (10). The first step towards this is taken by dividing the sources of *L* into two groups, the endogenous and exogenous respectively. The former mediate our instincts, or urges, which are transformed into the corresponding emotions by addition of *L* normally derived from the appropriate environment, *e.g.*, endogenous *L* would urge to mate-seeking, and the exogenous *L* derived from the appropriate meeting would transform the urge into the corresponding emotion.

To account for an urge I assume that particular groups of cells must be set apart to mediate it, and that these cells are somehow or other more sensitive to some one particular hormone than are other nerve-cells. The original grouping of nerve-cells and their somatic connections would thus constitute the urge machinery, as it were, and the appropriate ductless-gland hormone their activator.

To consider the nature of conscious knowledge would take us too far from our immediate objective, and so I suggest only that we have no inner store of it. To obtain knowledge, we have to learn—which is possibly another method of saying that we can only know exogenous *L*. To explain, therefore, lack of an inner store of conscious knowledge, it seems to me necessary to assume either that we cannot apply adequate *H* to endogenous *L*, or else that endogenous *L* falls below what I would term "the cognoscible level." If, however, one added what in itself was a eu-critical or normal amount of *L* to an infra-cognoscible amount, the resulting total might well take us to the para-critical or emotional level. I suggest, then, that instinctive, or urge, *L*, actually falls below the cognoscible level.

It happens, however, that at the normal period of ripening of one of our chief urges, the vast majority of humans are minors who have little or no voice in determining their environment. Instead, that

determination is performed for them by parents or guardians, whose arrangements may well be deliberate both in regard to lack of opportunity for natural attachments of exogenous to endogenous L , as well as in respect of supplying non-natural substitutes. But any such resulting non-natural attachment does not imply repression of the instinct, using instinct in the sense I have derived from McDougall; on the contrary, it implies full use of instinctive or endogenous L . Indeed, according to my results, repression of instincts is impossible, since they depend on our ductless glands. What is possible is the formation of non-natural emotions based on these natural instincts. Also, the stricter the environment, the more likely is it that non-natural emotions shall be formed.

According to the above, the prime cause of origin of non-natural emotions is lack of opportunity to form natural ones. And once they have been formed, it is necessary to appreciate the difference in our attitude towards them. On the whole we consider it "natural" that lovers should be "madly" in love, but not that young people should be "madly," say, religious. We should appreciate the part played in these affairs by the factor T , since, as with shock amnesia, this can determine that, of two individuals generating equal L for an emotion, the one with the greater T shall be able still to add enough H to be reasonable, whereas the one with the smaller T cannot add enough H to be reasonable. T , indeed, may determine the difference between a Ruskin and the patient at a neurological clinic.

Now, just as one would expect by analysing a theory to reach its constituent facts, so also by analysing an emotion one should also expect to reach its constituents. And if the emotion, or theory of conduct, be a non-natural one, analysis could be expected to show how it was developed. Hence, if it were developed through its possessor living in an environment which gave no knowledge of primary urges, that lack of knowledge would persist up to the point where the analyst had split up the emotion into its constituents and then supplied the urge-knowledge.

In contrast with the individuals just considered, who grow up in an environment which does not afford knowledge of one of their chief urges, there are those individuals who obtain knowledge of the significance of this urge, but are placed in an environment which forbids its normal emotional outlet, *e.g.*, a vow of celibacy. For such on the whole a virgin cult seems satisfactory, but there are instances on record where it does not. We find in these other cases that individuals were gravely disturbed by the strength of their

natural, yet unwelcome, desires, and eventually obtained relief through a vision of the superlatively beautiful.

Now for anything to be described in superlative terms implies, according to the mechanism given above, that its factor L is also superlative or very intense. If, then, there be added to the L of an urge a superlative L derived from the vision superlative, there might well be so much L mediating the emotion that its possessor should no longer be able to apply to it adequate H to mediate knowledge of it. He could therefore be led to believe he had conquered that particular emotion. The conquering also should be accompanied by other signs which medically might be assigned to shock, and by others, according to their prejudices, assigned to "emotional storms," etc.

In the cases just considered, it seems to me reasonable to apply the term "attempted repression" to the conditions existing before the final temptation. This last event, however, does not imply success at repression, but rather failure, because the emotion has not been repressed, but instead actually grown beyond the capacity of its possessor to be conscious of it. Moreover, the now superlatively live emotion, incapable, because beyond consciousness, of normal outlets, must find other outlets, and through its superlative energy provide its possessor with the possibilities of abnormal achievement in these other outlets.

Ordinary life provides other possibilities of conflict, and as examples of such we may take rank injustice or great misfortune. To anyone who had so suffered the friendly advice would be to try to forget it, and, as aids to forgetting, there might well be recommended a change of scene or occupation, because as everyone seems to know, the man who broods over his wrongs ceases eventually to be able to judge them accurately.

In the mechanism I give, this inability to judge accurately implies such an abundance of the factor L in the excitation processes mediating the idea as leaves no room for adequate H , and I have to suggest there is no essential difference between brooding and training, brooding being essentially a process of training applied to an idea (1). Hence, just as the overtrained man eventually loses skill, so also the overtrained idea loses the corresponding attribute of adequate judgment. Overtraining is also much more readily obtained for an idea, simply because fatigue does not enter so much as a factor limiting the amount of training.

If, then, brooding and training be similar processes, the healing influence of time, or neglect, applied to their effects will give the

same result, namely, a loss of efficiency of the acts. Deliberate neglect rather than repression seems to me the more apt description of the process. At the same time we should not lose sight of the possibility that deliberate neglect may be ineffective in an unpropitious environment, since the latter could restore what time would otherwise take away.

As regards conflict, one must appreciate the reality of its existence, but differ from Freud concerning what happens. Neglect aided by environment could reduce, under favourable conditions, the intensity of the *L* of the unwelcome idea to a more reasonable level, and so place the source of conflict among the ordinary things of life. I think the average family physician, proceeding on the common-sense lines of change of scene or occupation, sees many cures effected thereby. If, however, neglect be not possible and environment be unfavourable, then a superlative vision of the consequences of the unwelcome idea might well be the cause of a sudden breakdown. Thereafter the conflicting idea no longer directly, but instead indirectly, affects the psychic life of its possessor, who may well be fortunate if those indirect effects can be turned to useful ends, and distinctly unfortunate if they cannot.

Repression, however, is an unfortunate term to have been used to explain these happenings, though in this connection it should be noted that I have made full use of McDougall's distinction between instincts and emotions, whereas Freud on the whole neglects the distinction. But, having made the distinction, the "repression," if any, in the case of an urge is performed by those who determine the environment, and not by the individual who is deprived of knowledge of the urge by the environment. Moreover, that environment does not repress the urge, but instead determines what shall be added to form emotion. As regards those cases where the emotion has become so great as to be beyond consciousness, what happened was the exact reverse of repression.

If, for principle, we use the term "potential" and speak of bodily organs in general instead of the organ of mind in particular, some of Freud's discoveries could be generalized as follows. Every organ has at its disposal two independent sources of potential for mediating its responses, and it frames different types of responses according to the amounts of energy drawn from each source. This generalization is also my own, drawn from physiological work on hearts, and so what Freud previously discovered in the realm of psychology, I can claim to have discovered in physiology.

But, at the time when Freud made this psychological discovery,

physiology had gone no further than the conception that an induced shock, when applied to a muscle, set up therein an excitation process which culminated in a contractile response. The physiologist may, as many still do, consider the problem only from the aspect of size, and so there was no common meeting-place with one dealing in quality as well. This standard of size determined, moreover, conceptions of the anatomical existence of higher and lower centres in the brain, in which again there was no common meeting-place for a philosophy in which "higher" was a sublimation of "lower."

To the conception, however, that an induced shock directly excites contractile material, I add, always with Macdonald as guide (9), the following others, *viz.* :

1. Excitation processes and responses take place in separate structures having "action at a distance" as their connecting link.
2. There are two independent sources of potential for the framing of excitation processes.
3. Each source of potential exerts its own independent influence on the strength and quality of responses.
4. Each responding organ has a normal definite limit to the size or strength of its responses.

These additions have enabled us to approach the philosophy of Freud from a physiological basis, and show where I think he has gone astray. The guide-post he failed to reach is the one which states there must be a limit to the size or intensity of the responses of any organ. And when we take the direction indicated by this guide, we find the two principles or potentials synergically acting to give intensity to responses, and giving them quality in accord with the rates of their respective efforts, whereas Freud only got to the point where these two potentials seemed to be antagonistic. He there went astray, but nevertheless, in the course of his investigations, found much more that is new, *e.g.*, sublimation. Our guide-post *T*, however, shows there are two ways of losing conscious memory or consciousness of things. Freud has found both, but like Columbus, when he went west to reach the east, believes that what he has found in the west is actually east.

References.—(1) BurrIDGE, *Journ. Ment. Sci.*, 1929, lxxv, p. 371.—(2) *Idem, ibid.*, 1929, lxxv, p. 395.—(3) *Idem, ibid.*, 1929, lxxv, p. 693.—(4) *Idem, ibid.*, 1931, lxxvii, p. 345.—(5) *Idem, ibid.*, 1931, lxxvii, p. 385.—(6) *Idem, Journ. of Physiol.*, 1911, xlii, p. 359.—(7) *Idem, Arch. Internat. de Pharmac. et de Therap.*, 1921, xxvi, p. 115.—(8) *Idem, ibid.*, 1922, xxvii, p. 239.—(9) Macdonald, *Quart. Journ. Exp. Physiol.*, 1909, ii, p. 65.—(10) McDougall, *Social Psychology*.

ON JANET.

By W. BURRIDGE, D.M., M.A.Oxon.,

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JANET, like Freud, met the problem of explaining why certain people have not conscious memory of past, for them, tremendous experiences, and yet those experiences exert a marked influence on conduct. To account for these facts he assumed the existence of a force inherent in consciousness, enabling this to hold to itself memories of events. A loss of conscious memory of some past tremendous event would thus be due to consciousness being too weak to hold that event to itself—an hypothesis which also explains why great joy can be as disturbing as great sorrow.

Such losses of conscious memory Janet termed dissociation, and in explanation of the fact that some individuals seem more prone than others to develop dissociation he suggested that this force of consciousness was stronger in some than others, so that those in whom this force was strong were better able to hold events to consciousness than those in whom the force was weak.

If, however, there be this force inherent in consciousness and welding the events of the psychic life together, it implies that there must be some other force inherent in, or acting through events, tending to keep events away from consciousness, because no force would be required to hold things together unless those things had a tendency to be parted from their holder. Janet's simile of the shopper with many parcels is here apt, since it would be gravity that would part a parcel from the shopper.

Since also events dissociated from consciousness can still be welded together into a coherent whole, as Janet himself has shown, it seems to me necessary to assume that some other force welds together these subconscious events, or that there is some cohesive force among events. Incidentally, it should be noted that I use here the term "events," as would Janet, whereas data of events would, I consider, be a more correct description.

But events dissociated from consciousness are events of great intensity, so that if they are welded together by some external

force, this force must be greater for dissociated events than for conscious ones. And this welding force being of consciousness, we should be more conscious of dissociated events than associated ones—a *reductio ad absurdum*. Hence we must assume the existence of some internal cohesive force welding events together, and grant to the whole some conscio-fugal action.

Starting, then, from Janet's hypothesis that there is a force inherent in consciousness holding to it events, we find there must be also some opposite force inherent in events. Hence consciousness and events represent opposing forces. Consciousness would, thus, be able to hold to itself any event of a strength up to its own inherent strength, and there would be equal consciousness of all events that consciousness could hold. This last result holds whether consciousness be identified with the force, or the force considered to be attached to consciousness.

We deduce from these results that every parent is as equally conscious of the failings and virtues of his own child as he is of those of his neighbour's child, or that a lover is as equally conscious of the faults and failings of the loved one as of a hated one. Having made those deductions we find them so little in accord with reality that we must presume that the original idea of a holding force associated with consciousness is not accurate.

But we find also from Janet's original idea two subsidiary ones, *viz.* :

1. There is a limit to the forces of psychic life, this limit being twice the intensity of the force of consciousness.
2. Consciousness and events are associated with opposite forces.

In addition, Janet's conception of "misère psychologique" implies that the limit of force of psychic life differs in different individuals.

I have, therefore, to suggest that Janet's hypotheses lead to my own conceptions of the psychic mechanism. He seems really to have been groping after that factor which I term *T*, so that the person who, according to Janet, owns only "misère psychologique," possesses, according to my findings, a small *T*.

Like Janet, we would make consciousness mediated by or associated with energy, but make the energy force in general, not attraction in particular. And, instead of the force inherent in consciousness being weak in some and strong in others, we make the factor *T*, or the sum-total of the intensities of consciousness and the data of events, weak in some and strong in others. Also we place individual

limitationsⁿ on this sum total or T , instead of individual limitations on the force associated with consciousness.

Janet also found that individuals with "misère psychologique" were emotional, and was hence led to suggest that emotions depleted the organism of psychic energy. I have to suggest that Janet here confuses consequence and cause.

Emotional states are well known to be incompatible with good judgment, which, put in terms of my mechanism, is equivalent to stating that the excitation processes mediating them contain relatively much of the factor L , and a correspondingly diminished amount of the factor H which mediates judging capacity. But if two individuals differing in the factor T develop equal amounts of the factor L over anything, the possessor of the greater T can apply to this factor L more of the factor H than can the possessor of the smaller T . Other things being equal, then, possessors of the greater T will always be more reasonable than possessors of the smaller T , the average man, for example, "keeping his head" easier than the average woman.

Again, other things being equal, the possessor of the smaller T will be more emotional than the possessor of the larger T . Hence defining Janet's "misère psychologique" as the possession of a small T , we learn that emotional instability results from "misère psychologique," rather than, as Janet thought, that emotional instability causes "misère psychologique."

Medico-Legal Notes.

REX v. EDWARD GEORGE WARE.

This case was tried at Monmouth Assizes on June 12, before Mr. Justice Wright. Some interesting points as to the "irresponsibility" of mental defectives were raised.

The accused man, æt. 23, was employed as a surface worker at a colliery near Pontypool. There was a history of his having had a fall on his head at birth. He attended school up to the age of 14 years, but never got higher than the second standard. Since leaving school, however, he had supported himself, and was described as a steady worker. He had, at first, worked underground; but he had been obliged to relinquish this occupation, because going up and down in the "cage" was said to "affect his head." He lodged at the house of one William Reece, whose wife, Beatrice Reece, he was alleged to have murdered. There was another young lodger, named Victor Morgan, who was a brother of Mrs. Reece. Evidence was given of peculiar actions on the part of the accused. For instance, he had bought a china dinner service, for which he would appear to have had little use, but of which he was said to have been very proud; for no apparent reason he took this dinner service, and smashed every piece of it against a wall.

The accused seems to have been on bad terms with Morgan, and there were frequent quarrels between them. In February there was a great disturbance, because Morgan had worn a pair of gloves belonging to the accused, who burned the gloves, and also burned a pair of shoes belonging to Mrs. Reece. Morgan said he would leave the house. Mrs. Reece then told the accused that he also would have to leave, and a quarrel resulted. The accused picked up a chopper and inflicted a number of severe wounds from which the woman died about two days later. After this, with a knife, he inflicted a severe wound on his own neck and a number of lesser wounds over his abdomen. The facts were not in dispute, and the defence was that of insanity.

Dr. J. P. J. Jenkins had examined Ware, while he was awaiting trial at Cardiff Prison. The witness had found no evidence of

insanity in Ware, but regarded him as a mental defective, and as certifiable under the Mental Deficiency Acts, estimating his "mental age" at less than ten years. The reasoning power of a mental defective would, in the opinion of the witness, be more easily overthrown by a slight stimulus than would that of a normal man. The witness considered it to be most probable that Ware was actually insane when he attacked the woman.

Dr. M. Hamblin Smith, medical officer of Birmingham Prison, had examined Ware. The witness declined to give an estimate of "mental age," but he agreed with Dr. Jenkins that Ware was certifiable as a mental defective. Asked by the judge whether a mental defective would be capable of "knowing the nature and quality of his acts," the witness replied that this would, of course, depend upon the degree of mental defect existing in the particular individual; but that, in this case, there was not such a degree of mental defect as would, *per se*, prevent the accused from so "knowing." The judge then said that he would suppose that the reasoning power of a mental defective might be temporarily upset by a much slighter emotional stress than would be required in the case of a more normal man; and Dr. Smith expressed his concurrence with this view. The interesting point then arose as to whether mental deficiency could be regarded as coming within the term "disease of the mind," as that term is used in the "McNaghten rules," and the judge said that he thought it might fairly be so taken.

Dr. T. Wallace, medical officer of Cardiff Prison, who had kept Ware under special observation for about three months, agreed with the other witnesses' estimate of his intelligence.

The judge, in his summing-up, said that the jury had to consider whether Ware, at the time of the offence, was so overcome by some emotional stress as to render him temporarily insane within the definition given in the "McNaghten rules." The extreme brutality of the injuries inflicted upon the dead woman might be weighed when determining the point at issue. The jury returned a verdict of "Guilty but Insane," and the usual order for detention was made.

Mental defect was not so fully recognized in 1843 as it is to-day. The legal "irresponsibility" of mental defectives has not been fully determined. It is highly desirable that it should be settled, and this case may be a landmark in the process. There is another consideration suggested by the case. We have here a man who is undoubtedly a mental defective, but who supports himself,

and has never got into any trouble. No one would desire to segregate such a defective, nor could such segregation be legally enforced. Then the man suddenly commits a brutal murder. The impasse is, no doubt, unavoidable, but it seems rather unfortunate.

REX *v.* EDWIN CLAUDE THICK.

The accused in this case was a bricklayer, æt. 26. He had suffered as a child from infantile paralysis, which had produced marked deformity of the left foot—a disability of which he was acutely conscious. He was a married man, with one girl child of rather more than a year of age. All the evidence was to the effect that he was exceedingly fond of his wife and child. The three had been living with his parents, but on August 26, 1930, they moved into a newly built house. On the morning of August 29 the accused returned with the baby to the vicinity of his father's house. He gave the baby to a neighbour, asking him to give her to his (accused's) mother, with a letter. This letter stated that his wife had gone away with a Frenchman. After this he disappeared, and was not seen for about ten days, when he returned to his father's house, and resumed living there. The house which he had occupied with his wife and child was taken by another tenant. On November 27 circumstances caused the police to search this house, and the remains of the accused's wife were found in an empty space which existed between the party walls. The head and limbs had been disarticulated from the trunk, and the various parts of the body were wrapped in bed-clothes. The skull had been fractured, and the autopsy indicated that death had resulted from this injury, combined with a wound in the neck. When arrested the same evening, the accused stated that he remembered going to bed on the evening of August 26, and that the next thing he could remember was that he was awakened by the child on the next morning, and found the dead body of his wife with him in the bed. A difficult situation obviously existed, and he dealt with this by dismembering and hiding the body. To this account he adhered throughout, with absolute consistency. After his arrest there was found what may be described as a "prose poem" in his handwriting, dealing with his great love for his wife and child; this was, having regard to the circumstances, a remarkable document. The facts were not disputed, and the defence was that of insanity.

The case was originally tried by Mr. Justice Avory, on March

16, 1931, at Birmingham Assizes. Evidence was given by the accused's father of a number of attacks of "wandering" from which the accused had suffered prior to the tragedy, and three of these were confirmed by police witnesses. Dr. M. Hamblin Smith, medical officer of Birmingham Prison, stated that he had kept the accused under observation for more than three months, and believed that the amnesia described was genuine. The witness detailed certain experiences which the accused claimed to have had of "seeing" and "hearing" his deceased wife. Taking all the circumstances into consideration, the witness considered that the accused suffered from attacks of automatism, probably of an epileptic character, and he believed that the facts were consistent with the accused having so suffered on the night of August 26-27. Prof. J. T. J. Morrison and Dr. F. W. M. Lamb, who had conducted the *post-mortem* examination, were called by the prosecution as rebutting evidence. They did not consider that the facts were consistent with automatism. (It should be mentioned that neither of these witnesses had made any examination of the accused, and that they had only seen him when in the dock.) The jury failed to agree, and the case was postponed until the next Assizes.

The second trial was held on July 15, 1931, before Mr. Justice McCardie. The facts of the case having been detailed, Dr. Hamblin Smith repeated his evidence, and said that he had seen no cause to alter his view. He laid stress on the fact that he had now had the accused under observation for more than seven months, during which time his account of the matter, at many interviews, had not varied in the slightest degree. Dr. H. A. Grierson, medical officer of Brixton Prison, had also examined the accused, and agreed with the opinion formed by Dr. Hamblin Smith, and for reasons similar to his. Prof. Morrison and Dr. Lamb again furnished rebutting evidence. The judge having summed up, the jury found the accused "Guilty but Insane," and the usual order for detention was made.

In his summing-up, Mr. Justice McCardie laid down one somewhat important principle. Every man is presumed to be sane until the contrary has been proved. In a criminal trial, the onus of such proof lies upon the defence. To establish a defence upon the grounds of insanity certain conditions must, according to the McNaghten criteria, be "clearly proved." But the learned judge said that if the jury had any real doubt as regards the question of insanity, the benefit of such doubt should be given to the accused, just as is, of course, done in the case of any doubt as to the facts in a criminal case.

Part II.—Reviews.

Character and the Conduct of Life. By WILLIAM McDUGALL.
London: Methuen & Co., Ltd., 1927. Demy 8vo. Pp. xii + 287. Price 10s. 6d. net.

In the past it has been a reproach to psychology that it was too academic and had no practical value in daily life. This is certainly not true of the present day, when abundant literature—not always emanating from the most ideal sources—is available for the intelligent layman, where he may find helpful guidance in the manifold problems of behaviour. In recent years psychology has so progressed that it is now in a position to demonstrate scientific principles which will serve as safe guides to a correct and happy adaptation.

Prof. McDougall, whose writings on the subject have achieved a very wide measure of popularity, would seem especially fitted to deal with the themes of character and conduct. The book is "directed to men and women of goodwill who are not completely satisfied with themselves, who believe that by taking thought they may add, however little, to their moral stature and to their efficiency in working towards whatever goals they may have adopted. It is an essay in practical morals: and not at all concerned with ethical theories." It would be difficult to frame a higher aim in words, and there must be few indeed who do not come into this category of those who feel a need for some such aid.

The book divides naturally into two parts. The first part consists of a more or less systematic exposition of the various character-building processes and general aspects of conduct, while the second is devoted to a series of chapters of counsel addressed to parents and children, young men and girls, husbands and wives, and to those who would grow old gracefully. An appendix deals with the management of the body in its different aspects, with a few remarks on mental healing and the control of mind over body.

The first part contains mainly the theoretical material so well known to us from Prof. McDougall's previous works, and especially his *Outline of Psychology* and *Social Psychology*. It is written in the author's highly clear and lucid style, and his careful differentiations of the various attributes of character leave no loophole for any misunderstanding on the part of the reader. Though the writer accepts some of the main principles of Freudian psychology, he shows, as he has elsewhere, a decided hostility to much of that body of doctrine. We cannot help thinking that the value of the book would have been greatly enhanced had

deeper unconscious factors been taken more into consideration in the motivation of human conduct. This is particularly patent on occasions where explanations of behaviour are manifestly superficial and inadequate without such factors being noted as the essential "*fons et origo*."

The first chapter opens by stressing the importance of the maxim "Know thyself," and it is stated that self-knowledge is only to be obtained by critical introspection. It is, however, unfortunately true that such a process does not necessarily reveal the real self, because unconscious and defensive mental processes are at work to defeat this object. The individual must be taught something of these in order that he may find truth behind the veil. Compensation is spoken of briefly, but the very important processes of introjection and projection are not touched upon, although much of the vagaries of human conduct can only be envisaged in true perspective through their functions. For many reasons, too, we think Prof. McDougall would have had deeper insight into some of the problems he deals with had he been a psychopathologist and had more clinical experience of the morbid. Elsewhere he has fully recognized the importance of psychopathology for psychology in general, and for the elucidation and guiding of conduct such an influence is paramount. This is well illustrated by the author's erroneous deduction where he cites the case of a man (p. 278) who, through premarital experience, had every reason to believe himself normally constituted, yet found himself to be sexually impotent on marriage to a young woman to whom he was genuinely attracted. The statement that this was "the penalty he paid for loose living in which he had vented his sex impulse" is in all probability far from the truth. It is far more frequently the fact that such impotency arises in the over-scrupulous ascetic, who for various reasons has repressed his sexual desire, and has lived what Prof. McDougall would likely term a "clean life."

A wider clinical experience, we think, would have greatly modified the views expressed in the chapter on "Independence." On p. 189 we are told: "The tender devotion of an adult son to a mother, or of a daughter to her father, is, apart from all theory, a very beautiful thing. In the vast majority of cases it is displayed only when the need of the parent calls it forth. Why, then, in an age when the world is becoming over-populated, censure such instances of devotion as unnatural, even if they involve the indefinite postponement of marriage or life-long celibacy?" If the author had had the opportunity of noting in how many instances the subjects of such "tender devotion" become the victims of mental conflict, both conscious and unconscious, with consequent neurotic and psychotic disorder, he would have more patience with what he regards as the solemn nonsense written by some of the psycho-analysts. Exaggerated emotional bonds may and do look beautiful to the observer. The psychopathologist who knows his business sees the possible tragedy in the background. Whether the *œdipus complex* is accepted or no, it seems a highly questionable and dangerous

assertion to make that "in this age of pressure of population it would be an excellent thing that a considerable number of young people should remain bound to their parents" (p. 53). Such a link can only, in the majority of cases, hamper and frustrate the development of individual personality. The second part of the book, in which advice is given on the manifold practical problems of life, seems to lack scientific foundation, and appears rather as the kindly and sympathetic outpourings of an armchair moralist. One is tempted to echo the remark of another reviewer "Is this psychology?"

Throughout, one notes a great fear on the part of the author that there is a grave weakening of family ties, which if persisted in may bring dire results in the future. We can hardly view the coming generation with the apprehension that is here expressed. Surely this is a highly coloured picture that we read on p. 174—"When one looks round on the conditions under which children grow up, on the lack of old influences of domestic piety, which for long ages have been the major forces shaping each generation and preserving civilization from decay amid all the strains which material progress brings, one can only wonder that we still go on, that, in spite of increasing mechanization, shallowness, and *Schablonisierung* of modern life, so much of charm and beauty and nobility are produced in each generation; one can only wonder that neurosis, depression, unhappiness, suicide and crime are not even more common; and one is tempted to seek some supernatural explanation."

And again on p. 190, "It is necessary for the child to pass from dependence to independence. . . . At the present day the process is only too apt to accomplish itself prematurely. Our daughters revolt and demand a latchkey when they are still very foolish. Our sons become refractory to parental influence before their voices break; and are ready to take pity on 'poor old dad with his old-fashioned notions' before they have notions of their own." Such an exaggerated outlook on modern youth tends to permeate too many of the exhortations that are given.

That lack of sex instruction, judiciously given, is at the root of many later disharmonies of feeling and conduct can hardly be doubted. Yet in these pages we feel that the attitude taken up portrays an unwholesome fear of such teaching, which, it is stated, "may not only destroy the early bloom of innocence, but also lead to just those evils it was designed to prevent." One would certainly agree that "the thrusting of physiological details on young people who have no taste for them is worse than useless," but to remark that "many a girl who has had only the vaguest notion of conjugation, conception and parturition until marriage has enlightened her has become a happy wife and mother without any undue shocks or emotional disturbance" (p. 29) is not only highly reactionary, but involves a dangerous and unscientific suggestion. This last-quoted paragraph seems much at variance with later advice to girls on marriage (p. 208): "See to it that you do not enter upon the most serious and responsible of all tasks more

ignorant of its duties than the lowest savage." It is justly pointed out (p. 225) that every day thousands of newly-made marriages are wrecked by the lack of regulation in the marital embrace, but how can such regulation occur except through a frank education of the parties involved? Inconsistencies abound on such themes. The reserve of a girl is said to be such that few can boldly say, "I shall marry some day," yet she is recommended, when she has entered upon a formal engagement, to be frank with her betrothed about the duties and responsibilities of wedlock, and make plain to him her desire or not for children. In particularizing criticism, it is mainly in the sphere of sex that we feel Prof. McDougall is apt to deal with his subject more from a pulpit than from a scientific platform, and that he tends to fall foul of much of the teaching of psychopathology. Though with certain individuals sexual continence is possible and compatible with physical and mental health, it is highly doubtful whether this is true of the majority. Telling young men (p. 221) that a strong man can live and live well without love and without any sex indulgence may be the tenet of certain idealists, but is hardly tenable from many other points of view. The writer's fear of sex and its stimulation is patently noted in his observations on flirting (p. 22), and his view that it is foolish for young married people to attend dances (p. 236). It is highly probable that jealousy is not the sure evidence of love it is here taken to be, and that when manifested to any degree it is much more of a pathological nature than is commonly realized.

In the pages on "The Management of the Body" we are certainly surprised to learn that "more unhappiness of civilized folk is due to constipation than to any other cause." Such a statement reads as though it emanated from an advertisement for some patent purgative medicine.

Notwithstanding these detractions, the fact remains that the contents of this book will in the main be a great source of profit to many who desire to make the best of themselves and to be happy, useful and successful. Prof. McDougall's position in the world of psychology is such that his admonitions are bound to have great weight.

C. STANFORD READ.

Alcohol and Behaviour. By SIDNEY SMITH, M.D., M.R.C.P., D.P.H.
Edinburgh: Oliver & Boyd, 1930. Pp. 38. Price 6d.

About a hundred years ago William Ramsay Henderson founded a fund for the promotion of the study of phrenology. He, very wisely, gave his trustees a free hand in the management of the trust. This little book is a reprint of one of a series of annual lectures given by eminent authorities in psychology and allied subjects.

After pointing out the strong prejudices, on both sides, which render it so difficult to obtain unbiased information on the subject

of alcohol, Dr. Smith gives us a brief but a fair description of the history of alcoholic drinks, of the action of alcohol, and of its effect upon inhibition. The suggestion is made that alcohol may act by diminishing the efficiency of the oxidation-reduction processes which are essential to cellular life.

The question of incapacity to drive a motor vehicle is, patently, of great practical moment. The definition of such incapacity, as given in the Road Traffic Act, 1930, is considered and criticized. Dr. Smith views with some apprehension the administration of this section of the Act; and he considers that a heavy burden has been thrown upon medical practitioners, in whose hands the decision so largely rests. The matter is complicated by the fact that nearly all doctors are, themselves, motor drivers, and possessed, to a greater or lesser degree, of the motorist's inevitable prejudices. The warning is given that the examination of the alcoholic content of the blood, valuable as it is, gives us no information as to the effect of the alcohol.

Certain social matters are then taken up. The average annual consumption of alcoholic drinks, in this country, has diminished to a very marked extent during the past thirty years. Yet this seems to have had very little effect upon crimes involving serious violence. The incidence of common assault has decreased. On the other hand, there has been a marked increase in the incidence of sexual offences; and this may indicate that the outlet to mental conflict which alcohol offers takes other courses when it is withheld. Some interesting relations between intoxication and the contraction of venereal diseases are discussed; and Dr. Smith gives reason to doubt the oft-alleged superiority in the expectation of life among total abstainers as compared with moderate drinkers.

M. HAMBLIN SMITH.

The Sexual Reform Congress. Edited by NORMAN HAIRE, M.B., Ch.M. London: Kegan Paul, Trench, Trübner & Co., Ltd., 1930. Pp. xl + 670. Price 25s. net.

The third congress of the World League for Sexual Reform was held in London, during September, 1929, under the presidency of Dr. Magnus Hirschfeld. This volume contains the proceedings, translations of the foreign language papers being provided. Some of the latter contain very interesting details as to the present practice in other countries.

Two of the papers are of direct interest to our readers. Dr. H. Stack Sullivan discusses archaic sex culture and schizophrenia. He rejects the views that schizophrenia is due either to primary degeneration or to dysfunction of the sex glands. He holds that the psychosis is the result of a conjunction of experiential factors and physical functional limitations, and that the patient's self-esteem is distorted to a low point. Failure to

recognize that there is a homosexual stage in the development of every individual is, in his opinion, at the root of the trouble. The remedy is to free the child from antiquated ideas on the subject of sin. The paper deserves very careful consideration. Dr. Bernard Hollander contributes a paper on insanity and divorce. He urges that the real danger to the race arises, not from the chronic patient, but from the patient with a recurrent psychosis, who is periodically released from mental hospitals, and who begets or bears children during his or her periods of liberty.

The remaining papers range over a very wide field. As might have been expected, great attention is given to the subject of contraception. Two comparatively new methods are described; the Gräfenberg ring, which consists of a ring of flexible silver wire inserted within the cavity of the uterus; and a new type of air-inflated pessary for insertion in the vagina. Both are highly praised by their respective inventors and others, but the discussions make it perfectly clear that a wholly satisfactory contraceptive has yet to be invented. Several very interesting papers deal with the problem of prostitution and the characteristics of prostitutes. Dr. S. D. Schmalhausen deals with "sex and human nature," urging that psycho-analysis will have to give much greater attention to society as the shaper and mis-shaper of behaviour. Prof. J. C. Flügel considers sex differences in dress. Dr. M. Sourasky gives good reasons for believing that the injunctions of the Mosaic law have had much to do with producing the immunity of the Jewish race to certain forms of malignant disease. Dr. F. E. Hirsch contributes a paper on the use of blood-tests for the determination of paternity—a method which may have helpful medico-legal applications. Dr. O. Schöner describes an ingenious method of foretelling the sex of children. And we would mention with special appreciation the paper given by Dr. Helene Stöcker on marriage as a psychological problem.

The volume will be of great service to all who are interested in the problems of sexology. Every reader will find much with which he is in agreement. On the other hand, many of the papers will produce violent disagreement in some readers. This we believe to be an excellent result. Out of controversy will arise reform. He is a bold man who would venture to prophesy as to the shape which such reform will take. But none of us can be satisfied with the existing state of affairs, and as medical psychologists we are called upon to take no small share in guiding society through the present welter of confusion to the haven at which we may, perhaps, hope to arrive some day. But one word of caution seems necessary. Violent attacks upon existing institutions may be good propaganda, and they are, from some points of view, natural and excusable; but they do not take us far in a scientific direction. Many of us are inclined to think that we are able to view these problems in an entirely unbiased manner; and it may be that we can view them from an angle which differs from that of the majority. But we deceive ourselves if we imagine that we are free from complexes

and repressions on these topics. The mind of every one of us is, on this subject, in a tangle, which it is difficult and perhaps impossible to disentwine. This is said in no spirit of reproach, for the situation is inevitable. To recognize our limitations is the first step towards freeing ourselves therefrom. But it would seem obvious that very few of the contributors to this volume do recognize these mental limitations; many of them write as though they alone were free from prejudice in the matters which they discuss.

M. HAMBLIN SMITH.

The Will to Live. By J. H. BADLEY. London: George Allen & Unwin, Ltd., 1931. Pp. 267. Price 10s. 6d. net.

Mr. Badley is the head master of Bedales School, the well-known co-educational establishment. He tells us that he wrote this book at the request of some of his elder pupils, who desired an account of modern psychological theories. That boys and girls should feel an interest in these problems does not surprise us. But that they should go to their head master for information, and that he should produce a book such as this, is a matter upon which both parties are to be congratulated.

Having dealt with the nature of mind, and given good reasons for regarding psychology as a true science, Mr. Badley develops the thesis that psychology is evolutionary. He takes his readers through the elements of mental activity, deals with consciousness (pointing out that unconscious mental life is the fundamental condition), and describes instinct, differentiating it from habit. He then discusses intelligence, thought and intellect, indicating in how small a degree man uses his boasted reason, and describing the process of rationalization. He gives a warning against too ready a use of the critical faculty, and the danger of accusing other persons of hypocrisy. Finally he considers emotion, complexes and repression, and gives a brief but fair account of the main theories held as to the unconscious.

Mr. Badley takes exception to the term "libido," for reasons with which we agree; we have suggested, on previous occasions, that "conatus" is a preferable term. He rightly protests against the tendency to confine the term "complex" to a repressed system of ideas. His treatment of sex is sane and balanced, although somewhat restrained. We should have liked to hear more from him on this head, for the sex difficulties of adolescents at a co-educational school probably differ from those met with in ordinary schools. But the nature of his immediate audience must be remembered in this connection. In a useful section on "Ideals and Idealization" he urges that the world of thought is as "real" as the world of matter; and if his readers grasp that fundamental principle it will be worth much to them in many directions.

On a few points we feel compelled to differ from Mr. Badley. It

is misleading to class Freud, Jung, Adler and others under the generic title of "psycho-analyst," for the term "psycho-analysis" is now, by general agreement, reserved for the Freudian theory and method. It seems rather a sweeping statement to assert that Francis of Assisi was "untroubled by sexual conflict"; that he suffered from severe conflict of some kind seems obvious. The description of "disposition" would be improved by expansion; insufficient attention seems to have been given to the existence of defence mechanisms.

But the main object of the book seems to be admirably achieved. Those who read it will not be rendered expert psychologists. But they will, at least, understand the meaning of the chief psychological terms now in use; they will comprehend references to the "Behaviourist" and "Gestalt" psychologies, and the James-Lange theory of emotion; and they will possess some idea of the main modern views on the unconscious mind. Some will, perhaps, be induced to pursue their studies further; and if that happens, we opine that none will be better pleased than Mr. Badley. He provides, indeed, a list of books for further reading, the only comment which we would make on this being that "psycho-analysis" is not well represented.

M. HAMBLIN SMITH.

Crime as Destiny. By Prof. Dr. JOHANNES LANGE. London: George Allen & Unwin, Ltd., 1931. Pp. 200. Price 6s. net.

This is a translation of a German book on criminal twins. As is well known, the twin condition occurs in two forms: dizygotic twins, who are believed to result from the fertilization of two separate ova, who may be of different sexes, and who do not resemble each other more closely than do other children born of the same parents; and monozygotic twins, who are believed to result from the fertilization of a single ovum, are always of the same sex, and resemble each other very closely, both physically and mentally. A search of the Munich records discovered thirty-seven pairs of twins of whose histories there was satisfactory information; but in seven of these pairs neither twin had been imprisoned. There were left thirty pairs, thirteen monozygotic and seventeen dizygotic, one of whom had been imprisoned. Among the thirteen monozygotic pairs the second twin had been imprisoned in ten cases; among the seventeen dizygotic pairs the second twin had been imprisoned in two cases. The figures certainly show a marked preponderance of double criminality among the monozygotic as compared with the dizygotic pairs. Very interesting case-histories are given of several individuals of both types. The author tentatively draws the conclusion that crime is "destiny": a man of a certain constitution, placed in a certain environment, will be a criminal. With this view all determinists will, of course, agree.

We have nothing but praise for the diligence with which the book has been compiled; and we confess to some envy of the Bavarian

Institute for Criminal Biology, whose records would appear to be of a comprehensive character. Work of this kind is worthy of the highest commendation, and we trust that it will be continued. But conclusions must be drawn with the utmost caution from so small a body of observations as is contained in this volume, and Prof. Lange exercises such caution. While claiming that heredity has much importance as a causative factor in delinquency, he rejects the conception of the "born criminal." Crime presents a social picture, and the particular environmental conditions of the individual offender must be given their full weight. He urges the "abolition of the dreadful influence of alcohol," attaching a higher value to that factor than we generally do in this country; probably Bavarian conditions differ from ours. He advocates (and we fully agree) the detailed examination of all law-breakers, and the thorough training of experts in this subject. He points out that there are many persons who do not offend against the criminal law, and yet are more anti-social than are some offenders whom the law punishes heavily. Finally, he contends that we should "make it impossible for human beings with positive criminal tendencies to be born"; but he does not explain in what way this desirable end might be achieved.

Prof. J. B. S. Haldane contributes a foreword to the volume. He argues cogently in favour of the deterministic position, but the practical application which he makes of his theory will provoke criticism, even from strict determinists. His thesis may be briefly stated as follows. "Catholics believe in 'free-will'; many non-Catholics do not so believe. Catholics claim that their body forms 8% of the population of England and Wales, but 15% of our criminals are Catholics. Therefore a Catholic is about twice as likely to become a criminal as a member of another religion, or of none. Hence a belief in free-will has no high value as a practical guide to conduct." Even assuming that the figures given are reliable—and this is a very big assumption—we should require to know far more about the respective environmental conditions of the Catholic and non-Catholic offenders before we could safely draw any conclusions.

M. HAMBLIN SMITH.

A Theory of Laughter. By V. K. KRISHNA MENON, M.A. London: George Allen & Unwin, Ltd., 1931. Crown 8vo. Pp. 188. Price 5s. net.

There has been great diversity in the theories of laughter which have been put forward by psychologists. Mr. Menon considers that this divergence has been caused by difference in the starting-point. He bases his hypothesis upon McDougall's theory of instinct. It is incorrect to say that we laugh at anything; we are impelled to laugh in certain situations. The situation is the occasion rather than the cause of the laughter; the cause lies in the person who

laughs. An instinct is stimulated, forces are brought together, and are demobilized in the act of laughter. This explains the occurrence of laughter in other than what are termed ludicrous situations. Animals can, and do laugh, although their facial anatomy prevents them from expressing their laughter in the human manner. The author discusses humour as expressed in literature, and regards Falstaff as the ideal humorous character; Panurge he puts in the second place. Cervantes possessed much humour, but Don Quixote is not a humorous personality. Mr. Menon is then led to a consideration of the nature of art, and he gives some ingenious criticisms of Shakespeare's plays.

The book is interesting, but is too diffuse; and it suffers from the absence of any attempt to sum up the argument.

M. HAMBLIN SMITH.

Le Géon, ou La Terre Vivante. (The Living Earth.) By H. JAWORSKI. Paris: Librairie Gallimard, 1929. Crown 8vo. Pp. 267. Price 12 fr.

Primitive races held many strange beliefs. Some of these have since been approved by modern science, though, it is true, in a modified form. The ancient tradition which maintained that the earth was a living being has never received the scientists' benediction. Nevertheless, this tradition has received the support of various writers in all ages.

In this book the author upholds the view that the world is a living organism comparable to human beings. Thus, he says, there is life in the rocks and mountains, which correspond to the skeletal framework of the body. Life is also evidenced in the earth's permeable and moving surface; in the regular palpitation of its waves; in the ebb and flow of the tides; in the constant composition of its atmosphere, of its oceans and rivers. It possesses a heart, vessels, sensation and even sex. Its metallic blood, mysterious and boiling, circulates in streams of fire and coagulates near the surface; and men are faced with the very gravest dangers if they would gain possession of a little of that blood. The world breathes, sleeps, and is nourished. All human life is inevitably bound up in its life. The preservation and death of human beings, the struggles and the profound joys of men, are the rhythm of the life of the Universe.

The book appears to have become popular in France, where it has reached its eighth edition.

NORMAN R. PHILLIPS.

Biological Aspects of Emotional Life (Biologia della Vita Emotiva). By Prof. VITO MARIA BUSCAINO. Bologna: Nicola Zanichelli.

The author considers emotional reactions entirely from the biological point of view. He finds from a close study of the somatic manifestations of emotions that three general rules can be drawn up:

(1) Objectively considered, an emotion is composed of a series of variables: (a) Innervation of striated muscle; (b) autonomic innervation; (c) the endocrine system.

(2) One emotion differs from another according to the relative preponderance of its variables.

(3) Some groups of cerebral cells become sensitized to chemical substances of endocrine origin in such a manner that a given emotional tone is associated with a particular variation of endocrine function.

By a long series of experiments he has shown that somatic manifestations of an emotional state may be obtained even after the removal of the cerebral cortex. They cannot, therefore, be regarded as cortical in origin.

The centres for vegetative reflexes are situated in the grey matter around the third ventricle and the Sylvian aqueduct. An emotion is perceived subjectively in the cortex, but its particular tone is determined by the basal and mid-brain ganglia.

The genesis of the neuroses is an exclusively physiological question. A neurotic subject is one whose sub-cortical centres in the vegetative-affective zone are over-excitabile.

A psychic trauma or emotional shock in a predisposed subject induces a complicated interplay of actions and reactions between these irritable centres and the periphery, especially the endocrine glands. The process is entirely physiological. Emotional states are thereby induced which colour the train of thought. Mental symptoms are the result and not the cause of this interplay. Dissociated complexes are formed, but they are the result of a non-psychical process.

In the same way the nervous and mental symptoms of hysteria and the traumatic neuroses are the consequences of non-psychical, sub-cortical, vegetative-endocrine processes, which dominate the mental make-up of the individual.

On the basis of this biological conception of the emotions, mental disorders are classified into dysphrenia, dysthymia and schizophrenia; and the pathogenesis of dementia præcox is explained by an organic lesion of the vegetative-affective centres and the cortical and sub-cortical association tracts.

H. W. EDDISON.

A Text-Book of Psychiatry. By D. K. HENDERSON, M.D.Edin., F.R.F.P.S.Glasg., and R. D. GILLESPIE, M.D.Glasg., M.R.C.P., D.P.M.Lond. Second edition. London: Humphrey Milford, Oxford University Press, 1930. Demy 8vo. Pp. x + 526. Price 18s. net.

The first edition of this book was reviewed by Dr. Devine in the *Journal* for January, 1928. Since then it has become increasingly popular, and has won deserved recognition as perhaps the best general text-book on psychological medicine published in this country. Its merit lies in the wealth of clinical material

embodied in the 81 case-histories quoted at length; in the thoughtful and judicious critical discussions on ætiology and nosology; and in the thorough-going adoption of the dynamic viewpoint. The chapters on symptomatology and on general psychopathology—always a difficult subject to present succinctly to students with no previous psychological knowledge—are admirably done, and there is a particularly comprehensive account of the numerous organic reaction-types. We would again draw attention to the useful section on occupational therapy.

We feel that in spite of the broad view of the factors leading to mental disorder taken by the authors, they have not succeeded in doing justice fully to either the toxic or the psycho-analytic schools. With regard to the former the impression is conveyed that the theory is somewhat of a fashionable fad, and, further, that it is to be accepted or rejected as a whole; and the findings of the various workers in this field are mentioned only to be immediately refuted. Recent work, *e.g.*, that of Buscaino on the biochemical side, of Stewart on intestinal flora, and of the Birmingham school on sinusitis, is not included. As Dr. Devine remarked in his original review, "the search for, and, where present, the treatment of such conditions, should be a matter of routine in every case of mental disorder . . . whatever may be the exact significance of chronic sepsis in any given case."

From the psycho-analytic point of view the authors also lay themselves open to criticism. Although their section on general psychopathology is largely Freudian, the analytic teachings are dropped when the individual psychoses come to be considered. For instance, the term "narcissistic libido" is explained in the general chapter, but its application is not mentioned in the discussion of schizophrenia. Hardly any attention is given to the work done by the psycho-analytic school during the past fifteen years in elucidating the mechanisms involved in the psychoses, particularly in melancholia.

We should like to see some mention of the work of the French school, particularly that of Claude and his pupils on the relation between dementia præcox, as a process, and schizophrenia, as a psychological reaction.

While, on the whole, treatment is fully dealt with, there is a disappointingly meagre account of the malarial treatment of general paralysis. Some discussion of the possible mode of action of the treatment and of its effect on the pathological findings, as well as a much fuller description of the technique, might have been expected. Except for a short paragraph on Admiral Meagher's report, methods used and results obtained by the Viennese authorities in the early years of the treatment are the only ones quoted. Other pyretic methods are not mentioned. The treatment of interstitial cerebral syphilis is dismissed with the astonishing statement: "This does not differ in any way from the treatment of syphilis in general." Surely no syphilologist would maintain that there was any such thing as a "treatment of syphilis in general"!

Neuro-syphilis, above all other forms of the disease, has its special therapeutic problems, and is certainly not to be dealt with by methods suitable in, say, the primary stage. An extended discussion of the subject would have been well worth while.

In the very clear and concise legal section the subject of certification has been left untouched since the first edition. The work went to press before the Mental Treatment Act was passed; nevertheless, its usefulness might have been enhanced if some indication had been given of the possibility of such legislation, or even if the recommendations of the Royal Commission had been included.

In the review of the first edition the book was "unreservedly recommended as a sound and reliable guide to psychiatry." Its place is now too well established for it to need any further recommendation. We have pointed out some shortcomings in the hope that they may be remedied in a future edition, and that so good a book may never suffer from being allowed to become out of date in its details.

A. WALK.



Impressions of a Study-Tour of English Institutions [Indrukken van een Studiereis langs Engelsche Gestichten]. By F. GREWEL. Amsterdam, 1930. Reprinted from *Psychiat. en Neurol. Bladen*. Pp. 40.

Many of the readers of the Journal retain pleasant memories of the visit of a party of Dutch psychiatrists towards the end of 1929; others will have read the vivid and racy description of the tour by Dr. A. E. Evans, which appeared in the Journal for April, 1930. A full account, from the point of view of the visitors, has been drawn up by Dr. Grewel. In forty pages he holds up the mirror to institutional psychiatry in England. First he gives some general impressions; next the tour itself is described, with copious notes of the most prominent features and idiosyncrasies of the various hospitals; there is a section on English Lunacy Law; and an appendix containing detailed facts and figures about the institutions, which could not be given in the more informal description.

The author's general impressions are given under fifteen headings, which it will be of interest to summarize:

1. Patients, on the whole, rather better behaved than in Holland, in spite of less supervision.
2. Patients allowed more freedom within the hospital.
3. Much use made of open-air treatment; increased oxygenation regarded as of special therapeutic value.
4. Sports and games generally encouraged.
5. Occupational therapy poorly developed.
6. The psychotic generally looked on as a sick person.
7. Proportion of staff to patients lower than in Holland, and probably insufficient.
8. Lower maintenance-rate; probably due to capital expenses not being included.

9. Frequent gifts from friends of the institution.
10. The visitors were convinced of the unlimited resources of English institutions; the party of British psychiatrists who visited Holland the previous year had the same impression!
11. Medical superintendents in England are anything but phlegmatic in temperament!
12. More of a military spirit in the hospitals.
13. It appeared to be the general opinion in England that the male nursing staff were more satisfactory than the female.
14. The universal recognition of the work of Sir Frederick Mott as the standard to be aimed at in psychiatric research.
15. Greater frequency of infectious diseases.

Undoubtedly the feature of our institutions which struck our visitors most was the comparatively poor development of occupational therapy. Accustomed as they are to vigorous efforts in this direction, aiming at the employment of practically every patient and at the conversion of even acute wards into busy workshops, they could not help commenting on the idleness of large numbers of our patients, and on the small scale of systematic, purposive occupational treatment. Dr. Grewel notes that much work is done as a matter of course, and that a number of hospitals stand out above others in the extent to which occupation is encouraged. The elaborate organization of patients' entertainments is much admired; a curious point is that the author mentions as a novelty a dance for patients of both sexes.

Dr. Grewel is to be congratulated on the general faithfulness and accuracy of his account, the notes for which were compiled during a strenuous fortnight. There are two points on which we are able to correct him: there are no "old-fashioned, wooden beds" at Horton; and it is not the fact that the news of German Zeppelin raids was suppressed during the war; on the contrary the raids were given full publicity—witness *Punch's* cartoon on the Zeppelin as John Bull's best recruiting officer. Only the names of the localities visited were kept secret, for obvious reasons.

A. WALK.

A Challenge to Neurasthenia. By D. M. ARMITAGE. Second edition. London: Williams & Norgate, 1931. Crown 8vo. Pp. 64. Price 1s. 6d.

This little book was written as a tribute from a former patient to the memory of Dr. L. S. Barnes, a general practitioner in Hertfordshire, who died in 1927. He devoted many years of his life to the treatment of psychoneurotics; and his boundless energy, tireless patience and unfailing sympathy had their reward in the devotion and admiration of those who knew him. Miss Armitage writes enthusiastically of his psychological methods, which she invites sufferers from "neurasthenia" to apply for themselves. Two quotations will serve to show what the essentials of the method were:

"Your subconscious mind . . . has temporarily assumed the upper hand, and is now ruling you through fear. He has no business to be in this position at all. . . . Your life is temporarily being run by an impostor, who has managed to persuade you that he is stronger than you are. I am here to prove that this is not the case."

"His method, with those able to use any intelligence at all, was ever the same: oft-repeated appeals to their reason; incessant demands for a logical explanation of their own contentions; irrefutable proof of the essential falsity of their beliefs."

Miss Armitage seems to be unaware that similar methods, under the designation of "persuasion," are well known to psychiatrists. It is because of their limited application that other methods (including psycho-analysis, to which she makes the usual scornful allusion) have been brought into use. The coupling of the persuasive technique with a working theory which comes perilously near to that of demoniacal possession is certainly novel; and it must be to Dr. Barnes's unquestioned credit that he, while a busy practitioner, was yet able to devote to psychological treatment the time and energy needed to apply it with such success. But we fear that Miss Armitage rather weakens her case when she states: "This treatment is not for the weak-kneed, amongst whom neurasthenics may, of course, be found. But it cannot be too often stated that weakness of character is not in itself the cause of neurasthenia, or its corollary." Presumably a patient who fails to respond is to be dismissed as "a weak character," and left in the same state of hopelessness which Miss Armitage deplures when induced by other forms of treatment.

A. WALK.

Part III.—Epitome of Current Literature.

i. Neurology.

Histological Investigation of the Choroid Plexus in Mammals [*Ricerche istologiche sui plessi coroidei dei mammiferi*]. (*Riv. Sperim. di Fren.*, March, 1930.) *Comini, A.*

The author summarizes his findings as follows :

Epithelium.—The epithelial cells are always ciliated. The nuclei of these cells are large, spheroidal and vacuolated, and contain scanty chromatin. No mitotic division of the nuclei was seen. The protoplasm is abundant and is not homogeneous. Fats and lipoids, especially in some species, are plentiful in the epithelium, and occur in various forms. Glycogen is present in some species. Sometimes a pigment is present which gives the reaction for iron. Melanin is absent.

Connective tissue.—Usually considerable in amount, but this varies according to the species. In some cases there are cells of the type described by Sundwall. *Intra-vitam* staining with trypan blue and lithium carmine shows the presence of reticulo-endothelial tissue. Some connective-tissue cells contain fats, and others lipoids. Melanin is rarely found in the connective tissue. H. W. EDDISON.

Clinical and Anatomical Studies on Two Cats without Neocortex. (*Brain*, January, 1931.) *Schaltenbrand, G., and Cobb, S.*

In this series of experiments the aim was to find out whether there is any difference between animals in which the cortex only has been removed, and those deprived of both cortex and striatum. The authors succeeded in evolving a satisfactory operative technique, and the published observations are the result. Full details are given of the experiments, and the article is well illustrated photographically. It should be of the greatest interest to the neuro-physiologist. WM. McWILLIAM.

Disseminated Sclerosis in North Wales. (*Brain*, January, 1931.) *Allison, R. S.*

In this article Dr. Allison deals exhaustively with disseminated sclerosis in the Welsh counties of Denbigh, Flint, Caernarvon, Anglesey and Merioneth—its incidence, frequency, distribution and ætiological factors. The total cases described number 65, but the author's findings are for "the most part negative," though interestingly so. With regard to neuropathic inheritance he states

that "there is little . . . to support the view that disseminated sclerosis is due to a primary degeneration dependent on congenital hereditary influences."

WM. MCWILLIAM.

2. Psychology and Psycho-Pathology.

The Approach to the Study of Hysteria. (*Journ. of Neur. and Psychopath.*, January 1931.) Wilson, S. A. K.

The author considers that the defective inhibition of antagonists which occurs in hysterical paralysis is of cortical origin. The shunting of innervation to other groups of muscles than the desired one also shows that impairment of cortical function is coupled with defective inhibition. Tremor is an escape phenomenon of infra-cortical level. The physiological character of some hysterical fits may be taken as evidence of transient decortication or decerebration. Glove-and-stocking anæsthesia is not so valuable in differential diagnosis as was formerly thought, for it appears in syringomyelia. Allocheiria, which was formerly considered diagnostic of hysteria, occurs characteristically in disseminated sclerosis. Sphincter disturbances are by no means uncommon in hysteria. The author points out that if diminution of the abdominal reflex is looked on as an early organic sign in frontal tumours, disseminated sclerosis and pyramidal lesions generally, it should bear the same significance in hysterical conditions.

Hysterical symptoms may be either inhibitions or release phenomena. Hysterical individuals are "born, not made"; there is an unstable constitutional background.

G. W. T. H. FLEMING.

Social Adjustment. (*Journ. of Neur. and Psychopath.*, January, 1931.) Gordon, R. G.

The author regards social adjustment as based on a well-defined sentiment which itself is founded on herd instinct, suggestion, sympathy and imitation, and sex, together with other less constant contributory factors. These may all be present, as happens in the mental defective, without the subject being able to achieve social adjustment, owing to deficiency in cortical tissue. The cortical functions of control, integration and discrimination are essential if social adjustment is to be achieved. The absence of social adjustment may be a sign of amentia, apart from intellectual defect. Even in defectives this function of adjustment may go on developing in late adolescence; hence an individual should not be regarded as hopelessly asocial too early in life. This absence of social adjustment may be associated with idiopathic epilepsy. The author regards epilepsy as essentially a sign of some sort of functional defect of the cortex. The "social ament" may be apparently intelligent, because one capacity has been developed at the expense of others.

G. W. T. H. FLEMING.

Dreams and Their Relationship to Recent Impressions. (*Arch. of Neur. and Psychiat.*, May, 1931.) Malamud, W., and Linder, F. E.

The authors exposed various pictures for 30 seconds to a number of psychotic and psychoneurotic patients, and investigated the influence of these on their dreams. Many features which were omitted from the patients' description of the picture soon after seeing it were given in the account of their dreams the next day. In many cases the results obtained were practically identical with those obtained tachistoscopically by Poetzl in normal people. The authors found the method of value in bringing to the surface conflicts instrumental in the precipitation or even causation of the mental disorder. The results emphasize that no matter how irrelevant or accidental psychic phenomena may appear, they are actually closely related to the functions and problems of the whole personality.

G. W. T. H. FLEMING.

Blocking: A New Principle of Mental Fatigue. (*Amer. Journ. Psychol.*, April, 1931.) Bills, A. G.

The author found that in mental work involving considerable homogeneity and continuity there occur with almost rhythmic regularity blocks or pauses during which no response occurs. These blocks occupy the time of 2 to 6 responses, and have an average frequency of about 3 per minute. Whilst practice tends to reduce their frequency and size, fatigue tends to increase both the frequency and size. The responses between the blocks tend to bunch towards the centre, so that a regular wave-like effect of rarefaction and condensation is produced. This bunching is increased by fatigue. Individuals who respond rapidly tend to have fewer and shorter blocks than slow individuals. There is a constant tendency for errors to occur in conjunction with blocks, suggesting that the cause of errors lies in the recurrent low condition of neural functioning which the blocks reveal. The rests afforded by these blocks keep the individual's objective efficiency up to an average level, in spite of the changes which fatigue has brought about in his nervous system. The neural mechanism involved appears to be related to the refractory phase of neurology. The time-relations of these blocks are quite different to those of the attention wave.

G. W. T. H. FLEMING.

An Attempt to Isolate the Factor of Attention. (*Amer. Journ. Psychol.*, April, 1931.) Easley, H.

The author applied various tests of attention—cancellation, Woodrow, Munsterberg, etc.—to a group of psychological students. He found no evidence that the attention tests measured any factor which was not measured by the tests of "intelligence" used at the same time. The various tests of attention measure something; if this is attention, then the attention involved in one function is not the same as that involved in another. There was no evidence

of any group factor of attention involved in any combination of the attention tests. If attention is involved to any extent in all the measures, then the intelligence tests are at least as good measures of it as are the attention tests. The direct and indirect methods of measuring attention do not measure the same thing, even in the same function, namely reaction time.

G. W. T. H. FLEMING.

Handedness and Ability. (*Amer. Journ. Psychol.*, April, 1931.)
Wilson, M. O., and Dolan, L. B.

The authors studied 975 pupils. The dextrals were found to be only slightly superior to the sinistrals in intelligence, achievement and teachers' ratings. Sinistral girls are slightly superior to sinistral boys. The authors are careful to emphasize that the differences are slight.

G. W. T. H. FLEMING.

The Pattern of Abilities among Adult and Juvenile Defectives. (*Univ. of California Publications in Psychology*, vol. v, No. 2, 1931.)
Jones, H. E.

The Stanford-Binet scale was given to 185 juvenile and 271 adult defectives. Tests exceptionally easy for adults are those involving everyday tasks and routine verbal comprehension; those which require rapid adjustment and ingenuity, and those presenting the most novel situations, are exceptionally difficult for adults. There is an absence of clearly-defined steps between the age-levels, for both adults and children; these inequalities are a possible source of fluctuation in I.Q. The custom of giving no tests below a basic age at which all tests are passed may result in a spurious raising of I.Q. Groups equivalent in mental age may present marked differences in the pattern of test success. The superiority of adults in certain tests is attributable to their advantage in length of environmental exposure.

M. HAMBLIN SMITH.

Do Personality Types Exist? (*Amer. Journ. Psychiat.*, March, 1931.) Kluwer, H.

The author considers the reasons which have been advanced against the existence of personality types. He concludes that these reasons are of no significance when we concern ourselves with "types" as defined in modern psychology. The interest in types indicates that behaviour units, comprising disparate variables, are the main concern of many psychologists. Such units certainly exist; and so a "typological psychology" must be developed.

M. HAMBLIN SMITH.

Personality Testing in the Light of the Situational Approach. (*Amer. Journ. Psychiat.*, March, 1931.) Krout, M. H.

Personality is a system of persistent adjustments of an individual, evidenced in responses to given situations. The situational approach is to be preferred to the trait approach; the latter depends upon a

number of assumptions, many of which are fallacious, and there is no agreement as to what a trait is. Reactions to selected words, and autobiographical accounts, are the only promising methods of objective study. But for a long time the study of the human personality must continue to be largely empirical.

M. HAMBLIN SMITH.

Internationale Zeitschrift für Individual-Psychologie, November-December, 1930.

This number contains the following papers :

The Fifth International Congress for Individual Psychology.
Kronfeld, A., and Voigt, G.

A short account of the proceedings at the Congress in Berlin in September, 1930.

Death as an Experience of Children and Adolescents [Der Tod als Erlebnis bei Kindern und Jugendlichen]. Gerard, E. J.

This is a German translation of the MS. of the American author. From a total of 72 *questionnaires* it is concluded that children are much more afraid of death than adults.

The Dethroned Libido [Die Entthronte Libido]. Rühle-Gerstel, A.
A criticism of Freud's book, *Das Unbehagen in der Kultur*.

Individuality of To-day [Individualität in der Gegenwart].
Dewey, J.

This is a German translation of the last of a series of articles published by Prof. John Dewey, of Columbia University, in *The New Republic*.

The Entrance into Vocational Life [Der Eintritt ins Berufsleben].
Verhaeren, J.

This paper discusses the difficulties young people often experience on leaving school and entering some vocation, and how these difficulties may be overcome by talks on individual-psychological lines.

A Case of Speech Impediment [Ein Fall von Sprachhemmung].
Unger, M.

This paper gives the case-history of a 40-year-old woman and her cure by encouragement.

Concerning the Individual-Psychological Theory of Dreams [Zur Individualpsychologischen Traumlehre]. Lazarsfeld, R.

The mechanism of fear was the original means of avoiding danger. It is the note-book of primitive man. Neurosis and the dream revert to these means. A dream is then interpreted on these lines.

A Compulsory Movement [Eine Zwangsbewegung]. Merzbach, Th.

A short case-history of a 13-year-old boy and his treatment on Adlerian lines.

A. WOHLGEMUTH.

Internationale Zeitschrift für Individual-Psychologie, January-February, 1931.

This number contains the following papers:

Compulsion Neurosis [Zwangsneurose]. Adler, A.

Fear is one of the foundations for the feeling of inferiority. It is essential to inquire into the patient's past, for every patient's actions arise out of the material of his past experience. Hence a striving for personal superiority, so that the inferiority may not be discovered. In actual situations the fear of defeat leads to hesitation. The composition of the compulsion neurosis is identical with that of the entire style of life and of the personality.

These are some of the conclusions to which Adler has arrived since 1912. In the last few years he has found also that the "compulsion" lies not in the compulsory movements but in the threatening attacks of the demands of the community. A cure can only be effected through a reconciliation with the vital questions—that is, through a recognition of the faulty life and style, and by reinforcement of the community feeling.

The Problem of Neurasthenia [Zum Problem der Neurasthenie]. Dreikurs, R.

The subjective experiences of neurasthenics correspond to a series of objectively demonstrable symptoms. These can be arranged in two groups: (1) Increase of the reflexes, (2) those concerning vegetative processes—lability of the vascular system, variations in the pulse, dermatographism, acidity, etc. The genesis of these two kinds of objective symptoms is then considered, and reference is made to Hess's hypothesis that vagotonus corresponds to that adaptation of the body in which the individual turns away from the external world and lives for the regeneration of the internal organs (histotrope regulation), whilst sympathicotonus corresponds to the opposite adaptation, *i. e.*, turned towards the outer world (ergotrope regulation). Sexuality is next discussed at some length. What is really harmful in ipsation (masturbation) is not the physiological effects of the act, but solely the psychical disturbances set up by the fear of its consequences upon the body. Two interesting case-histories are given.

Idiocy, Platonism and Common Sense. Haeueller, A.

A paper of a somewhat philosophical trend. *ιδιώτης* is the private person who is not a citizen—*πολίτης*.

The Encouragement-Idea in the Prussian Penal System.
[*Der Ermutigungsgedanke im preussischen Strafvollzug*].
Kleist, F.

This is a discussion of the new Prussian penal code, the *leitmotiv* of which is "education" of the criminal, especially the young.

The Connection between the Development of Art and of Character
[*Zusammenhänge zwischen Kunst- und Charakterentwicklung*].
Zilahi-Beke, A.

Reflections on Emil Ludwig's *Michelangelo*.

A. WOHLGEMUTH.

Internationale Zeitschrift für Individual-Psychologie, March-April,
1931.

This number contains the following articles :

Choice of Neurosis [Neurosenwahl]. Kronfeld, A.

This is an examination of the question why one neurotic patient manifests gastric and intestinal troubles, whilst another suffers from asthma and a third one becomes impotent.

Choice of Neurosis [Neurosenwahl]. Wexberg, E.

This paper treats of the same subject, but more systematically and in greater detail.

Psychogenesis and Psychotherapy of Endocrine Disturbances [*Zur Psychogenese und Psychotherapie endokriner Störungen*].
Weinmann, K.

This paper illustrates the thesis by two case-histories.

Conflict Neuroses [Über Konfliktneurosen]. Lenzberg, K.

A discussion of the problem from an Adlerian standpoint.

Phobia as a Means [Phobie als Mittel]. Credner, L.

Two case-histories are given to illustrate this paper with an individual-psychological explanation.

Musicality of Jews (Die Musikalität der Juden). Rosenthal, H.

The Psychological Problem in Ibsen's "Rosmersholm" [*Das Psychologische Problem in Ibsen's "Rosmersholm"*].
Nissen, I.

A. WOHLGEMUTH.

The Effect of Visual Stimulus upon the Perception of Bodily Motion.
(*Amer. Journ. Psychol.*, January, 1931.) Gurnee, H.

Experienced movement, bodily or visual, appears to be a meaning that may attach to one or more of several visual or bodily factors.

When two small objects without a well-established stationary meaning make up the field of vision, movement of one produces perceived movement of both in opposite directions. When both the body and the visual field are moved, the perception of movement, visual, bodily, or both, becomes very complex, depending largely upon the set of attention. A higher percentage of positive responses occurred in the decelerating phase of visual oscillation than in the accelerating phases.

A. WOHLGEMUTH.

The Influence of Hue on Apparent Visual Movement. (*Amer. Journ. Psychol.*, January, 1931.) Squires, P. C.

The investigation was undertaken to determine the influence of hue on apparent visual movement under the condition of successive retinal excitation, *i.e.*, the ϕ -phenomenon. This problem is of importance for the theory of perception, in view of the contentions advanced by "Gestalt" psychologists. Five observers were used. No significant correlation was found to obtain between hue or hue combination and pattern of movement. The "reality" of movement under the conditions of this experiment was very compulsory. The stimulus pattern seems of secondary importance in the determination of the phenomenon. Mental set or attitude is of primary importance. "If the 'Gestalt-theory,'" says the author, "in the field of apparent visual movement is presumed to depend upon the proposition that quality of movement is 'cut away from,' or relatively independent of, the quality of the stimulus, then the theory is without firm foundation. All the facts tend to demonstrate an extremely high degree of functional inter-relation between quality of movement and quality of stimulus configuration."

A. WOHLGEMUTH.

The Time of Judgment in Psychometric Measures. (*Amer. Journ. Psychol.*, January, 1931.) Kellogg, W. N.

Two light-stimuli were presented to the observers, and two kinds of judgments were required—either plus or minus, or plus, equal, minus. Five observers were used, who returned 3,360 judgments.

The judgment-time in the three-category series is about 10% longer than in the two-category series. Judgments of equality are uniformly longer than those of other categories. It takes longer to make an incorrect judgment than to make a correct one. The time of judgment is a better index of the confidence of the observers when their judgments are permitted to vary among three categories than when they are restricted to two.

A. WOHLGEMUTH.

The Relation of Bright and Dull Pressure to Affectivity. (*Amer. Journ. Psychol.*, January, 1931.) Hunt, W. A.

In 1924 J. P. Nafe, experimenting with stimuli of different modalities, described pleasure as bright pressure and displeasure as dull pressure. Hunt set himself the task of checking the results.

He experimented with coloured papers. The results, the author states, lend support to Nafe's view without proving it. He thinks three different interpretations are possible: (1) Affection is bright or dull pressure (Nafe's view); (2) affection is accompanied by bright or dull pressure (the author's view); (3) affection and bright and dull pressure depend upon identical processes in proprioceptive end-organs, but different attitudes of report. A. WOHLGEMUTH.

A Study of Vocational Attitudes in Relation to Pubescence. (*Amer. Journ. Psychol.*, January, 1931.) Lehman, H. C., and Witty, P. A.

The writer presents several hypotheses as to the change of attitude to vocational desires at the approach of puberty. A. WOHLGEMUTH.

The Retroactive Effect of Pleasant and Unpleasant Odours on Learning. (*Amer. Journ. Psychol.*, January, 1931.) Frank, J. D. and Ludvigh, E. J.

The authors conclude that the degree of learning varies with the degree of pleasure and displeasure of the odours, as judged by the observer, in such a way that the greater the pleasure, the better the learning, and the greater the displeasure, the poorer the learning. A. WOHLGEMUTH.

The Effect of Colour on Apparent Size. (*Amer. Journ. Psychol.*, January, 1931.) Gundlach, C., and Macoubrey, C.

The results of this study reveal a marked and consistent effect of colour on apparent size, and this effect seems to be directly related to the luminosity of the colours involved. A. WOHLGEMUTH.

Psychological Monographs, No. 187, 1931. *University of Iowa. Studies in Psychology*, No. XIV. Edited by Christian A. Ruckmick.

This number contains the following papers:

Voluntary Movements of the Organs of Speech in Stutterers and Non-stutterers. Blackburn, B.

Stutterers showed a marked inferiority to normal speakers in ability to execute rhythmical, voluntary movements of mid-line speech-structures in a non-speaking situation, especially voluntary movements of the tongue and diaphragm, and in a lesser degree of lips or jaws. There is no difference in other voluntary rhythmical movements such as those of arms or hand. It appears that several types may be differentiated among stutterers.

A Comparative Study of Affective Response by Means of the Impressive and Expressive Methods. Dysinger, D. W.

Words written on cards were presented to the observers. The observers had to indicate the feeling-tone they experienced by the

word or the situation called up by it. The reading of the psychogalvanic reflex was taken at the same time. The conclusions arrived at were as follows: There is a striking correspondence between the affective tone indicated in the deflection and that reported by the subjects in the majority of cases. In most of the remaining cases there is incomplete evidence of correspondence, and in a few cases it is entirely lacking.

An Investigation of the Phenomena Connected with the Beating-Complex. Hange, J. B.

By the beating-complex is meant the experience associated with the simultaneous sounding of two notes of different pitch, but not too far apart from one another. As the difference in pitch increases it tends to give rise to the experience of smoothness and blending involved in consonance. Electrically-driven tuning-forks and Stern variators were used to produce the notes in this research. It was found that the quality of the beat is dependent upon both the relative and the absolute intensities of the primaries, and that it is necessary to control the intensity of the primaries when the effect of changes in the difference in frequencies on the quality of the beat is studied.

Apparent Movement in Auditory Perception. Mathiesen, A.

As the results of previous workers seemed doubtful and even contradictory, the author set herself the task of finding reliable conditions for the ϕ -phenomenon in the auditory field. Under the carefully thought-out conditions of the experiment no compulsory conditions for apparent auditory movement were found. In so far as reports of movement were made, the range of interval within which such apparent movement occurred did not closely correspond to the range of phenomenal shortening of distance.

A "Central" Explanation of Sound Localization. Ruckmick, C. A.

Auditory localization involves not only favourable physical conditions, but a definite mental set made up of an attentive attitude and the effect of practice. These critical attitudes, while best induced by certain physical conditions, cannot be referred entirely to any sensory process, but, it is suggested, can better be explained in terms of neurological conditions in the cortex and underlying levels as traces of past experience in the individual and in the race which interpret the present perceptual occurrence.

Variations in the Galvanic Response. Smith, F. O.

The object of this investigation was to determine the variations in the direction, latency, magnitude, time and number of deflections in the galvanic reflex when various stimuli are presented to different individuals. The author found that not only do the

deflections vary with different observers for the same stimulus, but the same observer may show different galvanic responses to the same stimulus on different occasions. These may vary in direction, latency, magnitude or time of deflection.

Some Aspects of the Psychophysics of the Vibrato. Tiffin, J.

In this study an attempt was made to apply the traditional psychophysical approach to the vibrato by means of a specially devised apparatus. Tests of ability to hear a frequency vibrato and ability to hear an energy vibrato were constructed and applied to nearly 400 students. In addition an intensive investigation was made with five observers to determine certain systematic tendencies in the hearing of the vibrato. The method of constant stimuli was used exclusively in this intensive series. The results of both series are set out in full.

The Relation between the Physical Pattern and the Reproduction of Short Temporal Intervals: A Study in the Perception of Filled and Unfilled Time. Triplett, D.

The problem of this study is the comparison of the reproduction of temporal intervals when the standard and comparison intervals are filled with tones and when they are empty so far as sensory content is concerned. It was found that some observers have positive and others negative constant errors for filled or for unfilled intervals. The most significant result, it is stated, which came out of the attempt to compare the filled and unfilled intervals has been the discovery that some of the observers perceived the unfilled intervals as positive entities, not unlike the filled intervals.

Experimental Study in the Use of the Tonoscope. Williams, H. M.

This paper gives a description of the "Iowa Tonoscope, Model VI," and of tests and experiments carried out with it.

A. WOHLGEMUTH.

Internationale Zeitschrift für Individual-Psychologie, May-June, 1931.

This number contains the following papers:

The Meaning of Life [Der Sinn des Lebens]. Adler, A.

This is an exposition of Adler's philosophy. Character traits are elements in the structure of the life-style. They show us the relationship between individual to social problems. The possibility of their growth is, of course, hereditary. A social relationship has to be acquired, and this depends upon the creative force of the child.

The Practical Results of Individual Psychology in the School
[*Die Praktischen Auswirkungen der Individual-psychologie in der Schule*]. Birnbaum, F.

The practical results of individual psychology in the school are, in the last instance, not results of a theory, but of a new style of life. If one of the teachers who to-day live and work individual-psychologically had in former years to take bromides towards the end of the school-year to subdue his nervousness, whilst he asserts now that he has iron nerves, then such a teacher is to be regarded as an argument in favour of individual psychology.

The Pedagogic Consultation in the School [*Die Pädagogische Beratungstunde in der Schule*]. Spiel, O.

This is a discussion of the different attitudes the teacher has to adopt and the different functions he has to perform as regards the child and the parents.

A Case of Mental Defect and its Treatment in the Normal School
[*Ein Fall von Schwachsinn und seine Behandlung in der Normalschule*]. Seelmann, K.

History of a boy whom the school doctor had pronounced to be defective, and who had been given up by two teachers as unteachable. A third teacher treated him sympathetically on Adler's lines, and was successful.

Elementary School or Special School? [*Volksschule oder Hilfsschule?*]. Simon, A.

The author holds that the individual-psychologically trained teacher in the elementary school can work without all the hindrances that belong necessarily to the special school for backward children, and is hence in a better position to teach the backward child than his colleague in the special school. This superiority would be greatly enhanced if he were given greater freedom in his curriculum, and if he had only 15-20 children to teach instead of 40.

Psychical Dynamics in School Life [*Seelische Dynamik im Schülerleben*]. Valentiner, Th.

Backward children are not a homogeneous mass. They should be treated individually on individual-psychological lines, and many successes have been obtained in such cases.

Foundations of Individual-Psychological Didactics [*Die Grundlagen der Individualpsychologischen Didaktik*]. Mittag, W.

A paper on much the same lines as the preceding one.

Types of Children in the Individual-Psychological Bringing up at Home [Kindertypen in Individualpsychologischer Heimerziehung]. Friedmann, A.

A number of histories of different types of difficult children.

On Children who have no Joy [Über Kinder, die Keine Freude haben]. Rasey, M. J.

A translation from English into German of a paper by the Director of Research at the Detroit Teachers' College.

The Creative Writing of the Child [Das Schöpferische Schreiben des Kindes]. Welch, R.

It ought to be made clear to children that their experiences and interests, when they are clearly expressed, are worth printing. Examples of their poetry (in English) are given.

The Child in Hospital [Das Kind im Spital]. Langer, M.

An advocacy for treatment of child-patients in hospitals on Adler's lines of encouragement. A. WOHLGEMUTH.

Psyche, No. 43, January, 1931.

This number contains the following articles :

Offences against Taste. Bentham, Jeremy.

These are extracts taken from unpublished MSS. of Bentham's deposited in the Library of University College, London. They are chiefly concerned with his views on sex, and remarkable for being outspoken, and so much in advance of his time. He touches on the relations of the sexes, homosexuality, ipsation (as Crookshank terms it), birth-control, abortion and infanticide. Jeremy Bentham might have been President of the World League for Sexual Reform. Utility is the sole foundation of morals.

Animal Magnetism. Wright, Maurice B.

This is a popular account of the subject.

A New Science : Interlinguistics. Jespersen, Otto.

This is an account of the work that is being done to bring the various artificial languages, such as Esperanto, Ido, etc., into harmony.

Psychology or Psychologies. Fortes, M.

Prof. Carl Murchison's latest omnibus volume, *Psychologies of 1930*, affords the author the opportunity to discourse on the different schools of psychology and their methodology. He has no fault to find with the stimulus-situation in the psychological experiment and the collection of numerical data which are treated statistically. He is, however, somewhat prejudiced against the introspective

method, although he overlooks here the gravest danger, namely, that of the "laboratory atmosphere." On the whole the criticisms are fair, and ought to be helpful to psychologists.

La Pythie de Delphes. More, Adelyne.

This paper is written in French. It gives an account of the traditions of the Delphian Oracle and discourses upon propheto-maniacs in general.

Individual Psychology and the Bases of Science. Crookshank, F. G.

In practice, and judging by the results, we are told, the medical systems of native peoples have generally proved adequate to their needs; until, that is, the introduction of civilization, by which term the author means alcohol, syphilis, Christianity, and the sexual customs peculiar to Christian countries. The bulk of the paper is concerned with the discussion of the four great metaphysical antinomies, namely, the problem of mind and matter, the problem of universals, the problem of causality, the problem of predestination and free will. They are all solved in harmony with Adler's individual psychology.

A. WOHLGEMUTH.

Psyche, No. 44, April, 1931.

This number contains the following papers:

The Function of an International Auxiliary Language. Sapir, Edward.

Debabelization: A Reply to Prof. Sapir. Ogden, C. K.

The Biological Analysis of Sensation. Hogben, Lancelot.

The author discusses the reactions of the lower animals to stimuli from the standpoint of the experimental biologist. He compares the field of investigation of the physicist to his own, and deprecates the studies of the psychologist—the introspectionist, as he calls him. His strictures, however, would only apply to the now probably defunct class of anthropomorphically speculating arm-chair psychologists. Behaviourism is the extreme limit of the swing of the pendulum in the opposite direction, whilst the modern experimental psychologist keeps the just balance between the two.

A Psychologist's Utopia. Money-Kyrle, R.

"A society may be said to be *secure* when its members are protected from each other, and *free* when their natural desires are not inhibited." Biological facts suggest that aggressiveness in general is an innate response to frustration, especially sexual frustration, and that the peculiar aggressiveness of man is more often due to sexual frustration than it seems. The social discontent, which has always been a danger to society, is a manifestation of the œdipus

complex. It cannot be removed by purely economic means. Everyone has had an œdipus complex, but whereas some individuals remain fixed in it or regress to it, others outgrow it. With reference to this complex the author says, "Probably it can never be quite understood by those who have not been analysed."

Physics and the Laws of Thought. Reiser, O. L.

The author contends that if change is the realization of possibility, and if the realm of possibility is the domain of infinity, then anything that exists takes on the appearance of possessing contradictory properties as soon as the thing is defined in terms of any given set of properties. The Law of Excluded Middle or Law of Contradiction (*tertium non datur*), "S (the same S) cannot both be P and not P," does not apply to nature with absolute accuracy, since it is constantly evolving. The laws of logicians apply only to the state of affairs in an ideal and timeless world where things do not evolve. It strikes the lay observer that there are more evolutionary changes in physical hypotheses than are evident in nature.

A. WOHLGEMUTH.

The Free-Association Method and the Measurement of Adult Intelligence. (University of California Publications in Psychology, 1931.) Conrad, H. S., and Harris, D.

The authors have evolved an intelligence test for adults based on the free-association method, and they believe that it compares favourably with other vocabulary and intelligence tests, such as the Stanford Binet, Pintner's, and Snedden's tests. For this method the following among other merits are claimed: Shortness; simplicity of directions; novelty, interest, and acceptability to adult subjects.

WM. McWILLIAM.

Maze Learning in Rats. (University of California Publications in Psychology, 1930.)

1. *Degrees of Hunger, Reward and Non-reward, etc.* Tolman, E. C., and Honzik, C. H.
2. *Rôle of Kinesthesia in Maze Learning.* MacFarlane, D. A.

In these two monographs we find the results of advanced "conditioned reflex" experiments in rats. In the first, rewarded rats, as measured both by time and errors, learned the maze most rapidly; further, rats run with food reward at the end of the maze showed, when reward was removed, large increases in both time scores and error scores, which could not be accounted for by chance factors alone.

In the second monograph it is shown that the changes in kinesthesia brought about by the conditions of the experiments had but slight effect on the ability of the animals to traverse the maze without entering any *culs-de-sac*, and that such disturbances as there were rapidly disappeared.

WM. McWILLIAM.

The Relations of Mental and Physical Processes. (Mind, April, 1931.) Ritchie, A. D.

The author expresses the belief that even in sense perception the mind is not purely passive and receptive. To him, the physical correlates of mental acts are not only processes in the brain, but the whole set of causally related physical processes, and within the percipient's body include both ingoing and outgoing processes. He concludes that the nervous process of inhibition is the most important bodily correlate of thought.

WM. McWILLIAM.

3. Psychiatry.

The Measurement of the Psychotic Age. (Amer. Journ. Psychiat., May, 1931.) Gardner, G. E.

Two views have been held: firstly, that some psychotics think and act as does primitive man; secondly, that the patient regresses to some point in his early life, because of a fixation of his sexual libido at that point. It is possible to ascribe to each individual patient a measurable "psychotic age." The author inclines to the view that the reactivation of infantile age-levels can best be accounted for by assuming that the patients were endowed with a defective sympathetic nervous system, which prevented a normal and orderly emotional development. Investigations are being continued, with a view to the correlation of the physical symptoms in the psychoses with those of the early developmental levels.

M. HAMBLIN SMITH.

Transvestism or Eonism. (Amer. Journ. Psychiat., May, 1931.) Horton, C. B., and Clarke, E. K.

Two cases of this condition are described. Neither case has been analysed. Havelock Ellis has stated that transvestism tends to occur among the educated, refined, sensitive and reserved. Neither of these cases was educated or refined, and the sensitivity and reserve seemed exotic.

M. HAMBLIN SMITH.

The Affective Psychoses in Children. (Amer. Journ. Psychiat., May, 1931.) Kasanin, J.

Affective psychoses are very rare in children. Mild maniacal attacks may, however, escape notice; for the behaviour of a normal child closely resembles hypomaniacal activity. Ten cases of affective psychosis, occurring between the ages of 10 and 15, are studied in

this paper. Half of these children showed definite physical anomalies. The immediate precipitating factors are usually quite trivial. The prognosis is grave.

M. HAMBLIN SMITH.

Depressive Reactions Related to Parenthood. (*Amer. Journ. Psychiat.*, May, 1931.) Zilboorg, G.

A considerable group of cases of both sexes was studied by the Freudian method. A strong unresolved incest drive stands as a barrier to parenthood. Some men and women whose infantile attachment to one of their parents is unresolved are automatically protected against marriage; but some of these persons marry, break at the moment when they seem to have achieved their ideal of identification, and choose a psychosis as a compromise. The puzzling problem of why parents hate their children is considered. Given a strong parent-fixation, the child becomes the bodily expression of an elemental sin; the parent projects his own sense of guilt on to the child, and so becomes hostile to the child. Unfortunately, these maladjustments only become clear after a mental illness has developed. The prevention of such illnesses is a task for the future.

M. HAMBLIN SMITH.

The Hæmato-Encephalic Barrier; the Diagnostic Value of the Bromide Test in Mental Diseases. (*Amer. Journ. Psychiat.*, May, 1931.) Katzenelbogen, S., and Goldsmith, H.

Walter's bromide permeability test provides a means of determining a decreased resistance of the barrier. There is a tendency to an increased permeability in the organic psychoses, and a decreased one in schizophrenia. Age does not appear to affect the permeability.

M. HAMBLIN SMITH.

Menopause and Psychosis. (*Amer. Journ. Psychiat.*, May, 1931.) Farrar, C. B., and Franks, R. M.

Tradition unduly exaggerates the psychotic potential of the climacteric. The fears thus set up lead to troubles for which the menopause must not be held primarily responsible. Of the women who present psychotic or neurotic abnormalities at this period, the great majority have exhibited pre-climacteric psychotic potential. The menopause is a critical period, not only biologically, but often in the life relationships of the individual; any psychosis which may develop is to be regarded as largely reactive to the latter factors.

M. HAMBLIN SMITH.

Sociopathic Behaviour in Women. (*Amer. Journ. Psychiat.*, May, 1931.) Partridge, G. E.

The cases of nine women were studied. These women, although not criminal, displayed reactions which were widely at variance with social demands. In each case there had been a difficult mother-child situation, and all the patients showed strongly ambivalent

attitudes towards their mothers. In eight of the nine cases there was evidence of infantile deviation from normal personality. Overt homosexuality was present in one case, and was potential in three others. Guilt feeling was strong in the group, and in some cases appeared to be pleasure toned; the guilt was often projected upon the mother. There was no evidence in favour of the conception of a "moral deficiency."

M. HAMBLIN SMITH.

Encephalographic Studies in General Paresis. (Amer. Journ. Psychiat., March, 1931.) Ebaugh, F. G., Dixon, H. H., Kiene, H. E., and Allen, K. D.

A group of 70 cases of general paresis was studied, and 97 encephalographies were performed. Arachnoiditis was shown to be cleared up by malarial treatment. Encephalography in careful hands is a safe clinical procedure. The findings are definitely related to the pathology present. Clinical improvement in many cases appears to be closely correlated with the encephalographic findings.

M. HAMBLIN SMITH.

The Relation of Time of Day, Sleep, and Other Factors to the Incidence of Epileptic Seizures. (Amer. Journ. Psychiat., March, 1931.) Patry, F. L.

The patients, 31 in number, were placed in three groups, *i.e.*, those in whom the attacks were predominantly diurnal, mainly nocturnal, or occurred at any time; attacks were more frequent in the first two groups than in the third. Two thirds of the patients exhibited "time peaks," *i.e.*, concentration of attacks around certain hours; nine such peaks could be recognized. The pooled fits showed a greater seasonal incidence during the spring months. Mental deterioration was less rapid in the diurnal group, and this group was more liable to *status epilepticus*. A high systolic blood-pressure and a high pulse-pressure were found to be bad prognostic signs.

M. HAMBLIN SMITH.

Pupillary Disturbances in Schizophrenic Negroes. (Arch. of Neur. and Psychiat., April, 1931.) Schilder, P., and Parker, S.

The authors found pupillary changes in catatonia much more frequent in negroes than in white persons. A constitutional factor appears to be essentially responsible, and it is probable that this factor concerns the pupillary apparatus itself. Changes of the so-called catatonic type may be observed in any pupil which is affected by a toxic or an organic lesion of a slight degree. In particular the authors found them in cases of intoxication with alcohol, scopolamine and morphine. The phenomena are due to a coincidence of constitutional psychic and toxic factors.

G. W. T. H. FLEMING.

4. Pathology.

Functional Achlorhydria and the Histamine Test. (*Amer. Journ. Psychiat.*, March, 1931.) Katzenelbogen, S., and Scott, W. C. M.

Histamine is a powerful stimulant of gastric secretion, and particularly of that of free hydrochloric acid. The diagnostic value of the test lies in this property. Only a positive response is conclusive; if negative, the test should be repeated, using the same or a higher dose.

M. HAMBLIN SMITH.

Hæmorrhage of the Brain. (*Arch. of Neur. and Psychiat.*, February, 1931.) Bouman, L.

The author finds that it is necessary to distinguish between hæmorrhage from a large vessel and that from the small vessels in the adjacent area. The large hæmorrhage is dependent on an atheromatous ulcer which bursts, the blood forcing its way into the surrounding tissue and causing mechanical injury. As a result of this, small vessels in the adjacent area with altered walls, and also small vessels without alteration, may be caused to rupture. There is also ischæmia of some of the surrounding tissue, with consequent necrosis of the vessel-walls and of the brain-tissue. In addition there are chemical influences from the extravasated blood. The blood spreads along the perivascular spaces of Virchow-Robin or along the perivascular glia chambers of Held. The two forms of secondary hæmorrhage contribute towards the quantity of extravasated blood. In "red softening" the wall of the hæmorrhage consisted of three distinct layers from within outwards, (1) brain-tissue with extravasated material, (2) newly formed vessels with glia and lymphocytic elements, and (3) gliosis. In connection with several cases of cerebral hæmorrhage in young patients and the so-called "hemiplegia without anatomic observations," the author thinks a vasomotor disturbance is responsible.

G. W. T. H. FLEMING.

Acute Diseases of the Brain Due to Functional Disturbances of the Circulation. (*Arch. of Neur. and Psychiat.*, February, 1931.) de Vries, E.

The author describes four cases in which localized brain symptoms were due to elective softening of parts of the cortex, and for which no organic vascular lesion could account. One case showed small foci of necrosis distributed at random over the various layers of the cortex. In the other three cases the lesions took the form of laminated cortical softening. The third cortical layer was most frequently involved, occasionally the fifth and sixth layers together. All the cases showed lesions of the common vascular type, or thrombosis of vessels in other places, mostly in connection with

widespread diffuse degeneration of ganglion cells. The author considers that functional disturbances probably play a much greater rôle in the pathogenesis of focal softening in general arteriosclerosis than has hitherto been believed.

G. W. T. H. FLEMING.

Tumour of the Brain with Disturbance in Temperature Regulation.
(*Arch. of Neur. and Psychiat.*, March, 1931.) Strauss, I., and
Globus, J. H.

The authors describe three cases of intracranial tumour. In each case a neoplasm of the subthalamic region with variable involvement of the hypothalamus and thalamus was found. They conclude that a lesion in the periventricular zone of the third ventricle and in the tuber cinereum causes a disturbance in the function of the heat-regulating mechanism.

G. W. T. H. FLEMING.

A Clinico-pathological Study of the Intracranial Arachnoid Membrane.
(*Journ. of Nerv. and Ment. Dis.*, February-March, 1931.)
Davis, L., and Haven, H. A.

The authors describe a series of twelve cases showing definite histopathological changes in the arachnoid membrane. These included one verified intracranial tumour, two cases with the pathological process centering about the optic chiasma, and seven with the clinical picture of an intracranial neoplasm in which no tumour was verified at operation. Each of these showed definite changes in the arachnoid membrane, classified into three different groups according to the histopathological picture each presented. (The three groups described were—inflammatory, fibrotic and hyperplastic.) Two of the cases gave a history of trauma sufficiently definite to be considered as an ætiological factor.

G. W. T. H. FLEMING.

The Pathology of Chronic Epidemic Encephalitis: A Histopathological Study of Four Cases with Widespread Cerebral Lesions.
(*Journ. of Neur. and Psychopath.*, January, 1931.) Carmichael, R.

The author examined histologically the brains of four cases of chronic epidemic encephalitis. In all, the substantia nigra was most markedly affected, but lesions of varying degrees of severity were found in almost all the other nuclei of the brain-stem, and in the basal nuclei and thalami. The spinal cord showed definite alterations in two cases, and in all four the deeper layers of the cortex were markedly implicated. The cerebellum escaped injury in all four cases.

The disease-process in chronic epidemic encephalitis is actively

progressive. The blood-vessels are little affected, the mesodermal reaction of the acute stage having passed away.

G. W. T. H. FLEMING.

Pinealomas. (*Arch. of Neur. and Psychiat.*, May, 1931.) *Globus*, *J. H.*, and *Silbert*, *S.*

The authors describe seven personally observed cases of pineal tumours. If the tumours are regarded from a developmental point of view, it is possible to understand their structure, and to keep them all in one common group. They are all autochthonous teratomas. The absence of glial or neuronie elements during the evolutionary stages of the pineal body excludes the spongioblastic or neuroblastic forms of pinealoma. The cellular organization of the pineal body at an early stage of development points to its glandular character, at least for the brief prenatal period, and hence justifies its designation as the pineal gland. The presence of pubertas præcox is not necessary for the diagnosis of pineal tumour.

G. W. T. H. FLEMING.

The Origin and Formation of Senile Plaques. (*Arch. of Neur. and Psychiat.*, May, 1931.) *Ferraro*, *A.*

The author concludes that senile plaques may originate from both neuroglial elements and from nerve-cells. The oligodendroglia cells give origin to some of the plaques; the astrocytes do not take any part. The microglia-cells represent an important element from which senile plaques primarily develop. They may also originate from isolated disintegrated nerve-cells or from a collection of such elements. The histochemical process leads to the formation of a granular argyrophile substance, which at times gives in the central portion of the plaque some of the reaction of amyloid substance and at other times the reaction of fat substance. The author has never seen nerve-fibres give origin to senile plaques. Once the plaque is formed, its increase in size and volume depends on the participation of nerve-cells, microglia and astrocytes. The microglia cells contribute the largest increase. The nerve-fibres also participate in the development of the senile plaque through a process of fragmentation and gradual disintegration of the neurofibrils.

G. W. T. H. FLEMING.

5. Treatment.

The Treatment of Post-Encephalitic Children in a Hospital School. (*Amer. Journ. Psychiat.*, March, 1931.) *Bond*, *E. D.*, and *Appel*, *K. E.*

The physical disease, encephalitis, caused handicaps which the children were not able to manage psychologically. Nearly all were

improved to a fairly satisfactory level in the hospital, and nearly half, when sent home, maintained their improvement. The underlying feelings of insecurity and the regressive tendencies are far more important than the symptoms of lying, stealing, etc.

M. HAMBLIN SMITH.

Medical Aspects of Malaria Therapy in Neuro-syphilis. (*Fourn. of Nerv. and Ment. Dis.*, April, 1931.) Johnson, G. S., and Jefferson, R. A.

As a result of four years' experience at the Colorado Psychopathic Hospital, the authors have decided that malarial treatment is contra-indicated in "galloping paresis" and in far-advanced tabes. These cases are often made worse. Juvenile general paralysis and cases with primary optic atrophy yield disappointing results.

Malarial treatment, if there is any doubt as to the patient's health or fitness, should invariably be preceded by tryparsamide treatment. The authors think that much of the benefit obtained from malarial treatment is due to tissue reaction, which builds up immunity in the nervous system, and in the nervous system only.

As soon as the malarial treatment is completed, injections of tryparsamide are begun. Wagner-Jauregg has stated that intracutaneous inoculation with blood which agglutinates the recipient's corpuscles is partially successful in producing a tertian type of fever.

In the event of any cardiac distress, it is much wiser to terminate the malaria than to give so-called cardiac tonics. Complete serological recovery may occur in those who obtain good remissions.

G. W. T. H. FLEMING.

The Treatment of Cerebro-spinal Syphilis with Malaria. (*Fourn. of Nerv. and Ment. Dis.*, June, 1931.) Neustadter, M.

The author treated twenty-six cases of cerebro-spinal syphilis. Eighteen were improved and remained in good condition after three years.

G. W. T. H. FLEMING.

Treatment of Tabetic (Genuine) Optic Atrophies with Sulphur. (*Fourn. of Nerv. and Ment. Dis.*, May, 1931.) Fried, J.

The author treated twelve patients with sulphur injections. He found in some cases a marked improvement in acuity of vision and a continual improvement in the visual field. Cases with colour-blindness later recognized colours in the centre; in others the visual field existing previously for only the blue-yellow colours could be registered for red-green also. Ophthalmoscopically there was a change from a white to a grey-red, suggesting an intensive hyperæmia of the capillaries. In four cases this change in colour remained constant for four years. Out of the twelve cases, six showed marked improvement and four some improvement.

G. W. T. H. FLEMING.

On the Treatment of Tabetic Optic Nerve Atrophies with Sulphur.
(*Journ. of Nerv. and Ment. Dis.*, March, 1931.) Winkler, L.

The author found a beneficial effect from sulphur treatment. He obtained from four to six fever reactions of from 101°-103° F. The results were, (a) change of the greyish colour to red, due to improved circulation, (b) improvement of visual acuity, (c) enlargement of the visual field, (d) reappearance of colour-vision. The treatment may be repeated if necessary, preferably after the lapse of a year.
G. W. T. H. FLEMING.

Occupational Therapy in a Tuberculosis Sanatorium. (*Occup. Therap. and Rehabil.*, April, 1931.) Powers, H. B.

The issue of the official organ of the American Occupational Therapy Association under review includes the above article, chosen as being typical of the number. Its first three articles deal with the therapy in tuberculosis hospitals, and as such still have an interest for the psychiatrist. The different types of handicraft are employed as "graduated exercises," and their various suitability are discussed.
WM. McWILLIAM.

Occupational Therapy at Bloomingdale Hospital, White Plains, New York. (*Occup. Therap. and Rehabil.*, February, 1931.) Haas, L. J.

Any British psychiatrist still ignorant of the extent to which occupational therapy is employed in some American mental hospitals should read this account. He will gain a good idea of how the departments should be organized. For example, in the Bloomingdale Hospital the staff of the women's department consists of eight therapists, a director, an assistant and six instructors. The department building contains ten shop rooms, reception hall, office, dye room, and two storage rooms. The shop rooms are equipped for basketry, book-binding, sewing, weaving, typewriting, carpentry, jewelry and metal work. In addition, there is a studio and also a kitchen. Information is also given as to the types of work employed as treatment, and the place of the physician in the scheme.
WM. McWILLIAM.

Occupational Therapy in the European Mental Hospital, Ranchi, India. (*Occup. Therap. and Rehabil.*, December, 1930.) Mukherji, A. K.

This article gives an account of the occupational therapy department in the Ranchi European Mental Hospital. The occupations detailed are weaving, carpentry, canework, cobbling, needlework and cement-work. The social side includes aquatic sports, music, dancing, and the cinema.
WM. McWILLIAM.

Occupational Therapy. (Occup. Therap. and Rehabil., February, 1931.) Kidner, T. B.

Discussing the utility of this therapy in mental hospitals the author writes: "The programme . . . should be carried on by work demanding progressively graduated effort throughout the patient's institutional life; until he or she is able to engage in pre-industrial work which will lead either to parole and discharge, or to a place of usefulness in the industries and general activities of the hospital for patients who cannot be discharged." Advice is also given to the occupational therapists in tuberculosis, general and orthopædic hospitals.

WM. MCWILLIAM.

Part IV.—Notes and News.

THE ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.

QUARTERLY MEETING.

THE Spring Quarterly Meeting of the Association was held at the British Medical Association House, Tavistock Square, London, on Thursday, May 21, 1931, the President, Dr. T. Saxty Good, M.A., occupying the Chair.

The minutes of the last meeting, having already been published in the Journal, were accepted as read and approved.

OBITUARY.

THE PRESIDENT said there was the usual sad duty to perform, namely, to announce the death of several members. He asked Dr. Lord to speak on this matter.

Dr. J. R. LORD remarked that it was always a sad duty at the commencement of meetings to announce the deaths of some members whom their fellows both loved and respected.

Since the last meeting the Association had been notified of the death of Dr. Owen McCarthy, which took place on November 6, 1930, that of Dr. William Donaldson, on April 4, 1931, and that of Dr. Walter Smith Kay, on April 2, 1931.

Dr. McCarthy was Resident Medical Superintendent of Cork District Mental Hospital, and his unexpected death was a great shock to a wide circle of friends, not only in Ireland, but also in this country. He was educated in Cork City, and was a student of Queen's College, and of the Royal College of Surgeons of Edinburgh. He qualified in 1900, and was appointed Assistant Medical Officer at the Mental Hospital, Cork, a year later. He fought brilliantly in the war from 1915 to 1917. In 1922 he was elected Medical Superintendent of Cork Mental Hospital. In the same year his position in psychiatry was recognized by his appointment as Lecturer in Mental Diseases at Cork University College. Dr. Leeper would be better able to speak of Dr. McCarthy's personal characteristics. He was a man of hospitable and genial disposition, very keenly interested in his institution and in the welfare of all his patients. During his period of office he initiated one great reform, namely the training, for the first time in Ireland, of female nurses to nurse male patients. His funeral, on November 9, was largely attended by members of the legal and medical professions, representatives of his County Council, and a great number of his friends and of the general public.

Dr. Donaldson was a neighbour of the speaker for many years, and he too was a genial Irishman, full of sympathy for everybody in distress. He was an illustrious student of Trinity College, Dublin; he graduated in 1883, and joined the staff of Cane Hill Mental Hospital. He was subsequently appointed Superintendent of the Manor Mental Hospital, and for a short time, while it was used for military purposes, he was its officer commanding, with the rank of Lieutenant-Colonel. Knowing him as he, the speaker, did, he was sure it was his great output of energy which led to his breakdown. After the war he returned as Medical Superintendent, but shortly after retired and went to live in Dublin. He never knew Dr. Donaldson say an unkind word of anybody; he always saw the happy side of things. He personally regretted the loss of Dr. Donaldson very much.

Dr. Kay's death occurred suddenly in London, at the age of 76, and was also deeply regretted. Dr. Kay was educated at Edinburgh High School, where he achieved many distinctions. He was a retired Medical Superintendent of the

South Yorkshire Mental Hospital at Sheffield. Prof. Robertson, who was a personal friend, had some important news to convey.

Dr. LEEPER said he had only to tell the members that Dr. McCarthy was one who devoted his life to his institution. The speaker was acting as Chairman at a meeting of the Irish Division when he received a telegram telling him that Dr. McCarthy was dead. It was a great shock to all at the meeting, as he had the interests of the Association so much at heart. He was taken away when there was about to be accomplished a much-needed extension of the mental hospital at Cork. Many times he had told the speaker that the constant anxiety of his work prevented his attending meetings as often as he would have liked. He had found Dr. McCarthy very anxious to help the Association in every way he could. He was sure all present would agree that members had lost a very able colleague.

Dr. WHITWELL said he had been probably one of Dr. Kay's oldest and closest friends; they first met in 1887, when the speaker was pathologist to Wadsley Asylum, of which Dr. Kay became Superintendent, and from that date they never lost contact with each other. For many years they took their holidays abroad, and they had travelled many thousands of miles together. On the evening before he died the speaker dined with Dr. Kay at the Constitutional Club, and he was waiting for his friend to come to him at the Royal Societies' Club when a message arrived stating that he had passed away. He was a great friend and most conscientious, both as a man and as a doctor.

Prof. GEORGE M. ROBERTSON said that Dr. Kay had left £5,000 for the Chair of Psychiatry at Edinburgh University, thus showing the great interest he had in his specialty.

A resolution of condolence was carried by members rising in their places.

THE ANNUAL MEETING.

The PRESIDENT reminded members of the Annual Meeting in Dublin, commencing on July 7, and said he hoped it would be a great success.

ELECTION OF NEW MEMBERS.

Dr. Russell and Dr. MacGrath officiated as scrutineers for the ballot, which was taken for all the candidates *en bloc*. They were all elected unanimously, as follows:

PEARSON, KATE YOUNG, M.B., Ch.B. Edin., Assistant Medical Officer, Rampton State Institution, Retford.

Proposed by Drs. Wm. Rees Thomas, C. H. G. Gostwyck and D. B. M. Lothian.

ROPER, WILLIAM FRANCIS, M.B., B.S. Lond., M.R.C.S., L.R.C.P., Medical Officer, H.M. Prison, Liverpool. Address: 21, Walton Park, Liverpool.

Proposed by Drs. H. T. P. Young, J. J. Landers and S. W. Davies.

PARKER, WILLIAM PATRICK HUGH, L.R.C.P. & S.I., Assistant Medical Superintendent, Mental Hospital, Toowoomba, Queensland, Australia.

Proposed by Drs. W. F. Samuels, R. Worth and G. W. Shore.

MOODIE, WILLIAM, M.D., M.R.C.P. Lond., D.P.M., Medical Director, Child Guidance Clinic, 1, Canonbury Place, London, N. 1.

Proposed by Drs. Edward Mapother, J. S. Harris and Thos. Tennent.

GILL, SAMUEL ERNEST, M.D. Lond., D.P.M., Commissioner, Board of Control. Address: 89, Coombe Road, Croydon.

Proposed by Dr. Thos. S. Good, Sir Hubert Bond and Dr. A. Edward Evans.

CLEGG, JOHN LEONARD, M.B., Ch.B. Liverp., D.P.H., Assistant Medical Officer, South Yorkshire Mental Hospital, Sheffield.

Proposed by Drs. W. Vincent, F. T. Thorpe and E. M. Sykes.

GARROD, MARJORIE, M.R.C.S., L.R.C.P., Hon. Medical Registrar, Tavistock Square Clinic. Address: "Bankcroft," Douglas Road, Harpenden.

Proposed by Sir Hubert Bond, Drs. J. R. Rees and Mary R. Barkas.

BAKER, JOHN COTTER, M.B., B.Ch. Dubl., Medical Superintendent, Stretton House, Church Stretton, Salop.

Proposed by Drs. T. B. Hyslop, R. Worth and G. Warwick Smith.

MALLOY, JOSEPH HOLDER, M.D.St.Andrews, Assistant Medical Officer, County Mental Hospital, Cheddleton.

Proposed by Drs. W. F. Menzies, W. D. Wilkins and David Henderson.

The PRESIDENT said the Council recommended as the President for 1932-33, Dr. Robert Brown Campbell, Medical Superintendent of Stirling Mental Hospital, Larbert. He had been Secretary of the Scottish Division from 1910 to 1920, and was Chairman of that Division in 1929-1930.

He thought it would be of interest to the members to be told of the enormous increase in the Association's activities in the matter of training nurses for the specialty. The present year's numbers exceeded those of any previous year by 56, the number presenting themselves for examination being 4,137.

RESIGNATION OF DR. CHAMBERS AS HON. TREASURER.

The PRESIDENT said the Council had to report with great regret that Dr. Chambers had resigned the post of Treasurer. They recommended the appointment of Dr. G. W. Smith to the vacant post, and that gentleman had consented to serve. He was sure members would wish to record their high appreciation of Dr. Chambers's great services to the Association.

NOMINATION OF NEW HONORARY MEMBERS.

The PRESIDENT announced that the Nominations Committee recommended that the following gentlemen be elected Hon. Members of the Association: Dr. M. J. Nolan and Dr. James Chambers.

The next point was to nominate a member to act on the Board of Control's Advisory Committee on Scientific and Ancillary Mental Health Services. The Council recommended himself (the President).

As representative on the Organizing Council for the International Congress of Local Authorities, 1932, the Council recommended Dr. Lord.

He was sure members would be delighted to learn of Sir Maurice Craig's convalescence after his illness, and would wish to congratulate him on his recovery.

PAPER.—“**Mental Disorders Associated with Pernicious Anæmia.**” by Dr. NORMAN PHILLIPS (Northampton) (*vide* p. 549).

Prof. GEORGE M. ROBERTSON said he had listened with very great interest to this paper, and was very glad the subject had been raised at the meeting. During his life he had seen many cases of chronic mental disorder develop during the course of pernicious anæmia, and many who, coming in with pernicious anæmia, also had chronic mental disturbance; but recently he had seen a case of the blood disease in which mental symptoms developed quite early. That patient had been suffering from the ordinary symptoms of pernicious anæmia, general weakness and gastric disturbance, and indeed there was a suspicion that the man might have cancer of the stomach. Then he became somewhat enfeebled in mind, began to be suspicious, quarrelled with the daughter who had always looked after him, and gave considerable trouble. He became weak, his gastric symptoms increased, and he was placed in an ordinary nursing home in Edinburgh. After he had been there two or three days he had an acute delirious attack, following anxiety; he thought that he would be murdered. He seemed to suffer from vivid hallucinations. He did not realize where he was; he was noisy and delirious, and had to be removed from that nursing home and placed in one of the nursing homes for nervous and mental cases. The speaker first thought it might be general paralysis of the insane, as he had certain suggestive nervous symptoms; then he thought it might be a case of early senility, but routine physical examination disclosed that he had pernicious anæmia. He, Prof. Robertson, was called in because of the onset of these mental symptoms, which at that stage were obscuring the physical symptoms. The delirious condition quickly passed off under appropriate treatment, but the man was still disoriented; he did not know where he was or realize the lapse of time, though he knew who he was himself. One symptom which was marked—it was not mentioned in Dr Phillips's paper—was amnesia; there was considerable lack of the power of attention. The anxious

and suspicious symptoms passed off, and were followed by those of mild elation, so that the patient became domineering and dictatorial.

When it was found that he was suffering from pernicious anæmia, he was at once put on liver treatment, and soon thereafter began to improve, both mentally and physically. In six weeks' time he had left the nursing home perfectly recovered, and was in better health than he had been for years. In that case the later symptoms were those of acute toxic insanity: he was confused, had amnesia, etc. Yet all the symptoms passed off quickly and completely, with very little recollection on the patient's part that he had passed through such an illness.

Dr. M. J. NOLAN said he would like to refer to a similar case to the one alluded to by Prof. Robertson, that of a patient who came under the speaker's care last year. She was one of the officials at the mental hospital. She was suffering from pernicious anæmia; she developed acute mental symptoms, which ran a course similar to that just mentioned. She was put upon liver treatment, and in a few months she was well, physically and mentally, and took up her work as before.

Dr. W. F. MENZIES said he rose to draw attention to a useful instrument which had been designed by Dr. Molloy, an assistant at his, the speaker's, hospital—a refractometer, which permitted of the rapid differential blood estimation of a blood-smear without doing an actual count. One could thus get the blood of all new admissions quickly examined.

In the last few years there had been only four cases of pernicious anæmia. Two of them died. In one the condition would never have been detected had not a routine examination of the blood been done, for the hæmoglobin was 78%. There seemed to be no association between the severity of the mental manifestations and the physical condition. One man died of a slow form of delirium, although his blood was restored nearly to normal. One woman, whose red cells were 1,800,000, went home, still somewhat ill, with a raised temperature, but physically much improved.

Sir HUBERT BOND, *K.B.E.*, said he wished the Association could have more papers like this; such contributions were very interesting to listen to, and were very informing and practical.

The lesson to him was that the mental symptoms, once they occurred, dominated the picture, and might put the observer off the track. And did not this paper point to the great importance of a systematic physical examination of all patients? The physical examination should not be restricted to what appeared to the observer to be the salient points, but should be uniform and complete, then these conditions would not be missed. It would be very sad if one knew the number of admissions in each year who had not received a thorough physical examination; it would cause some hanging of heads. He had been delighted to learn from Dr. Menzies that the blood examinations had been simplified by means of the instrument that gentleman mentioned. It was the more important to make these blood examinations when it was realized what could be done for blood diseases. Members were elated about new admissions, but there was also the mass of people who were semi-permanent residents. A complete examination was supposed to be done on these patients once a year. If examination could be thorough in each case, then in the course of time—and not a very long time—the specialty could render to general medicine a mighty help, and the special branch would be looked up to as an unsuspected source of information, even by some people who at present were not above uttering a little sneer now and then.

Dr. DOUGLAS McRAE asked whether he had heard aright that in the first patient there was a slight mental improvement which enabled Dr. Phillips to administer the liver extract. Up to that time, he believed, she had resisted taking the liver. It was therefore at least arguable that the liver was given while she was improving on the other treatments—quite a number of treatments had been given! Great credit had been given to the liver treatment, and not much to the other treatments. It was within the experience of all the members that cases coming to the institutions recovered under tonic and other treatments, and got well within three months.

One got cases showing periodical bouts of pernicious anæmia, lasting six to nine months, and then recovering. In 6 cases of pernicious anæmia no results were seen from liver treatment; that was the other side of the picture. In days gone by many cases of pernicious anæmia were temporarily cured by iron treatment.

Dr. LORD said he was sorry that Dr. Ford Robertson had not been able to attend

the meeting. He, working in collaboration with colleagues in Southport, had found that pernicious anæmia was due to some elaborated septic process. He took it that, so far as the mental symptoms were concerned, it might be the case that pernicious anæmia depressed the liver function, and that might produce the mental effects which had been observed. On the other hand, septic absorption might poison the brain and also the liver, or in any case might lower the liver function. If Dr. Shaw had been present he would probably have said that many years of experience had led him to the conclusion that a healthily-functioning liver was a very important aid in preserving a normal brain; he had done considerable research work on this subject, as readers of the *Journal of Mental Science* would know. If suspiciousness, a hasty temper and irritability were due to loss of liver activity, surely that was a condition known to many people—the mental state “the morning after the night before.” And if a little extract of liver was likely to relieve that condition, it might well be recommended as a morning “cocktail.”

The reason he rose was to support what Sir Hubert Bond said, as it was the message to the Association in the speaker's Presidential Address, namely, the importance of team work, and of a complete and careful examination of patients in a mental institution, however severe the mental symptoms might be. He had sketched a system by which this could be done without any considerable increase in the medical staff.

When Dr. Menzies interposed in the discussions it was always with something practical, and it would be valuable if some further information could be given as to the system of blood examination which had been introduced at Cheddleton; he would be glad to insert it in the *Journal*.

With regard to the chronicity of mental symptoms, he thought it was the experience of the Birmingham and also of American workers, that it was not fair to the patient to assume chronicity of mental symptoms until three years had elapsed. There were 600 cases of this type on record from Birmingham Hospital. Surely it must take three years for the delicate bio-chemistry necessary for normal mental health to be restored after many years of toxic poisoning, particularly in elderly people, whose intestine was a laboratory for the cultivation of various strains of bacteria.

Dr. A. G. SHERA said he would like, as a pathologist, to add his congratulations to Dr. Phillips on his extraordinarily interesting paper. When one reflected on the condition of research in relation to the somatic side of mental disease as it was now, in comparison with fifteen, even ten, years ago, one saw that the question was now full of hope, particularly in respect of such researches as Dr. Phillips had reported to-day.

He had always been interested in pernicious anæmia, and many cases of it came his way from the general point of view. His impression was that mental symptoms in association with this disease must be rare.

With regard to early diagnosis, there was another instrument, probably similar to that referred to by Dr. Menzies, which the speaker had been using for about a year, namely, Dr. Eve's halometer. A blood film was placed on the end of a camera-like box, which contained two reflecting mirrors and a small lamp, and there were two haloes. By means of a lever one could measure the haloes, which were in inverse proportion to the size of the red cells. It was claimed that megalocytosis, which was present in pernicious anæmia, could be shown by it. Borderline cases caused a good deal of doubt; he would not care to diagnose an unknown case by means of that instrument alone. Still, it helped one to do a preliminary sorting of cases, and occupied only a few minutes.

Another interesting point was the good effect of blood transfusion in these cases. In severe pernicious anæmia he always pressed for a blood transfusion to be done, as he was sure it shortened convalescence, and it should produce an equally good effect on the mental symptoms. He had heard it argued that hydrochloric acid was essential to the amelioration of subacute combined degeneration; that view was strongly held in certain medical quarters.

The question of the presence of streptococci in the fæces as a characteristic of pernicious anæmia was a new one to him; he wondered whether a particular type of streptococcus was essential, or whether it was a matter of a large numerical increase in the normal streptococci of the intestine, due, no doubt, to the achlorhydria.

If this paper showed one more way of attacking mental disease, Dr. Phillips was to be very heartily congratulated.

Dr. HAMILTON MARR said he was very much struck with the similarity of the mental and physical symptoms described by Dr. Phillips in these cases to those of untreated myxœdema. Fresh liver treatment reminded the speaker of the original treatment for myxœdema; the thyroid was chopped up and given with bread and butter, and the best results he had seen in myxœdema were obtained in that way. He did not know whether it was correct, but his Professor of Anatomy had the idea that the most indigestible thing in the world was liver. Therefore, if liver could be given to patients in a more digestible form, it might be advantageous. He did not know what actual substance in the liver was responsible for the cure of pernicious anæmia.

The PRESIDENT said this was a Medico-Psychological Association, and the members had been occupied this afternoon in making a physical diagnosis and also talking about confusional states; yet none had advanced any reason why a case of pernicious anæmia should have confusion—a symptom which was always associated with a toxic condition. Why should people with pernicious anæmia have such mental symptoms as delusions of persecution, and why, on going into general hospital wards, should one see a number of cases of pernicious anæmia who were lethargic and had no interest in anything except keeping themselves alive? There might be some benefit in discussing why there should be mental symptoms associated with any physical disease.

He was not belittling Dr. Phillips's paper; he, as a mental physician, had been able to improve both the physical and the mental state. The other side of the profession labelled the case reported first as neurasthenia, then as hysteria, though they were not the same disease, nor had they the same symptoms. He asked how many members, having had some awful disease and feeling very ill, would, if bidden to "pull themselves together, then it would cease," become annoyed, *i.e.*, paranoid. He would still like to know a little more why mental symptoms occurred in these cases of physical disease.

Dr. NORMAN PHILLIPS, in reply, said he had been much struck by the kind way in which his paper had been received. He was referring especially to Sir Hubert Bond, who was always encouraging mental hospital medical officers in their research work.

The President had spoken about the reason why mental change should occur in such a disease as pernicious anæmia. The cause of pernicious anæmia was not known, but the speaker considered that the fact of the accompanying change being of the toxic variety pointed to pernicious anæmia having a toxic origin. There was a deficiency of hydrochloric acid in the stomach of these patients.

Dr. SHERA asked about streptococci which might be present in the intestine. He could furnish Dr. SHERA with a full report on that point, but there was not time to do so now.

Dr. Douglas McRAE seemed inclined to throw doubt or cold water on the work, but if that gentleman read the *Journal of Mental Science* he must see that the liver treatment of pernicious anæmia had been producing extraordinarily good results.

He cordially thanked the other speakers for what they had said.

PAPER.—"Anti-malarial Work at the Central Mental Hospital, Tanjong Rambutan, Federated Malay States," by Dr. WILLIAM FREDERICK SAMUELS (*vide* p. 555).

Dr. LORD said that the reader of this paper had built and established, mainly as a result of his own initiative and energy, a mental hospital well up to European or British standard, and in this effort he had received very little practical sympathy from the Government authorities. The work had been done mainly by natives, whom Dr. Samuels had educated up to it. It was now an active centre for medico-psychological teaching. The paper just read gave a very good illustration of Dr. Samuels's resourcefulness. He was a most enthusiastic worker.

Dr. SAMUELS, in reply, expressed his pleasure at hearing the remarks of Dr. Lord. It was almost an impertinence for him to have come and read a paper of this description, which might be said to deal with forestry rather than medicine,

but he thought there might be some interested in hearing about the difficulties which sometimes had to be encountered.

PAPER.—“**Terminal Uræmia,**” by Dr. A. GEOFFREY SHERA (*vide* p. 573).

SOUTH-EASTERN DIVISION.

THE SPRING MEETING of the South-Eastern Division was held by the courtesy of the Visiting Committee and of Dr. F. R. P. Taylor, at the East Sussex County Mental Hospital, Hellingly, on Thursday, May 7, 1931.

Between 11.30 a.m. and 1.30 p.m. members and visitors were taken in parties on tours of inspection of the hospital and grounds.

At 1.30 p.m. members and guests were entertained to lunch, at which Dr. Taylor presided.

After Dr. TAYLOR had proposed “The King,” Dr. SERGEANT proposed a vote of thanks to Dr. Taylor and the Visiting Committee, which was carried by acclamation, and to which Mr. GODWIN KING, the Chairman of the Visiting Committee, and Dr. TAYLOR replied.

The meeting was held at 2.30 p.m. The minutes of the last meeting having been published in the Journal were taken as read and confirmed.

It was decided to hold the autumn meeting at Springfield House, Bedford, at a date to be announced later, and the date and place of the Spring Meeting, 1932, were left to be arranged by the Secretary.

The following was unanimously elected an ordinary member of the Association :

ROACHSMITH, CHARLES EDWARD, M.R.C.S., L.R.C.P., D.P.M., Assistant Medical Officer, Napsbury Mental Hospital, St. Albans.

Drs. Bower, Devine, Norman, Rice, Roberts, Robinson, Collins, Paddle and Boyle were elected members of the Divisional Committee of Management, and Drs. Bower, Collins, Devine, Rice, Roberts and Taylor Representative Members of Council; Dr. Taylor was elected Divisional Chairman, and Dr. Sergeant Hon. Divisional Secretary.

Dr. NOLAN read a paper on “**The Modern Treatment of Mental Out-Patients,**” which elicited remarks from Drs. TAYLOR, SMITH, MACAULAY, SERGEANT, BAIRD, COLLINS and HAYNES.

Dr. SHERA read a paper on “**Four Cases of General Paralysis Treated with Intrathecal Neo-salvarsanized Serum,**” which was followed by an extremely interesting demonstration of the four cases mentioned.

Members and guests were then entertained to tea.

SOUTH-WESTERN DIVISION.

THE SPRING MEETING of the South-Western Division was held, by kind invitation of the Committee of Visitors and Dr. T. Saxty Good, *O.B.E.*, at the Oxford County and City Mental Hospital, Littlemore, on Thursday, April 30, 1931.

The following members were present : Drs. E. Barton White, M. L. M. Northcote, Bertha Mules, Annie S. Mules, J. J. O'Reilly, A. T. Waterhouse, W. R. Dawson, J. L. Baskin, P. K. McCowan, J. D. Thomas, F. M. Stewart, N. R. Phillips and S. E. Martin. Drs. T. Gilchrist and P. Havard attended as visitors. Apologies for absence were received from Drs. F. Dudley and Donald Ross, and others.

Dr. Barton White was in the Chair.

The minutes of the last meeting were confirmed and signed.

Dr. S. E. Martin was elected Hon. Divisional Secretary and Drs. Barton White and McGarvey Representative Members of Council.

Dr. Barton White was elected Divisional Chairman.

Drs. T. Saxty Good and C. F. Bainbridge were elected Members of the Committee of Management.

The following were elected as ordinary members :

JOHN KENNETH CRAWFORD LIDDELL, M.B., Ch.B.Edin., Senior Assistant Medical Officer, Barnwood House, Gloucester.

Proposed by Drs. Arthur Townsend, J. G. Soutar and F. C. Logan.

DONALD JOHN MACDOUGALL, M.B., Ch.B., Major R.A.M.C., Officer i/c D Block, Royal Victoria Hospital, Netley.

Proposed by Major G. W. Will, R.A.M.C., Drs. J. P. Westrup and S. E. Martin.

The place of the Autumn Meeting, 1931, was discussed, and it was mentioned that Dr. Elizabeth Casson would be pleased to have the meeting at Dorset House, Clifton Down, Bristol. It was also suggested that Dr. Bedford had expressed a wish to have the meeting at Dorset County Mental Hospital. The decision as to the place of the Autumn Meeting was left in the hands of the Hon. Divisional Secretary.

Dr. F. M. STEWART, Medical Officer at Littlemore, showed several cases which had been treated for general paralysis of the insane with malaria. A discussion then took place as to the present treatment of general paralysis of the insane.

Dr. STEWART also showed a case of gummatous fibromata of the arm which had been treated with malaria and cured. In connection with this case Dr. Stewart handed round photographs which, in addition, exhibited hyperkeratosis of the feet.

Dr. C. W. S. DAVIES-JONES, Medical Officer at Littlemore, showed a case, and initiated a discussion on phantasy. His patient demonstrated, among other things, a new game called "Chevy Chase," which he had invented. This was a form of draughts and chess, and the rules were of a most complicated nature.

Dr. NEWMAN gave an account of his researches into the pathological findings in dementia præcox, and members had an opportunity of inspecting some of the microscopic slides which he had on view.

Dr. T. SAXTY GOOD exhibited a case for diagnosis. An interesting discussion ensued, in which Drs. BARTON WHITE, McCOWAN and others participated.

During the morning members and visitors were conducted over the Hospital and had an opportunity of inspecting the various departments of the Institution, and were most hospitably entertained to lunch, presided over by Dr. Saxty Good.

Dr. BARTON WHITE proposed a hearty vote of thanks to Dr. T. Saxty Good and the Committee of Visitors for their kind hospitality.

SCOTTISH DIVISION.

SPECIAL MEETING.

A SPECIAL MEETING of the Scottish Division was held in the Central Station Hotel, Glasgow, on Friday, February 20, 1931.

Present : Drs. Douglas McRae, T. C. Mackenzie, W. McAlister, R. D. Clarkson, John R. Robb, John McDougall, John C. Anderson, J. A. Jenkins, W. Boyd, W. Tuach Mackenzie, Henry Carre, A. M. Dryden, J. S. Annandale, J. H. C. Orr, Patrick Steele, J. H. MacDonald, Donald Ross, H. Ferguson Watson, R. D. Hotchkis, L. C. Bruce, R. B. Campbell, C. C. Easterbrook, Neil T. Kerr, R. Bailey, W. D. Chambers, Ivy McKenzie, C. G. A. Chislett and W. M. Buchanan.

Dr. Neil T. Kerr, Divisional Chairman, presided.

The minutes of last Divisional Meeting were read, approved, and signed by the Chairman.

Apologies for absence were intimated from Drs. John Keay, D. K. Henderson, J. H. Skeen, Prof. Robertson and Dr. R. Mary Barclay.

The SECRETARY explained that the meeting had been called, after consultation with the Chairman, to give members an opportunity of discussing the "Memorandum as to Duties of Medical Officer in Charge of Mental Health Services," issued by the Public Health Committee of the City and Royal Burgh of Edinburgh, and to take any action that might be decided upon in connection therewith.

The Memorandum is in the following terms :

" CITY AND ROYAL BURGH OF EDINBURGH.

" Memorandum as to Terms of Appointment and Duties of Medical Officer in Charge of Mental Health Services under the Public Health Department.

" 1. The Medical Officer to be appointed (hereinafter called ' the Medical Officer ') shall, under the Medical Officer of Health, have charge of the Mental Health Services of the Corporation. The Mental Health Services shall, in addition to Lunacy, include Mental Deficiency as defined in the Mental Deficiency and Lunacy (Scotland) Act, 1913.

" 2. Subject to what is stated in paragraph 1 hereof, the Medical Officer shall act as Medical Superintendent of the Mental Hospital of the Corporation known as Bangour Village.

" 3. The Medical Officer shall, under the Medical Officer of Health, have general direction of the institution for Mental Defectives at Gogarburn.

" 4. In the case of Bangour Village and Gogarburn Institution, the duties of the Medical Superintendent will be exercised subject to technical duties other than medical being carried out by the appropriate officials of the Corporation. In particular, the City Architect will have charge and supervision of all matters relating to maintenance, repair and alteration of buildings. Subject to provision being made for utilizing the services of patients as part of their treatment, the City Superintendent of Parks shall have charge of the maintenance and upkeep of the gardens and grounds, and a Farm Manager appointed by the Corporation shall have charge of the farms.

" 5. The Medical Officer shall also, under the Medical Officer of Health, have charge and control of any other Institutions or clinics provided by the Corporation as part of their Mental Health Services.

" 6. Generally, the Medical Officer shall carry out any other duties within the line of his profession which the Corporation or the Public Health Committee shall impose upon him.

" 7. The Medical Officer must be a fully qualified registered Medical Practitioner, with special experience in Mental Diseases and Institutional Administration."

" 8. The salary for the appointment shall be from £1,000 to £1,250 (with free house, coal and light and a non-pensionable allowance of £100 per annum for a motor car).

" 9. The Medical Officer will be subject to the provisions of the Asylums Officers' Superannuation Act, 1909, or the Corporation Superannuation Scheme, as may be arranged.

" 10. The appointment of the Medical Officer will be terminable by three months' written notice on either side.

" 11. The Medical Officer shall give his whole time to the duties of his office. He shall not engage in any other business or accept any other appointment without the sanction of the Public Health Committee, but he may, with the consent of the Committee, accept any appointment as Professor or Lecturer in connection with the instruction of students, provided that such subsidiary appointment shall not in any way interfere with the carrying out of his primary duties as Medical Officer aforesaid.

" CITY CHAMBERS,

" EDINBURGH,

5th February, 1931."

" A. GRIERSON,

" Town Clerk.

At the Chairman's suggestion the Memorandum was discussed paragraph by paragraph, and the following opinions were unanimously expressed :

Paras. 1 and 2 : That the Medical Superintendent is the responsible official under the Lunacy Acts, and that the Medical Officer of Health has no status under these Acts. That Rule 2 of the General Rules for the Management of the Edinburgh District Asylum, made under 20 and 21, cap. 71, sec. 9, and approved by the General Board of Control and the Secretary for Scotland, lays down that the Medical Superintendent " shall be the responsible head of the Institution and shall act under the direction of the Board." That the General Board of Control is still the central authority.

Para. 3 : That a medical superintendent has already been appointed at Gogarburn,

and that, according to the Mental Deficiency and Lunacy (Scotland) Act (General Board's) Regulations, 1914, section 56, 1 (b), "The superintendent shall have paramount authority in the Institution, subject to that of the District Board."

Para. 4: That this paragraph is at variance with Rule 3 for the Medical Superintendent of Bangour, which states, "He shall have the entire control of the whole establishment, and shall be responsible for the proper treatment and condition of the patients: for the state of the wards, buildings, and grounds." In general, that there can be only one head in an institution, and in particular, that the usefulness of the farm and garden as remedial agents and branches of the occupational therapy department would be imperilled if they were managed by outside officials, and that the work of the artisan staff has to be arranged to suit the general convenience of the institution.

Paras. 5, 6, 7 and 8: No comment.

Para. 9: That the Medical Officer of a rate-aided Asylum is compulsorily subject to the provisions of the Asylums Officers' Superannuation Act, 1909.

Paras. 10 and 11: No comment.

It was unanimously agreed that the opinions expressed should be embodied in a letter, and placed before the General Board for Scotland, together with a copy of the Memorandum. The Secretary was instructed to draft such a letter, and after consultation with the Scottish members of Council attending the Quarterly Meeting in London, transmit it to the General Board at once.

The Secretary called attention to the report in the *Scotsman* of February 19 of the remarks of the Principal of Edinburgh University at the opening of the University Psychological Clinic for Children and Juveniles, at which, among other misstatements, he said that "our Asylums are no more use to us than our graveyards." The Secretary was instructed to write the Editor of the *Scotsman* pointing out that the statements were untrue, and that they would cause pain and offence to a large number of people.

A vote of thanks to the Chairman terminated the business of the meeting.

QUARTERLY MEETING.

THE SPRING MEETING of the Scottish Division was held at Rosslynlee Mental Hospital, Rosslynlee, Rosslyn Castle, on Friday, June 5, 1931.

Present: Drs. W. McAlister, J. H. MacDonald, George Gibson, Wm. McWilliam, J. A. Jenkins, M. E. McLaren, T. R. C. Spence, W. J. Raitt, D. J. Forbes, J. H. Skeen, W. Boyd, R. Mary Barclay, Douglas McRae, R. Bailey, R. B. Campbell, F. E. Reynolds, J. H. C. Orr, Neil T. Kerr, W. M. Ogilvie and W. M. Buchanan.

Drs. J. K. Slater and J. M. Elliot were present as guests.

Dr. Neil T. Kerr, Divisional Chairman, presided.

Before taking up the ordinary business of the Meeting, the CHAIRMAN feelingly referred to the death of Dr. Hugh de Maine Alexander, who, as assistant to Prof. G. M. Robertson at Perth County Mental Hospital, Murthly, assistant to the late Dr. Reid at Aberdeen Royal Mental Hospital, and since 1906, shortly after the opening of the institution, as Medical Superintendent of the Aberdeen District Mental Hospital, Newmachar, had rendered valuable services to the care and treatment of the insane in Scotland. Dr. Alexander had been a member of the Association for thirty-two years, and took a keen interest in the affairs of the Scottish Division. Dr. DOUGLAS McRAE also paid tribute to the memory of Dr. Alexander, and spoke of his personal charm and character, and of the immense amount of undemonstrative work he had done for the Association in reviewing and abstracting books and articles for the *Journal of Mental Science*. It was unanimously resolved that it be recorded in the Minutes that the Members of the Scottish Division of the Royal Medico-Psychological Association desire to express their deep sense of loss sustained by the death of Dr. H. de M. Alexander, and their sympathy with the members of his family in their bereavement, and the Secretary was instructed to send an excerpt of the minute to Mrs. Alexander.

The minutes of the last Divisional Meeting were read, approved and signed by the Chairman.

Apologies for absence were read from Drs. D. K. Henderson, C. G. A. Chislett and Donald Ross.

The Secretary reported that, as instructed at last meeting, he had written to the General Board of Control for Scotland in the following terms :

" KIRKLANDS MENTAL HOSPITAL,
" BOTHWELL,
" LANARKSHIRE ;
" 26th February, 1931.

" THE SECRETARY,
" GENERAL BOARD OF CONTROL FOR SCOTLAND,
" 25, PALMERSTON PLACE, EDINBURGH.

" SIR,

" I am instructed by the Scottish Division of the Royal Medico-Psychological Association to bring to your notice the enclosed ' Memorandum as to the Terms of Appointment and Duties of Medical Officer in Charge of Mental Health Services under the Public Health Department of the City and Royal Burgh of Edinburgh,' and to transmit the following observations thereon.

" With regard to Paragraphs 1, 2, 3 and 4 of the Memorandum the Division would respectfully point out that under the Lunacy Acts the Medical Superintendent is the responsible official of an Asylum, and that there is no reference in the Acts to the Medical Officer of Health having any official status. In this connection the Division desires to refer to pages 8, 9 and 10 of the General Rules for the Management of the Edinburgh District Asylum (dated 22nd February, 1908) drawn up under 20 and 21 Vic., cap. 71, sec. ix, and approved by your Board and by the Secretary for Scotland, and also to the Mental Deficiency and Lunacy (Scotland) Act (General Board's) Regulations, 1914, para. 56, sec. 1 (b), and to point out that these paragraphs of the Memorandum appear to be at variance with the above quoted Rules and Regulations.

" Further, the conditions laid down in paragraph 4 of the Memorandum are, in the opinion of my Division, calculated to lead to difficulties in administration, as there can only be one responsible head in an Institution. It is greatly feared that the transfer of the management and supervision of the Farm and Garden from the Medical Superintendent to Corporation Officials would seriously imperil the scope and usefulness as remedial agents of these important branches of asylum occupational therapy, the importance and value of which has been long recognized and is specially referred to in the Sixteenth Annual Report of your Board.

" With regard to paragraph 9, the Division would be glad to know if it is not the case that the Medical Officer of a rate-aided Asylum is compulsorily subject to the provisions of the Asylums Officers' Superannuation Act, 1909.

" I am, Sir,
" Your obedient Servant,
" Wm. M. BUCHANAN,
" *Divisional Secretary.*"

The following reply had been received :

" GENERAL BOARD OF CONTROL FOR SCOTLAND,
" EDINBURGH ;
" 5th March, 1931.

" SIR,

" I am directed to acknowledge the receipt of your letter of the 26th ultimo, enclosing Memorandum as to the Terms of Appointment and Duties of Medical Officer in Charge of Mental Health Services under the Public Health Department of the City and Royal Burgh of Edinburgh, and to inform you that the matter is receiving the careful attention of the Board.

" I am, Sir,
" Your obedient Servant,
" K. M. MACGREGOR,
" *For the Secretary.*"

Dr. McRAE considered that the details in connection with the Memorandum should be in the possession of every member, and the Secretary agreed to send to each member of the Division a copy of the relevant parts of the minute.

Dr. MACDONALD considered the reply of the General Board of Control unsatisfactory and suggested that the Board be pressed for a considered reply. Dr. CAMPBELL supported this view, and the Secretary was instructed to write the General Board asking for a considered reply to the points raised.

The SECRETARY further reported that Section 194 of the Draft Provisional Order dated April, 1931, promoted by the Corporation of Edinburgh, sought to exclude the Medical Superintendent of Bangour Village from the provisions of the Asylums Officers' Superannuation Act (1909); that he had brought this matter to the notice of the Secretary of the Association's Parliamentary Committee; and that that Committee was arranging to oppose the Order in respect of this Section.

Dr. Douglas McRae and Dr. T. C. Mackenzie were unanimously elected Representative Members of Council for the year 1931-1932, and Dr. Wm. M. Buchanan was unanimously elected Divisional Secretary.

Dr. Douglas McRae was unanimously elected Chairman of the Division.

The following were unanimously nominated as members of the Mental Nursing Advisory Committee to the General Nursing Council: Prof. G. M. Robertson, Dr. Douglas McRae, T. C. Mackenzie, Donald Ross and W. M. Buchanan.

The Secretary submitted a letter from the Secretary of the Educational Committee dated May 26, 1931, intimating that that Committee had resolved to refer the question of the nomination of Examination Inspectors to the Divisions of the Association, and to ask for an expression of opinion regarding the number of inspectors required. After a discussion, in which the recent regulations for the Nursing Certificate were again criticized, the members present were unanimously of opinion that the appointment of an Examination Inspector was unnecessary in the Scottish Division, and none of those present were willing to accept nomination.

Members were kindly entertained to lunch, after which Mr. CHARLES BUCHANAN, Chairman of the Board of the Midlothian and Peebles Mental Hospital, welcomed the Division to Rosslynlee, and Dr. KERR thanked the Board and Dr. Orr and his staff for their hospitality, and for the arrangements made in connection with the meeting.

After lunch members were shown over the hospital by Dr. Orr and his assistant.

On the meeting reassembling, Dr. J. H. SKEEN showed an interesting case of encephalitis lethargica from New Saughton Hall. This patient had been originally looked upon as suffering from locomotor ataxia, but the absence of Argyll-Robertson pupils, the presence of the abdominal reflex, and negative specific serological findings, raised the question of encephalitis, and the remarkable mental and physical improvement on treatment by dry extract of stramonium confirmed that diagnosis. After Dr. SLATER had given the history and physical signs in detail the case was discussed by Drs. McWILLIAM, BAILEY, McRAE and MACDONALD.

Dr. J. M. ELLIOT, the visiting dental surgeon, opened a discussion on "Focal Infection," in which Drs. McALISTER, McRAE, R. MARY BARCLAY, BUCHANAN and SPENCE took part.

A vote of thanks to the Chairman terminated the business of the meeting, after which members were kindly entertained to tea.

COMPLIMENTARY DINNER TO SIR JAMES CRICHTON-BROWNE.

A Complimentary Dinner was given to Sir James Crichton-Browne, F.R.S. Lond. and Edin., at the Langham Hotel, London, on Thursday, May 21, 1931. The chair was occupied by the President of the Association, Dr. T. SASTY GOOD, O.B.E., M.A., who was supported by, among others, Lady Crichton-Browne, Dr. Percy Smith, Sir Robert Armstrong-Jones, Prof. George M. Robertson, Dr. Bedford Pierce, Dr. Menzies, Dr. J. R. Lord, Sir Hubert Bond, Sir William Job Collins, Dr. Gordon Holmes, Dr. Reginald Worth (General Secretary of the Association), and Dr. Nathan Raw, C.M.G. (Lord Chancellor's Visitor).

THE SPEECHES.

The PRESIDENT: Ladies and Gentlemen,—You are all aware why we have met together here this evening; it is to welcome and wish all prosperity to Sir James

Crichton-Browne and Lady Crichton-Browne. (Applause.) I am in what some people would call the honourable position of being President of this Association; but I would call it an awkward position on the present occasion. Why? I tried to look up some of the records of what Sir James has done, in fact, I sat up at night for a week with ice round my head looking them up, and I only got to about the time he was at Wakefield. There are two people in the Association one generally goes to when in difficulty: one is the General Secretary, the other the Senior Editor. Sometimes I get a little confused—(Laughter)—as to which is which, though I would not let them know that. On this occasion I said, "What am I to do?" They said, "Someone else will help you." And so I have got three gentlemen to tell us what we ought to know, and what you probably all do know. Some of us, if we read all the time, could not know all he has done, as he has done so much. I shall call upon those three gentlemen in rotation. They said to me, "You have got to end it up," so I am afraid you will be hearing me later on.

I shall therefore call upon the speakers to address you in this order: Sir Robert Armstrong-Jones, Prof. George Robertson, Sir Hubert Bond.

Sir ROBERT ARMSTRONG-JONES: Mr. President, Ladies and Gentlemen,—I rise, I am sorry to say, with a grievance. But a grievance usually has its antithesis. My grievance is that I scanned the menu very closely—it is before me now—and there is no reference to Bovril, which I consider a serious omission, as its delectable, stimulating, uplifting and health-giving qualities are known the world over. Nevertheless, though this omission is evident, yet its insinuating and nourishing excellencies will have found their way into many of the dishes which have been placed before us this evening. For my information and for your memory I may say that some of the most eloquent and charming sentences that have fallen from our distinguished guest have been physiological truths delivered and inspired by this great gift of man to men. I would remind you that there is an annual pilgrimage, which is usually called a shareholders' meeting of Bovril, and at this annual anniversary there are great expectations, which are fully realized, and the meeting is made happy when Sir James Crichton-Browne has delivered his address.

I now come to my antithesis. We have assembled together, as the President has said, this evening to congratulate a member of our profession, and a worker in our own special department of medicine, upon his conquest of time. (Applause.) He has enjoyed a long, most useful and very successful life. To say that he held the office of Lord Chancellor's Visitor for nearly fifty years is merely to imply that he has always worked very hard, for we know this is an appointment which can make no claim to Sabbatical exemption nor to a Long Vacation—a privilege accorded to others who daily toil in the precincts of the Law Courts. I speak from experience as to the work of this office, and I can say that no Egyptian task-master ever devised a slavery comparable to that imposed upon the Lord Chancellor's Visitors. But since his retirement, I am glad to say, I have never seen Sir James look better.

To those of us who have enjoyed his intimate acquaintance Sir James has proved to be a most brilliant, resourceful and dignified personality. He has the charm and culture of the author of *Religio Medici*, together with the eloquence of Demosthenes. And, judging from the letter I read recently in *The Times* relating to the "Christian Evidence Society," he has the pen of a St. Chrysostom. He has an established and acknowledged reputation as an illustrious contributor to English literature, and he has a real love for the prose and poetry of his native land. Carlyle and Burns have been his lofty inspiration, and he has been a great champion of Jane Baillie Welsh Carlyle in many stormy disputations. When in 1903 J. A. Froude wrote *My Relations with Carlyle*, Sir James Crichton-Browne returned a trenchant and devastating reply. And that reply is a most charming piece of English literature.

May I refer to his "Victorian Jottings," which exhibit such a delicate sense of wit and humour? And, Mr. President, I appeal to you, wit and humour are the greatest distractions, and they are the best solvents of social, political, and even professional differences. In this volume, which I am sure everyone in this room has read, there is not a wasted word, nor one out of place. I very humbly beg to suggest that those who have not read this volume should at once get it from the libraries. I venture to think that one of the best essays ever written is that contributed by Sir James to *The Book of Health*, a very

voluminous compendium ; it would be difficult to find a better hundred pages on education and the nervous system, every sentence of which is a classic, and fully applicable to-day.

The President has already referred to the wakeful hours he spent in reading the great contributions of Sir James Crichton-Browne in purely medical directions ; I want rather to emphasize the part Sir James has taken in urging the preventive aspect of mental disease. For many years his far-seeing genius has dwelt upon prevention. How many of us in Harley Street and elsewhere, have, when called upon to give advice upon mental cases, been ready to exclaim, "Why didn't you see me twenty years ago?" Sir James has realized that environment and education are great factors in the causation of mental disease, and he has been the ablest and strongest advocate of prevention. His great life-work has been devoted to the mental aspect of preventive medicine. He has studied childhood in its many phases, its receptiveness, its impressionability, its plasticity and suggestibility, and its various reactions to stimuli. Sir T. Dyke Acland—who recently passed away—and Sir James were the earliest to call attention to the short and inadequate hours of sleep which were allowed to boys in public schools. The result of this was that an extension of one hour a night was given the boys at Eton, Harrow and all the other big public schools.

Sir James, also, has given support and encouragement to the sanitary workers of this country, more, perhaps, than any other man, in season and out of season, urging the value of health in the home, the workshop, in the town and in the district. He has urged the value of education properly applied, of good industrial conditions, of good housing conditions, of the abolition of slums.

He left a great impression on the West Riding Asylum, now Mental Hospital, and his successors have been inspired by his work. We know the names of Major, Bevan Lewis and Shaw Bolton as practically household words ; we know also Sir James's own illuminating contributions to the theory of evolution and to the study of the emotions.

To-night Sir James is receiving the homage and congratulations of many of the younger men who continue to pursue the path he trod in the relief of human suffering.

Kindled by your example, Sir James, and by your enthusiasm, we are to-night experiencing a sense of "agelessness." Your sense of life, your mental energy, your sincerity and your ability are all helping to urge us to greater and higher endeavours. You were President of our Association, may I say, before even I was qualified ; you have been President of the Neurological Society, of the Medical Society of London, and, if you had been willing to accept the honour, you would have been President of the Royal Society of Medicine.

May I say it is a great gift to have been able to preserve your intellectual keenness and gaiety of spirits as you have so well and marvellously done? We trust, Sir James, that the flood-light thrown to-night upon your long career and long record may even add to the dignity and the clearness of your long past, and that it may afford you and Lady Crichton-Browne great pleasure. It has been a great privilege to us all to have you with us to-night and to realize that you have occupied a place by yourself in our time, and that you are still pre-eminent in our generation. May your forceful personality, your enthusiasm and your sincerity long be spared to enrich the lives of others in the future, as you have done in the past.

Prof. GEORGE M. ROBERTSON : Mr. President, Ladies and Gentlemen,—I have been asked to speak on this important occasion because I happen to be one of the representatives of the native land and of the *alma mater* of our distinguished guest.

I went to Edinburgh twenty years after Sir James had left it ; but, even so, I soon came to know of his distinguished gifts as a medical student. I joined, as he did before me, the debating society known as "The Royal Medical Society." When the Royal Society of Medicine in this city was looking out for a name, the first which was suggested was "The Royal Medical Society"; but it soon found, to its disgust, that the medical students of Edinburgh had annexed this name about 150 years previously. Sir James was evidently quite at home in this debating club, and I was told by a contemporary of his that on one occasion, when he was delivering a very important speech, he lost the thread of his argument. That is a painful accident which may happen to the best of orators. Did he falter ?

Did the sweat break out upon his brow? Did he collapse? No; he merely took his audience into his confidence and told them what had happened, adding that all would be well if they would have patience. And in a few moments, without having paused in his delivery, he had picked up the thread, and was proceeding with his argument as if nothing had happened.

How did he come to possess such gifts? Heredity had much to do with it. I was for a time Assistant Physician at the Crichton Royal Institution, and in my spare moments I read the old case-books. You may say that that must have been very dreary reading; but not so; they were written by W. A. F. Browne, the father of Sir James, while he was Physician-Superintendent of that institution, and I never came across more graphic accounts, or reports which showed a finer literary style; they were fascinating. Dr. Browne also wrote a very well-known book entitled *What Asylums Were, Are, and Ought to be*. That was written ninety-four years ago, and it should be read by every medical officer and assistant medical officer of mental hospitals now, and by members of mental hospital committees as well. I was anxious to have a copy; I found one day, to my delight, that it was advertised at a sale of books, and I purchased two yards of books at a shilling a foot. In this six feet of rubbish was this literary gem. I came back a short time afterwards to take my treasure home, and imagine my disgust to find it had been pinched by some blackguard, who had left me 5 ft. 11 in. of rubbish. And it was a long time before I got another copy.

Though he came to possess a literary disposition by heredity, Sir James did not acquire in that way the magnificent vocabulary he possesses; that he acquired, I understand, by learning the plays of Shakespeare by heart. We know people who have literary gifts and write beautiful prose, but yet who, when they get up to speak, make asses of themselves. But Sir James, as we know, had perfect control over himself even when a young man. I was told forty years ago by a lady—who is no longer living, so I have no living witness—that Sir James's father used to ask him and his brother to propose or reply to toasts at dinner; an excellent training, if the story is true. With this heredity and with this literary turn of mind, with this literary education, and with the possession of a robust and penetrating mind, interested in every form of human activity, and, in spite of anything that Carlyle may have said, with a glowing fervour of genius, Sir James became, and has been for nearly fifty years, one of the most prominent medical men in England, if not the most prominent. I believe, with Sir Robert Armstrong-Jones, that he has done more to educate the public on matters of hygiene, on sanitation and on public health questions generally than any other medical man.

In support of this, a friend of mine, sitting at dinner beside the editor of one of our great newspapers, was told by the latter that their reporters had instructions to report every word that fell from Sir James's lips in public, and that his speeches made better newspaper copy than those of any other medical man.

I have been asked by the Principal of Edinburgh University, Sir Thomas Holland, to convey the warm congratulations and wishes of the *Senatus Academicus* to Sir James, whom they regard as one of the most distinguished graduates that Edinburgh has produced. (Applause.) This resolution was passed at the meeting of the *Senatus* last week. I have received, this evening, a telegram from the Dean of the Faculty of Medicine, saying that at their meeting yesterday the Faculty expressed their great appreciation of the medical work which Sir James has done. And it will interest Sir James to know that the senior President of the Royal Medical Society has asked me to convey the respectful regards of the youthful members of that debating club. This man, twenty-five years of age, occupies the chair which was filled by Sir James sixty-five years ago.

And, in conclusion, in the name of the Scottish Division of the Royal Medico-Psychological Association, I ask Sir James to accept the expression of our affection and regard. (Applause.)

Sir HUBERT BOND, *K.B.E.*: Mr. President, Ladies and Gentlemen, and in particular, Sir James and Lady Crichton-Browne,—Time was when at every quarterly meeting of this Association we wound up the day by dining together. A very good custom it was. If ever we can revive it, let us try to add to the old custom by having always a guest of honour. For one reason and another the

custom, alas! has fallen into desuetude. I would not mention it to-night except to emphasize to you, Sir James, the exceptional nature of this evening's gathering, and to give point to the fact that the express purpose of our thus getting together is to do you honour—not being ashamed, however, to admit that, behind that desire, is also a wish to hear you talk to us and, as ever has been our good fortune, to profit by what you have to say to us. In another matter this gathering—so it looks to me—is exceptional, namely in the number of ladies who have been good enough, on this occasion, to grace it. Their presence, which is very welcome, we doubtless owe to the fact that Lady Crichton-Browne, to our particular satisfaction, has been induced to accompany her illustrious husband. We are very glad to have her here.

It is sixty-eight years since, in 1863, you, Sir James, became a member of this Association; and there is no name in the list of ordinary members anterior to that year; and, by the way, and as perhaps you are aware, there are now only three names on the Medical Register with dates of registration prior to yours. Thirteen years later, in 1876, on your appointment as Lord Chancellor's Visitor in Lunacy, you were elected an Honorary Member; two years later, in 1878, you became the Association's President; and in 1920 you gave, as many of us vividly recollect, the first Maudsley Lecture. This Lectureship, the position of President, and the Honorary Membership are the three highest honours which the Association has in its power to confer. In all these positions you are our honoured *doyen*, not only by right of seniority, but also by virtue of leadership and attainments, and, permit me to add, by virtue, too, of our affectionate regard.

It is by reason of that affectionate regard that it is now our desire not to let the year in which you have celebrated the ninetieth anniversary of your birthday pass by without offering you our warm congratulations, together with our most earnest wishes that you may be spared to us for many a year yet.

I wonder if there are any of us who have arrived at or are approaching sixty years of age, who are altogether heedless of the limit which the Psalmist puts to the natural term of our life? Even he, however, though not without an unpleasant note of warning in his song, admits of exceptions; and to those who are statistically minded, it may be of interest to know that, at the 1921 census, there were 1,451 men and 3,394 women aged 90 years or over, which, expressed actuarially, enables it to be said that not quite 2% of all males born, and slightly more than 3% of females attain that age. Of centenarians, there were 30 men and 80 women. And may you, Sir James, be called upon to record yourself among them at the next census. Have we not, indeed, a visitor at present in our country who, claiming to be 157 years old, asks us to believe that his greatest thrill since speaking to Napoleon has been his recent flight in an air-plane? His reminiscences should be, indeed, many and interesting; but, to us and our work, not so fascinating as that store of yours, Sir James, from which, just three months ago to-night, you broadcast from the headquarters of the B.B.C. at Savoy Hill, and the earliest of which, according to what you then said, went back to your fourth year.

Exceptions, so some folks say, prove the rule; others, more enlightened, point out that it is only when explained that exceptions can prove a rule. But it is no matter either way; for, Sir James, we have no wish "to explain you"; we are something more than content and proud "to possess" you and to venerate you as our guide, philosopher and friend. With gratitude we recognize how good a friend you ever have been, and are, to our Association. You are—if a word of slang is permissible—our "star turn," who in moments of unforeseen difficulty has never failed us, and whose intervention has always enhanced the Association's prestige.

Were it really necessary to suggest a reason for the position you occupy in the world of science and medicine, and—may I say—in our hearts, we should not be far wrong, I fancy, were we to make two quotations. The first runs, "We believe that states and communities will become great, and good, and healthy, and civilized, in proportion as they attend to early training." The second, in a different vein, is, "He who looks upon the fair side of human nature, and who sows life thick with friendships, is sure in the end to find that all is not false and hollow, but that many of the seeds which he has planted rise and bear fruit a hundredfold." The former is highly suggestive of child guidance work, and of the quite modern importance given to events of childhood as causes of mental disorder in later life; it might well have been written to-day; but both were written nearly seventy years

ago. The love of friendship which runs through the second of these quotations, and the breadth of vision that characterizes both of them, suggest an intellectual development and power of judgment of considerable maturity. Not so, however, for both were written and uttered by an undergraduate who had not yet attained his majority. Do you recognize them, Sir James? The first is from a paper you gave when Secretary to the Royal Medical Society of Edinburgh, and the second is from your address as President of that ancient society which has done so much for the undergraduate life of Edinburgh students of medicine. The writer of these papers was bound, if spared, to go far; and, if he was not somewhat of an exception, all we can say is that there were indeed intellectual giants in those days.

In conclusion, may I say, Sir James: that the sunset of your life may be prolonged, and that its hues may be golden is the wish of each and all of us; and, if twilight's shadows are inevitable, may they merge into the twilight of a still more golden "morrow."

THE PRESIDENT: I still cannot think of what to say, and again that wonderful person, the Editor, has given me a respite. I ask Sir William Collins to speak, so as to give me a further chance of thinking what I will say.

SIR WILLIAM JOB COLLINS, M.D., D.Sc.: I am not in the bill, I am no part of the programme, and when I have to make an "impromptu" speech, I like to have a fortnight's notice. (Laughter.) I gather that the orators we have listened to with so much pleasure came to this meeting adequately prepared; and I think it is a mean advantage that the learned President has taken of me to call upon me, without my having made any preparation, to address myself to such an important theme as that which engrosses you to-night.

But I am pleased to be present at this Association because they did me the honour of making me an Honorary Member, for the reason, I think, that twenty-three years ago I had the pleasure of piloting through the House of Commons the Bill, now the Act, called "The Asylums Officers' Superannuation Act."

To-night, if I am to make remarks, they must bear on the theme which is before us, and that is our esteem, respect and affection for the nonagenarian, Sir James Crichton-Browne. You will realize he is so various that "he seems to be not one, but all mankind's epitome." Neurologists and psychiatrists have done duty to his work in their direction. May I, as one who has had more to do with him in regard to sanitary and hygienic work, and who has followed him in that way, say that he stands in the line of men like Chadwick, and Farr, and Richardson and Southwood Smith, and has well maintained the great reputation of British sanitary science? As an orator he stands in the line of medical orators like Sir James Paget, Sir William Savory and Sir Clifford Allbutt; and though our medical orators are few and far between, it is good to know that we have such men as Sir James Crichton-Browne to maintain that reputation. I have maintained that in public life the medical man has his *role* to play; diagnosis is a prompt apprehension of minute differences. What is prognosis? It is an accurate prevision of the future based upon a correct observation of the past. And what is treatment, in its ultimate analysis? Resourcefulness in cases of emergency. As one who has had to do with municipal and Parliamentary life, I can say that those are exceedingly useful qualities in the public life of this country. As to statesmen, they are not always gifted with oratory; indeed it has been said that eloquence is not essential to statesmen. It is said that Oliver Cromwell talked nonsense, and "William the Silent" did not talk at all. It is because of his great gift of language and forceful presentation of ideas that Sir James has the great power of adequately representing the views of the medical profession in psychiatry, hygiene and practical science, and as interpreter of science to the public.

It has been a great pleasure to me to have been permitted to be present this evening and to take part in this important function. I have formed the highest esteem of our guest's great qualities, and I trust that he may yet attain that century which, I gather in an interview with the Press, he has adumbrated; and I join with you in honouring this grand old man of medicine, Sir James Crichton-Browne. (Applause.)

THE PRESIDENT: I cannot put my part off any longer. Lady Crichton-Browne Sir James Crichton-Browne, Ladies and Gentlemen,—You have heard the

well-deserved eulogies delivered by a Welshman, with his national gift of imagination, a canny Scot, and a staid and mature Englishman. I cannot hope to emulate them in any way; I am simply a plain medical man. While I am speaking, I see before me two concrete objects, one larger than the other. In the human organism there is the large body, and there is that small part of it which enables that body to go on, namely, the heart. I have heard it said that the wife is "the better half"; it is perfectly true that the wife possesses her husband's heart.

Therefore, Lady Crichton-Browne, may I ask you to accept *this* from this Association, as representing the esteem in which we hold Sir James? I present it first, because you only have the right to open it; you only know all about his heart.

Sir James, I present to you the rest of your body; there is an inscription on it which will tell you what the Association think of you. But I think there is something more than this. This salver is symbolic of Sir James. First, it is sterling metal; secondly, we all know that polish is only of surface value; thirdly, that it can convey and carry to all mankind every sort of refreshment for the soul. I will now hand it to you for after-care.

Now I am "done Browne," and it is for you to carry on. I propose the health of Sir James Crichton-Browne—(Applause)—and Lady Crichton-Browne.

The toast was pledged to the singing of "For he's a jolly good fellow."

Sir JAMES CRICHTON-BROWNE, F.R.S.: Mr. President, Ladies and Gentlemen,—I am, I assure you, deeply touched and highly gratified by the honour you have done me this evening—an honour all the more honouring, because paid to me, in my own country as it were, in which I cannot claim to have had any prophetic mission, but in which it has been my lot and privilege to toil for many years.

When I received your invitation to this dinner, I regarded it simply as a compliment evoked by a recent event in my personal history—as a graceful recognition of the survival—I will not say of the fittest—but of the toughest and most tenacious amongst you, but the kind words spoken by your Chairman and your generous reception of me convince me that it means more than that, and signifies that through my long career I have to this hour retained the friendship and goodwill of those who have been my fellow-labourers in the medico-psychological vineyard.

I cannot, of course, ignore the occasion of your invitation, or avoid the soft impeachment that I have passed a very advanced milestone on life's journey—although I think that without any Mephistophelian assistance I might, like Goethe's Faust, pass myself off for younger than I am—but I am not disposed to minimize the matter, for there comes a time in growing old when the weight of years ceases to be a burden and becomes a trophy. At seventy, the Psalmist's appointed period, a man is venerable, at eighty he becomes a curio, at ninety there is something supernatural about him. For that we have poetic warrant, for we are told that—

"The sunset of life gives us mystical lore,
And coming events cast their shadows before."

Campbell was not strictly correct in that, for at sunset the shadows are behind a man unless he is walking backwards, and in my case this evening the events that crop up in my memory are all retrospective, and cast very long shadows behind. And the very length of these shadows and my power to recall them refutes, I would say, the once vulgar error that a subtle psychical virus pervades our mental hospitals, and that insanity is, like measles, contagious. I have been for upwards of sixty years in daily contact with the insane, and while I am aware that a personal certificate to one's own sanity cannot be valid or convincing, I entertain the hope that I am still of sound mind, memory and understanding, and that, on my demise, a trial of three weeks' duration and certainly costing more than six and eightpence will not be required to establish my testamentary capacity.

But during those sixty years to which I have referred, I have been not only in daily contact with the insane, but in constant touch with the Medico-Psychological Association—and that has perhaps been the saving clause, for I have owed to it through all my working days an invaluable stimulus, a sustaining influence, fraternal fellowship and generous recognition of every honest endeavour. It is really sixty-eight years since I joined its ranks, and I am proud to remember that

I was proposed by Dr. Conolly, whose name I mention with profound veneration, and that my first asylum appointment—we called them asylums in those days—after my election was at Exminster, at a salary of £80 a year, as Assistant to Dr., afterwards Sir John Bucknill, the founder of the *Journal of Mental Science*, whose manifesto vindicating the claims of medical psychology to a place among the exact sciences you still reprint in every number of that periodical, which has now established a European, I might say, a world-wide reputation, and which is just showing a slight tendency to obesity.

It is those sixty-eight years that have made me the Patriarch of the Association, standing as I do almost alone of the members who joined it in the 'sixties of last century; my former esteemed colleague Dr. David Nicolson is the only other representative of that decade, with only two companions from the 'seventies, both of whom were on my staff at Wakefield—Dr. McDowall and Dr. Merson.

Well, Ladies and Gentlemen, while repudiating the notion that those who minister to the mind diseased, when not themselves of unstable nervous constitution, run any risk of contracting the malady, it is to be borne in mind that that ministration involves risks of another kind. There is no branch of our profession in which a heavier and more continuous weight of responsibility has to be borne, in which the human material dealt with is of so explosive a character, in which more anxious duties have to be performed, or in which, to a wide range of medical knowledge and skill, there has to be added so much administrative ability with disciplinary tact and control. They call our department a speciality; it is really a compendium of science and philosophy, with a good deal of common sense thrown in.

It was no doubt the variety, complexities, solicitude attending the work of our department that created the desire for mutual support, sympathy and encouragement in those engaged in it, and so led to the formation of the Medico-Psychological, now the Royal Medico-Psychological Association, one of the earliest of those specialist societies in our professions which are now so numerous, and go on multiplying by fissiparous division. But the Medico-Psychological Association from its very earliest days had higher aims than any personal advantage of its members. It was designed to promote friendly intercourse in order that friendly intercourse might promote the welfare of that grievously afflicted class to whose service its members are dedicated, and in order to advance that medical science and practice in the advancement of which all classes of the community are interested.

Ours is the most secluded, retiring and modest of all the professions—we have no pulpit, rostrum, platform or bench from which to declaim—and it is apt therefore to be pushed aside and denied the credit due to it. Only the other day Mr. Greenwood, the able and energetic Minister of Health, who gave, I believe, valuable assistance towards the passing of the Mental Treatment Act, said at a conference that pure air, water and food and cleanly surroundings were more important than the whole medical profession put together, and that he never thought much of a bottle of medicine. Now, should Mr. Greenwood happen to be attacked by diabetes or pernicious anæmia, or any nervous disorder, which Heaven forbid! he would, I am sure, be very grateful for a bottle of insulin, or liver extract, or luminal, or their tabloid equivalent, and I would remind him that the sanitary precautions which nowadays secure to us the hygienic protection he justly extols, have been reached without exception by the labours and discoveries of medical men, and that at this moment these sanitary precautions are maintained and enforced by a staff of ninety-eight medical men attached to his department at Whitehall, to say nothing of 1,700 or 1,800 medical officers of health throughout the country.

Now the same injustice which Mr. Greenwood does to the medical profession at large is very often done to our department in particular. The public who see our mental hospitals so well organized and equipped, and doing such beneficent work, are apt to think how much indebted we are to Boards and Committees, commissioners and architects, and benevolent gentlemen who orate at public meetings, but I venture to assert that since the days of Pinel there has been no step in the emancipation of the insane, no amelioration in their condition, no improvement in their treatment, nursing and accommodation that has not originated with, and been carried out by medical men, and in this country, for the last ninety years, by members of the Medico-Psychological Association. (Applause.)

This is not the time or place to enlarge on the mass of admirable and fruitful scientific work that has been done, and is being done by members of this

Association, but I may repeat what Sir Henry Head once said to me—and no better authority could be quoted: "I never take down an old volume of the *Journal of Mental Science*" (and there are now eighty-seven such volumes, really the transactions of this Association)—"I never take down an old volume," he said, "without realizing that these volumes are mines of wealth, and without finding in them instruction and pregnant suggestions."

Sir Robert Armstrong-Jones has referred in flattering terms to an early experiment of mine in introducing laboratory research work at the West Riding Asylum. I can only say that the time was ripe for it, that I was fortunate in having an enlightened committee of magistrates, who tolerated what they perhaps regarded as my eccentricities, fortunate in having round me a band of capable and eager assistants—ten of whom became medical superintendents during my directorate—and fortunate in attracting outside workers like Ferrier, Hughlings Jackson, Lauder Brunton, Clifford Allbutt and Milne Fothergill to make some use of the laboratory.

In these days we were chiefly concerned with neurological inquiries. I am an unblushing *laudator temporis acti*, and would not have you suppose that we were ignorant of psycho-analysis of the wholesome kind. Laycock's writings were a subtle system of psycho-analysis, Braid and Heidenhain had fully informed us about hypnotism, and Charcot had demonstrated the power of suggestion. Nor did we neglect psycho-therapy—we practised it as diligently, although not, I admit, as discriminatingly and individually as it is now practised, thanks to our President and others. But at that time Gratiolet had just identified the cerebral convulsions, Broca had localized aphasia; Brown-Séquard had produced artificial epilepsy, Gowers had demonstrated the syphilitic origin of locomotor ataxia, Duchenne had traced muscular atrophy to the motor tract, Darwin was dominant; George Lewes, Herbert Spencer and, above all, Maudsley had just entered the field; Lockart Clarke had begun his microscopical examinations, and it was the structure of the brain and nervous system, their histology, their responses to electrical stimulation, their degenerative changes, their abridgment of function by destruction of parts, that mainly occupied our attention. Of course all these methods of research are still being pursued with more delicate instruments, apparatus, reagents, than were at our command, and not one of them is exhausted, and it seems to me that even the macroscopic study of the brain and its convulsions from the embryological, developmental, racial points of view and from that of comparative anatomy may still yield significant results.

Turning from remote antiquity to the present hour one follows with vivid interest the ever-growing knowledge of the brain and nervous system in health and disease that is being accumulated through bacteriology, protozoology and biochemistry, through the knowledge of enzymes and hormones and vitamins, and through very stringent cross-examination; and dipping into the future one hopes for significant revelations yet to come. In this mysterious universe the brain is the kernel of the mystery, the most intricate, complex, enigmatical structure in the whole realm of nature. Its starry constellations in their millions are more inscrutable than those that the astronomer surveys and measures, and consciousness is more incomprehensible than time and space. Sir James Jeans tells us that the Universe is running down, and must come to an end, but he gives us some millions of years before the catastrophe, so it is still worth while to persevere with our investigations, and without bothering ourselves about relativity and the quantum theory, to strive to rid our race as far as may be of the pests that afflict it, and to prevent its deterioration and the dying out of its finer elements. We have, I note, many new kinds of treatment for mental troubles constantly offered to us. Most of these are plausible, some no doubt have genuine merit, but it is a satisfaction to reflect that all of them will ultimately have to appear in the Court of Appeal before that inexorable judge, Lord Chief Justice *Statistics*!

The mention of the Lord Chief Justice recalls to me that last year you had an eminent judge to deliver your Maudsley Lecture, and that he took as his subject "Truth," and created some consternation by deploring the scarcity of it in the Law Courts, where perjury he affirmed was rampant. Well, truth is also a scarce commodity in our mental hospitals, for when you come to think of it, all insanity is a departure from truth and reality. It is, to use a recently invented term, a "non-volitional inaccuracy," ranging from the slight error of refraction of a transitory delusion to the profound mendacity of mania or general paralysis. It is untruth arising, not from ignorance, stupidity, romance, apprehension or any

deliberate intention to deceive, but from some mechanistic failure in the higher brain-centres. If, as Horace has it,

“Ira furor brevis est,”

we might say,

“Furor mendacium longum est.”

It is the happy mission of the medical psychologist to lead back the wanderers from the murky regions of self-deception into the clear light of day.

Now, Ladies and Gentlemen, before sitting down, I am going to venture to say, not without fear and trembling, that in reviewing the progress of psychological medicine in this country of late years—perhaps I stand absolutely alone in the matter and shall be pronounced an obscurantist—but I could not help regarding with some regret the removal of Bethlem Royal Hospital from London.

No one can appreciate more highly than I do the munificent generosity that made that removal possible, the fact that it is an advantage to a mental hospital to have rural surroundings, the boon that it must be to the inhabitants of South London to have the grounds of the old hospital made available for recreational purposes, but on the other hand Bethlem Hospital had an exceptional position, with its historical associations, its traditions, bad and good, which made it in some sense a national institution. Modernized as it had been, it afforded unique facilities for the treatment of acute cases of mental disorder occurring in the Metropolis, for visits by relatives, for amusements and diversions, and for obtaining special surgical or medical assistance when that was needed; it was an easily accessible teaching school, and, above all, a rallying point for visitors to this country interested in matters medico-psychological.

I have no doubt that the new hospital has reproduced all the best features of the old one with every possible modern improvement, and I mention the change that has taken place, not to be lachrymose over an accomplished fact, but to point out that it suggests the provision in London of an institution fulfilling some of the functions which Bethlem Hospital subserved. It seems to me that the time has arrived when the Royal Medico-Psychological Association should have a home of its own in London, when we should have a British Medico-Psychological Institute or Collegium, in which meetings might be held, post-graduate teaching carried out, research work pursued in well-equipped laboratories, commodious library accommodation provided, and so on.

No doubt research work—admirable research work—is now going on in almost every mental hospital in the Kingdom, no doubt as regards clinical observation and early treatment we are daily being brought into closer relations with general hospitals, but medical psychology must always have a distinctive position of its own, and considering the status it has attained and the gravity of the problems with which it has to deal, it is surely deserving of a central habitation as well as a name—a focus on which its scattered energies may concentrate. It has certainly thriven on its peripatetic habits hitherto, but it will, I believe, flourish still more when it adds to these and to its Royal Charter a fitting and dignified Metropolitan abode. The public is not yet fully alive to the scope of medical psychology in these record-breaking days when speed in thought, word and deed is the sole criterion. They do not realize the grievous burden of the maintenance of 146,000 certified lunatics—and the number is increasing year by year; the deplorable evil of having probably five or six mental defectives to every thousand of the population—and the depth of that evil has not yet been sounded; the tragedy of having 5,000 suicides per annum; and the ominous fact that there is diffused throughout the community an enormous amount of nebulous madness or unrecognized mental disorder. The Registrar-General has just told us that in the recent census enumeration a whole batch of people, all presumably intelligent householders, refused to fill up the forms, who could only be described as mentally deranged.

When all this is popularly understood, when it is recognized that medical psychology is not merely concerned with the treatment of the insane, but that it has an immediate bearing on education, criminology, eugenics and many of our social difficulties, then, I think, some philanthropic and far-seeing millionaire—and in spite of Mr. Snowden there are still one or two millionaires left—will step forward and provide the funds necessary to establish and endow such a Medico-Psychological Institute as I have indicated. The Rockefeller Trustees have just given £142,000 to the School of Economics to enable it to extend its operations. Now

economics seem to me to be in what we would describe as "a confusional state," and more immediate beneficial practical results might, I think, accrue from liberally supported medico-psychological investigations.

I should sing my *Nunc Dimittis* more complacently if I saw a worthy Medico-Psychological Institute in London, but however that may be I must sing my *Nunc Dimittis* as regards this long speech, once more thanking you with the utmost cordiality for your great kindness, for the heirloom you have presented to me, and for the delightful souvenir of which you have made Lady Crichton-Browne the recipient. I would express the hope that all the bright young things I see around this table may reach their ninetieth birthday, and may on the occasion be hospitably entertained by the Royal Medico-Psychological Association. (Loud applause.)

Colonel ERNEST WHITE, C.B.E. : Mr. President, Ladies and Gentlemen,—I wish to propose a toast which I am sure will be well received by you all, and it is that of our worthy President, Dr. Good. (Applause.) I first met him, I think, some time in the '90's when I went to stay at Littlemore for two days. He was then Assistant Medical Officer there; I little thought at that time that he would one day occupy the chair of this Association; and we all congratulate him on having achieved that honour. He has done splendid work in his special line of our branch of medicine, and I hope he will long continue in that work.

I suppose that the reason I am called upon to propose this toast is that I am the senior past-President of the Association, after Sir James Crichton-Browne, present to-night. There were 25 Presidents between Sir James and myself, and, unfortunately, I think only two of them are now alive, namely Dr. David Nicholson and Dr. McDowall. Afterwards there is a long list following me, and we hope all will achieve long life.

I retired early in life, that is to say in my fifty-fourth year, and I have enjoyed the years since, having been employed usefully. I have never been idle, and that is one of the most important considerations with regard to anticipating a good old age. I am in my eighty-first year, and Sir James has given me such a fine example that I shall endeavour to follow it, to the best of my ability.

With regard to our President, we are more than satisfied with the way in which he has discharged the various duties of his office and brought further glory to our Association, and I am sure he will continue to do so in the future.

You have had such long and perfect speeches to-night that I am sure you do not want to hear much from me. Therefore I conclude by saying we wish our President long life and health, and that he will achieve a good old age, such as Sir James has achieved, and we wish him every success in the post he holds. (Applause.)

The PRESIDENT : You have heard me talk quite enough to-night; I can only thank you for the way in which you have pledged my health.

ST. LUKE'S FOUNDATION: WOODSIDE NERVE HOSPITAL.

OPENING BY H.R.H. PRINCESS HELENA VICTORIA.

SINCE the closing, in 1916, of the old hospital building in Old Street, the Ancient Foundation of St. Luke's has carried on the following activities: The provision of an institute for private mental nurses, the maintenance of the old convalescent home at Gerrard's Cross, and, since 1923, the staffing of two wards for functional and early mental cases at the Middlesex Hospital. Meanwhile the Governors, after considering how best they could apply the resources of their charity to modern needs, decided to build, on an accessible site in the London district, a hospital entirely devoted to these cases, under disinterested yet unofficial management. The result is the Woodside Nerve Hospital, which was opened on November 8, 1930, by H.R.H. Princess Helena Victoria.

The ceremony was performed in the Board Room. Lord BLANESBURGH, Treasurer of the Hospital, referred to the illustrious history of St. Luke's Charity, which was founded in 1750, and said that there had been two great successive

hospitals. The first was in Moorfields, and the second was the well-known hospital in Old Street, which continued its beneficent work until 1916, when it was taken over by the Government for the use of the Post Office. The main purpose of the charity in its early days had been to provide for the poor. Now its work was rather to provide for educated people of limited means who were proud enough not to desire to accept assistance if they were able to provide to any extent for their own maintenance. By means of the available resources of the charity and with the assistance of larger payments by patients who were able to afford them, they might be able to receive deserving cases with no resources.

Sir JAMES PURVES-STEWART said that for some years past there had been a close and useful association between the Hospital of St. Luke and the great hospital of Middlesex, in connection with the diagnosis and treatment of early cases of functional nervous disorder.

Princess HELENA VICTORIA formally declared the Hospital open and wished it every possible success.

After Lord MACMILLAN had proposed, and Lord SANDHURST had seconded a vote of thanks to Her Royal Highness, the latter made a tour of inspection of the Hospital.

Description of the Hospital.

(From the Official Programme.)

The Hospital stands in grounds of some 6½ acres, occupying an elevated situation rising to the north at Muswell Hill, N., and overlooks Highgate Woods. All the buildings face the south. It is easily accessible by train or omnibus from any part of the Metropolis, the time taken in a journey from the centre of London being approximately half an hour.

The main entrance is in Woodside Avenue.

The grounds comprise open lawns and flower gardens, a small bowling green, and a putting green. Sufficient ground is reserved for the occupation of patients who may be interested in gardening.

THE BUILDINGS.

The centre of the site in the front is occupied by the administration block, which is flanked by two houses, that on the east constituting the nurses' home, that on the west providing quarters for the Matron, a physician, and the domestic staff.

Behind these three buildings are disposed in a semicircle the two ward blocks, which together afford accommodation for fifty patients, *i.e.*, thirty women and twenty men.

Behind the wards, and midway between them, stands the treatment block, while to the west of this are arranged the kitchens, stores, and boiler house.

All the buildings are connected, the one with another, by covered ways. They are from the designs of Mr. T. A. Pole, F.R.I.B.A.

THE WARDS.

Each block consists of two floors, and is, except as to the number of beds provided therein, practically the counterpart of the other; and in the case of each block the two floors are identical.

Each floor comprises bedrooms, dining room, sitting room, bathrooms and examination room.

The majority of the bedrooms are single rooms.

Each bedroom is provided with wide folding doors opening directly on to a broad verandah, on to which the bed may conveniently be wheeled.

Private sitting-room accommodation is provided.

Hot and cold water is laid on to each bedroom, and the bathroom accommodation is ample, one of the baths being adapted for continuous bath treatment.

Large recreation rooms for men, with a full-size billiard table, are provided in another part of the buildings.

The furniture has been designed and selected with a view to providing, with as

great an economy of space as possible, all that may reasonably be considered necessary or desirable for the comfort and convenience of the patients, the main object being to produce the atmosphere of a home rather than of a hospital.

THE TREATMENT BLOCK

consists of two floors, and contains, among others, rooms for hydrotherapy, colon lavage, massage, light treatment, electrical treatment and research, the appliances in each case being of the most approved principle and of the latest type.

In this block also will be found, in addition to the three laboratories, the dispensary, dental surgery, X-ray room, photographic dark-room, and a room intended for occupational therapy.

THE KITCHEN BLOCK,

having a separate entrance at the back of the site in Grand Avenue, comprises on the ground floor the kitchen, pantries, staff room, store rooms, and linen rooms. Underneath it are situated the boilers, which operate the low-pressure hot-water heating system and the domestic hot-water supply to all the buildings of the hospital. These are designed for the consumption of oil fuel, whereby smoke and dirt are avoided.

THE OUT-PATIENTS' DEPARTMENT,

which it is hoped may usefully be developed in the future, is situated in the administration block, and consists of a waiting room and an examination room, with which are associated two physical examination rooms.

STAFF.

The medical staff consists of Dr. R. W. Gilmour, Physician-in-Charge, Dr. Macpherson Lawrie, Deputy Physician-in-Charge, an honorary visiting staff of six, a dental surgeon and a radiologist. The Matron is Miss L. A. Hunt, S.R.N.

CORRESPONDENCE.

To the Editors of the 'Journal of Mental Science.'

SIR,—May I be permitted a reply to Major Dhunjibhoy's letter in the *Journal* of January, 1931, which has reference to an article of mine which he has evidently misunderstood or forgotten? This fact renders most of his letter irrelevant, and it is full of misrepresentations of my paper (published in your issue of July, 1930), to which I must refer him for reply to many of the points he now raises. His letter emphasizes the difficulty I had already foreshadowed of securing an unbiased inquiry, a difficulty which is clearly not so "fantastical" as he imagines. Though he "entirely disagrees" with my suggestion that inbreeding is a cause of dementia præcox, he cannot, and does not, deny that the custom of the marriage of cousins has prevailed among the Parsees for some 1,200 years. Your correspondent does not apparently realize that there is a certain amount of inbreeding in all countries. As already stated, I do not know of any other clear-cut group such as the Parsees constitute, and dementia præcox is endemic among them. Major Dhunjibhoy also does not appear to understand that my figures deal with consecutive cases, from all classes of Parsees, educated and uneducated, though I thought I had made this sufficiently clear. While himself stating no personal experience, he writes, "It is not understood why Col. Shaw has assumed that the alleged increase of dementia præcox is particularly high among the Parsees." I have not "assumed" any "alleged increase," but have made a definite statement of my experience of the remarkable prevalence of that disease among the insane of the Parsee community, with the details of which your correspondent's figures, relating to other nationalities, bear no comparison.

Taking Major Dhunjibhoy's figures of population: 82,696 out of the 101,778 Parsees in India live in Bombay Presidency. The Central Mental Hospital at Poona, from its completion for fourteen years in my care, has been the chief mental hospital for the treatment of Parsees in Bombay, and has special allotted or endowed wards to which patients of other nationalities are not admitted. I have therefore had special opportunities for comparison with other groups of inmates, *i.e.*, Europeans, Anglo-Indians (domiciled), Hindus of all castes, Mohammedans, etc., in addition to experience at two other large mental hospitals, at Lahore and Rangoon, which had been in my charge earlier. I have discussed this subject for years with educated Parsees, referred to it in my lectures and in my *Clinical Handbook of Mental Diseases*, 1925, and can assure Major Dhunjibhoy that it is no new and undigested idea. I have nowhere contended, as he infers, that inbreeding is a necessary predisponent of schizophrenia, but have suggested that it may be a predisposing cause of the various degenerations noted by many observers. I have nowhere stated that dementia præcox is "rare" among other Indian groups, as your correspondent infers. The term "comparatively rare" has a quite different connotation, and the views I have expressed as to the comparative incidence of dementia præcox in other Indian communities are apparently in agreement with those of Major Dhunjibhoy, who, however, most unwarrantably characterizes the agreement as "inadvertent" on my part!

It is very probable, for obvious reasons, that there has been a good deal of inbreeding in the Anglo-Indian domiciled community, in which the incidence of schizophrenia is rather high.

I have already stated quite clearly that, in common with most alienists, I consider that abnormal mental stress is often the precipitating cause of dementia præcox in predisposed individuals. Surely Major Dhunjibhoy is not serious in arguing that the preparation of Parsee children for the Kasti ceremony can be considered a form of intensive education, in the sense in which I have used the term! It is similar to the study required of Christians for Confirmation. I fear somehow that my conception of the term "education" is not that of your correspondent.

Though Major Dhunjibhoy holds that the long inbreeding of the Parsees has resulted in nothing but good, and that its object is the preservation of racial purity, he writes that he is in no sense a champion of it, and "fully realizes its undesirability." I wonder why?

Your correspondent writes of "inbreeding"—an admitted custom: "What I am urging is that its relationship to dementia præcox has never been definitely established." This bald statement is certainly true at present, and it constitutes his whole case! I have, however, still a hope that my paper may have shown a new field for inquiry, in which the relationship can be thoroughly tested. I have personally no doubt of the result of an impartial investigation, should one ever be made—a possibility which experience compels me to doubt, for the reason I have already given.

I have previously remarked on the curious theory that schizophrenia among Parsees and Indians generally is directly due to "western education," and have little to add. Major Dhunjibhoy seems to consider the term synonymous with "stress." He, however, loses sight of the fact that statistics in Europe and America have become increasingly accurate with the years, whereas Indian statistics of disease in general, and of mental disease in particular, are still untrustworthy, and will continue so to be as long as the Alienist Department remains as it is, and has no responsible specialist supervision and control.

Parkstone,
Dorset.

W. S. JAGOE SHAW, M.D.,
Lt.-Col. I.M.S. (retired).

July 10, 1931.

STUDY TOURS AND POST-GRADUATE EDUCATIONAL INFORMATION SUB-COMMITTEE.

Notice.

TOUR OF GERMAN MENTAL HOSPITALS.

A Study Tour of German Mental Hospitals and Clinics has been arranged to take place from Monday, October 5, to Wednesday October 14th.

The party will leave London (Liverpool Street Station) on the Monday evening and travel by the Hook of Holland to Cleve, whence the journey will be continued by motor-coach to hospitals and clinics at Bedburg-Hau, Gütersloh, Bielefeld, Giessen, Frankfurt, Wiesloh, Bruchsal, Karlsruhe, Illenau and Renchen.

The week-end will be spent at Baden-Baden, allowing an opportunity for a visit to the Black Forest, and the return journey will be made from Strasbourg by train, London being reached on Wednesday, October 14.

The hotel and travelling charges from London are £23 10s., payable by ordinary cheque about ten days before the commencement of the tour to the Reisebüro der Hamburg-Amerika Linie, Sothenstrasse 1b Am Kurgarten, Baden-Baden.

These charges are based on the party numbering twenty persons, and may be lowered or raised should it exceed or not reach that number. The above sum includes second-class rail, first-class boat, London to Cleve; motor-coach from Cleve to Strasbourg; second-class rail with sleeper and first-class boat, Strasbourg to London; hotel accommodation, with dinner, breakfast, and, in some hotels, lunch; hotel gratuities are included, and a guide awaits the party at Cleve to assist with the Customs.

Members intending to make this tour are requested to notify, as early as possible, the Hon. Secretary, Dr. A. E. Evans, 11, Weymouth Avenue, Mill Hill, N.W. 7, intimating also the names of relatives or friends by whom they may be accompanied.

OBITUARY.

DR. OWEN FELIX MCCARTHY.

The unexpected death of Dr. Owen Felix McCarthy, Resident Medical Superintendent, Cork Mental Hospital, which took place on November 6, 1930, was a great shock to his wide circle of friends. He was the younger son of Mr. John McCarthy, of Mount Alto, Glaninine, co. Cork. Dr. McCarthy was educated in Cork City, and pursued his medical studies at the Queen's College, Cork, and the Royal College of Surgeons, Edinburgh. Qualified in 1900, he was appointed Assistant Medical Officer at Cork in 1901.

Dr. McCarthy served with the Forces from 1915 to 1917 during the Great War.

He was elected Medical Superintendent of Cork Mental Hospital in 1922, and in the same year was appointed Lecturer in Mental Diseases at Cork University College. He was most hospitable and genial in disposition, and was keenly interested in the welfare of his patients and staff. He held the view strongly that a contented staff ensured better care of the patients, and to that end he devoted himself. During his period of office trained female nurses were for the first time appointed to nurse in the male hospital.

Dr. McCarthy was keenly interested in golf, and was at one time captain of the Muskerry Golf Club. He was a successful grower of roses.

He married in 1915 Miss Phillippa Dorothy Parnell, daughter of Mr. Edmond Parnell of Brockley, London, whom with three children he leaves to mourn his loss.

The funeral on November 9 was largely attended by members of the clerical, legal and medical professions, as well as representatives of the Cork County Council, Cork Corporation and many of the general public.

HUGH DE MAINE ALEXANDER, M.D., C.M. Edin.

By the death, on June 1, 1931, of Dr. Hugh de Maine Alexander, Medical Superintendent, Kingseat Mental Hospital, Aberdeen, Scottish psychiatry has suffered a severe loss. Although he did not participate actively in the affairs of the Association, of which he was a member since 1899, he was a well-known figure at the Scottish Divisional meetings.

The eldest son of an Edinburgh medical practitioner, he graduated at Edinburgh University in 1896, and gained the degree of M.D., with commendation, two years later.

In December, 1896, he was appointed Assistant Medical Officer at Perth District Asylum, Murthly, and in 1898 acted as interim Medical Superintendent, pending the appointment of Dr. Lewis C. Bruce to succeed Dr. G. M. Robertson on the latter's promotion to the Superintendship of Stirling District Asylum, Larbert. At Murthly Dr. Alexander was fortunate to be associated with Bruce, whose valuable researches were to him a source of great inspiration.

He became in 1901 Senior Assistant Physician at the Royal Asylum, Aberdeen, where, as Dr. Reid's deputy, he had ample scope for further developing his administrative ability.

On his appointment to Kingseat in September, 1906, he took charge of an institution erected on the colony system, the first of its kind in operation in Scotland, and which had been ably administered since 1904 by his predecessor, Dr. Angus. By his indefatigable energy he succeeded in keeping well abreast of the times, both in his clinical and administrative work, effecting many improvements and increasing the accommodation to meet every need of his patients.

That his life-work was no light task can be realized when it is known that in providing for his patients, who now number nearly 800—or double that in 1906—he maintained the highest standards of modern administration and treatment. In spite of his busy life, he contributed to medical literature both in the *Journal of Mental Science* and the *Lancet*, and from time to time did reviewing and abstracting for the *Review of Neurology and Psychiatry* and other medical publications. What little time he had to spare was keenly enjoyed in golf and cricket.

A feature of his management was the large percentage of patients to whom he gave *parole*, both within and outside the grounds, while he provided ample outdoor recreation for all in the institution. His boundless tact, combined with a genial and kindly disposition, and the fact that he made his mental hospital his hobby, served to make him very popular among his "own people" and highly esteemed by all who knew him.

WALTER SMITH KAY, M.D., C.M.Edin.

We regret to have to record the death of Dr. Walter Smith Kay, which occurred suddenly on April 22 last. As the head for many years of the South Yorkshire Mental Hospital at Wadsley, he will be remembered by many who were his colleagues or who worked under him.

Born in 1855, he was educated at the Edinburgh High School, where he took numerous prizes and distinctions, and where he was contemporary with Sir Robert Philip and the late Sir David Yule. He passed his final examination for the M.B. at Edinburgh University in 1876, though he was unable to graduate until the following year, as he was under twenty-one at the time of the examination. This year of waiting he spent at the Paris medical schools, attending the clinical lectures, at that time famous, of Charcot at the Salpêtrière. After a short period in general practice he joined the staff of Wadsley Asylum. In 1888, on the retirement of Dr. Mitchell, he was appointed Medical Superintendent. He remained at Wadsley until 1911. After his retirement he lived at Harrogate, but during the war he returned to active medical work. He assisted Dr. Hayes Newington at Ticehurst, and also sat on various medical boards as a neurologist.

Dr. Kay took an unflinching interest in all matters connected with psychiatry. By his will he leaves the munificent sum of £5,000 to the University of Edinburgh for the further endowment of the Chair of Psychiatry and the advancement of the study of mental disorders.

NOTICES BY THE HONORARY LIBRARIAN.

The following books have recently been added to the Library :

- Family Council Law in Europe*, 1930 (presented by the Eugenics Society.)
Mental Invalids. Easterbrook. 1925.
Performance Tests of Intelligence. Drever and Collins. 1928.

The following journals are circulated from the Library :

American Journal of Psychiatry.
The Psychological Review.
Journal of Neurology and Psychopathology.
L'Encéphale.
International Journal of Psycho-Analysis.
Journal of Abnormal Psychology.
Mental Hygiene.
Journal of Nervous and Mental Diseases.
Revue Neurologique.
Archives of Neurology and Psychiatry.
Journal of Comparative Psychology.

Members are requested to return all long-outstanding books to the Library as soon as possible for the purpose of cataloguing.

Members are invited to make gifts to the Library to assist in building up a historical collection of psychiatric works from the seventeenth century onwards. In selecting books for presentation, members are advised to consult the Hon. Librarian to see what books the Library possesses and those it is desirable it should possess.

The Librarian is prepared to obtain for members practically any book on psychiatry and allied subjects. Books can be despatched to members on payment of postage.

All communications concerning Books, Journals or Library matters should be addressed "Librarian, Royal Medico-Psychological Association, 19b, Tavistock Square, London, W.C. 1."

NOTICES BY THE REGISTRAR.

Bronze Medal and Prize for 1932.

Dissertations for the Association's Bronze Medal and Prize must be delivered to the Registrar by April 30, 1932.

Divisional Prizes for 1932.

Papers certified as eligible for this competition must be forwarded to the Registrar not later than April 30, 1932.

Gaskell Medal and Prize.

The examination for the Gaskell Medal and Prize and the examination for the Certificate in Psychological Medicine will be held at the Maudsley Hospital, Denmark Hill, London, in May, 1932.

Applications for entry to each examination to be made to the Registrar, St. Andrew's Hospital, Northampton.

There is no fee for entrance to the Gaskell Prize Examination.

The entrance fee for the examination for the Certificate in Psychological Medicine is three guineas.

The Nursing Badge.

This Badge, founded at the Annual Meeting (Wakefield), July 11, 1928, can now be obtained from the Registrar. The application must be made on a special form and accompanied by 6s., which includes the cost of engraving the name and registration number of the holder.

The badge is issued for general use, but especially for occasions when the nursing medal is inconvenient or inappropriate. It is fitted with a brooch-pin for women and a crescent-shaped button-hole stud for men.

For full particulars of the Association's Medals and Prizes and the Certificate in Psychological Medicine see "Year Book" prefacing the January number of the Journal.

NOTICES BY THE GENERAL SECRETARY.

Deaths.

HUGH DE MAINE ALEXANDER.
JOHN CARSWELL.

PATRICK JOSEPH DWYER.
GEORGE ROBERT LAWLESS.

Appointments.

GRANT, A. R., M.D., Ch.B., to be Medical Superintendent, Lancashire County Mental Hospital, Whittingham.

HOPKINS, E. L., M.C., M.R.C.S., L.R.C.P., D.P.H., D.P.M., to be Medical Superintendent, Derby County Mental Hospital, Mickleover.

LILLY, G. A., M.C., M.A., M.D., M.R.C.S., L.R.C.P., D.P.M., to be Medical Superintendent, London County Mental Hospital, Cane Hill.

RUDOLF, G. DE M., M.R.C.P., D.P.H., D.P.M., to be Medical Superintendent, Brentry Colony, Bristol.

NOTICES OF MEETINGS.

Quarterly Meeting.—November 24, 1931, at the British Medical Association House, London, W.C. 1. Maudsley Lecture by Sir Hubert Bond.

South-Eastern Division.—Autumn Meeting at Springfield House, Bedford, October 2, 1931.

Northern and Midland Division.—Autumn Meeting at the South Yorkshire Mental Hospital, Sheffield, October 28, 1931.

Scottish Division.—Autumn Meeting at the Argyll and Bute District Mental Hospital, Lochgilphead, October 23 and 24, 1931.

LIBRARY OF
CALIFORNIA



Photo Claude Harris.

JOHN ROBERT LORD, *C.B.E.*, M.D., F.R.C.P.E.,
Lt.-Col. R.A.M.C.

Born August 14, 1874.
Died August 10, 1931.

Ordinary Member, 1898.
Co-Editor, *Journal of Mental Science*, 1911-31;
Assistant Editor, 1900-11.
President, 1926-27.

THE JOURNAL OF MENTAL SCIENCE

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JOHN ROBERT LORD, C.B.E., M.D., F.R.C.P.E.

By the passing, on August 9 last, of Dr. J. R. Lord, the *Journal of Mental Science* loses its senior Editor, and the Association one of its most active leaders and devoted workers. No man gave himself more unstintingly to its work, or to the cause of psychiatry in so many of its aspects.

He was born in August, 1874, at Blackburn, and was educated there and at Owen's College, Manchester. Whilst still a youth we find him contributing articles to the *Blackburn Standard*, on such matters as "The Temperance Question," "Our Free Libraries and Museums and their Uses," and "Religious Toleration." His professional education was obtained at Edinburgh University, where he secured class-honours in several subjects, and was bronze medallist in General Pathology. He acted as Junior Demonstrator in Pathology at Surgeons' Hall. Whilst at Edinburgh his literary proclivities found expression in various contributions to *Science Gossip*. His final examination at Edinburgh was taken "with distinction" in 1896.

Lord's introduction to psychiatry took place in 1897, when he became Clinical Assistant to Dr. Edwin Goodall at the Joint Counties' Mental Hospital, Carmarthen. From the first he was regarded as a youth of promise. Remarkable at that early date were the following traits: keenness, initiative, self-confidence, abounding energy, love of work, great powers of application, strong sense of duty, fairness of mind, kindness to all and sundry. Here, evidently, was a youth of parts, active-minded and ambitious. The ordinary routine work he took in his stride, and did well, but that was by no means sufficient. He devoted himself eagerly to the medical investigative work which was in progress. He not only collaborated, but had bright and refreshing ideas. He was awarded the Bronze

Medal of the Medico-Psychological Association for work done at and about this period.

In 1898 Lord went with a strong recommendation to Hanwell, and so commenced his very successful and useful career in the service of the London County Council. Shortly afterwards he was appointed to Bexley, then the newest of the London county mental hospitals. The hospital had only been partially opened; only a few of the wards or pavilions were completed, sufficient for about 300 of the 2,000 beds for which the institution was being erected; and it was dependent on temporary and makeshift arrangements for its supplies of water, gas and electricity, as well as its cooking and its laundry. Such temporary expedients, while naturally tending to militate, for the time being, against high standards of medical work, call for efforts that both test and, in juniors, develop administrative capacity, and afford an experience that, in a variety of ways, is not without its subsequent value.

When Lord joined the staff at Bexley, the Medical Superintendent was Dr. T. E. K. Stansfield, from whom, as his Chief for close upon eight years and as he himself often testified, he derived much administrative wisdom and many an inspiration that stood later on in good stead; and the Deputy Superintendent was Dr. Hubert Bond, whom he succeeded in June, 1903. It is ever a hard thing to unravel and to distinguish which part of a man's character, actions and policy is derived from inborn qualities, and which from surroundings, and especially from the personalities of those with whom early professional training has brought contact. Certain it is that Lord's capacity and success were far from being mainly derivative.

From the first a diligent and thoughtful reader of contemporary psychiatric literature, and ready to assist in annotating, epitomizing and reviewing articles, it was during this period—to be exact, in 1900—that he, along with Dr. James Chambers, became an Assistant Editor of the *Journal of Mental Science*.

It was out of his initial efforts on behalf of the *Journal*, and the reading which they necessarily involved, that he quite early—as the one of us who was with him at Bexley well remembers—was impressed with the value of Kraepelin's method of classifying mental disorders, of which most of us in this country at that time had only an imperfect acquaintance; the grip and understanding which he acquired of the subject, and his ability to diagnose cases by this—as one may term it—longitudinal mode of classification, were of great service to his colleagues.

He it was who was in charge of two of the male sick wards when it was decided that their nursing should be entirely by women nurses. In the wisdom of this policy, the first occasion of its adoption in the London mental hospitals, his chief was a strong believer; but there were difficulties to overcome, some of them, as subsequent experience has shown, being in the nature of "bogeys." The present point is, however, not the system itself, but Lord's enthusiasm for what at the time was something of an innovation; an enthusiasm that later on could always be counted upon in aid of progressive achievements, and which supplied him with much of the pioneer's spirit.

Even during those Bexley days Lord's health was far from robust, and, though by no means an invalid, he was glad at times to seek the seclusion of his senior colleague's house, and to do some of his work on the sofa in the latter's study. Although he did not say so, it was probably because he felt physically disinclined or unable that he joined in none of the outdoor games or in the dances. Certainly he did not lack social inclination; indeed, quite the contrary; and while he did not take actual part in any of these amusements he was seldom absent from them, and delighted, on behalf both of patients and staff, in taking his share in their arrangements. He was fond, too, of music, and always ready to join in with a song or to contribute one to a programme.

Horton Mental Hospital had been opened in 1902, and, following a brief interregnum of some three months in its history, during which, as an emergency measure, Dr. Stansfield was seconded as its Superintendent, Lord was appointed to that position in February, 1907. It was not at that date an easy post to fill, and in the hands of some men might have proved rather their undoing than their success. With Lord, however, fortunately for him, for Horton, and for the many "causes" which he later espoused, it was otherwise. Of kindly and hospitable nature, strongly imbued with a sense of justice towards his staff, individually and collectively, taking a deep interest in his patients, amounting, as he not so long ago confessed, to a great affection for them, and intent on the development of all fruitful measures for their treatment, such difficulties as remained were soon dissipated; and, with a staff bent on seconding his efforts, and a committee whose confidence and support he had firmly secured, Horton quickly became well known for the excellence of its medical administration, and as one of the most progressive mental hospitals in the country.

At Bexley, pioneer work had been in progress in the direction

of introducing better facilities for the study and treatment of recent cases by the provision of admission and convalescent units. In this work Lord had taken his full share and, in entire sympathy with its principles, he saw to it that not less good facilities should exist at Horton; the new admission hospital there, for males, which was opened in 1912, was largely of his own planning. Laboratory work was developed; and conspicuous among Horton's many advances were its arrangements for the occupation of its patients; not, however, in those days on the lines which we nowadays call occupational therapy. It was rather the institution and great extension of trades, and the creation of a veritable hive of industry on the lines which had been developed at Bexley, especially by his colleague Dr. P. T. Hughes. The repute of Horton waxed high, and deservedly so.

Then came the war, and, as one of its myriad incidents, the scheme inaugurated by the Board of Control under which twenty-four mental hospitals became war hospitals; a few of them to serve as special hospitals for neurological and mental cases, but most of them for the reception of sick and wounded of all types. This scheme, both during and after its operation, without doubt has exerted a powerful influence, mostly for good, upon the administration, especially in its medical aspects of British mental hospitals, and in various ways, to explain which would be out of place here, has done much to bring their work into closer touch with general medicine; indeed, the force of its after-effects is not yet spent.

Among the mental hospitals earliest selected for this purpose was Horton, and from May, 1915, to October, 1919, Lord was its Officer Commanding with the rank of Lieutenant-Colonel in the R.A.M.C. Denied from serving overseas, both by his health and by his holding a position from which he could not be spared, there is no doubt that, despite its arduous nature and the heavy strain, mental and bodily, which it threw upon him, and despite the difficulty of exchanging a civil for a military discipline—which, as events proved, was beyond the capacity of some men—to Lord this opportunity of rendering war service came as a real solace and relief. How gladly and easily he took to these duties may possibly in some measure be related to the volunteer work which he did during his Edinburgh days in the University Battery of the Edinburgh City Artillery, and as a Lieutenant in the Edinburgh Battalion of the Boys' Brigade.

Into this great undertaking he threw his whole energies with the utmost enthusiasm, and he had the satisfaction of knowing, as

likewise did his Committee, that the "Horton (County of London) War Hospital" was one of the best and most efficient in the country. Its activities figure in official records, and its "Story" has been told in a book written by himself and published in 1920. Let it suffice here to say that to this large war hospital, the capacity of which varied from 2,040 to 2,532 beds, the total number of military patients, including a certain number of naval ratings, admitted was 44,623.

Throughout the whole of the military occupation of Horton, Lord's stimulating energy, backed by a most zealous staff, was prodigious. Nothing seemed to please him better than a suggestion or request for the concentration of this or that service at his hospital; nor did the trouble or re-adaptations which these "extras" necessarily involved ever in the least daunt him.

For his war-hospital services, Colonel Lord was in 1918 created a C.B.E. (Military Division).

Lord's war-hospital activities—they were necessarily much wider than the hospital's intramural duties—and the many considerations that had to be taken on the closing down of the institution's military occupation and its return to civilian functions, had a noticeable effect on his outlook upon psychiatry. By no means was it a mere reinstatement of the hospital to its civilian use.

It was in truth reconstruction rather than reinstatement, and a retention of every facility which, installed for war-hospital purposes, a broadened outlook saw to be required equally for the multifarious needs of mental cases; that is, if the institution really were to deserve the name "hospital."

It is beyond our available space to set out in full the developments introduced at Horton under Lord's *régime*. A bare mention must suffice of such matters as the great increase in the system of parole given to patients; the extensive development of X-ray work and of treatment by ultra-violet radiation; and the development of occupational therapy in its modern and more specifically remedial form. Malarial treatment of general paralysis was taken up at an early date, and a laboratory and centre were established, in conjunction with the Ministry of Health and the Board of Control, in which valuable research work has been carried out not only on general paralysis, but on the treatment and prevention of malaria itself. Another direction in which Lord was very solicitous was the all-round adequacy of the patients' dietary. It is the belief of most of his colleagues that the almost entire eradication of dysentery has been largely due to improvements in the dietary scales.

Lord was a strong advocate of team work in mental hospitals, especially in dealing with recent mental cases. By specialization on the part of the medical staff, and by the employment of consultants, he sought to bring every branch of medicine to bear on each individual case. The spirit of his hospital has been well described as "polypragmatic." It was his pride that no form of investigation or treatment, physical or psychological, was neglected at Horton.

He was, from the first, impressed with the necessity of enlightening the community on the problems of mental disease. "Mental Hospitals and the Public—a Plea for Closer Co-operation" was not only the title of one of his publications, but was the keynote of much of his work. His hospital was among the first, if not indeed actually the first, to appoint a social worker to link it with the outside world. Another step in the same direction was the establishment of a firm link between Horton and the Royal Free Hospital and its School of Medicine for Women. Since 1928 he was Lecturer in Clinical Psychiatry to the School, and he organized at Horton a course of instruction of unusual thoroughness. He welcomed visitors to his hospital, especially parties of educational or psychological students. The Mental Hygiene movement found in him a warm supporter. From 1923 onwards he was Honorary Secretary of the National Council for Mental Hygiene, and he spoke and wrote extensively on its behalf.

His early association with the Journal has already been mentioned. He became joint Editor in 1911, and from 1914 onwards as senior Editor, he carried on not only the general direction of the Journal, with the voluminous correspondence this entailed, but also a great mass of detailed and routine work. Besides his more important contributions, of which a list is appended, there have been few numbers of the Journal during the last twenty years that have not contained some editorial notes or reviews from his pen. He took particular pains over his reviews, many of which he expanded into essays of considerable intrinsic value.

His interest in the activities of the Royal Medico-Psychological Association, apart from the Journal, also dates from early in his career. He soon made a mark, with his ability, enthusiasm, industry and determination, and for long years, and up to the time of his death, he was a leader in the work of the Association. He had its interests constantly at heart, and did everything in his power to maintain and add to its prestige and dignity. He rendered great service in preparing evidence for the Royal Commission on Lunacy, and it was largely owing to his efforts that the Association

obtained its charter of incorporation, and the designation "Royal." His services were recognized in 1926 by his election to succeed Sir Frederick Mott as President.

At that time—in fact since the end of the war—his health had already begun seriously to fail, and he was burdened by a constant struggle with recurring illness. No one ever put a braver front on ill-health, or more serenely ignored its disabilities. He cheerfully complied with such restrictions in matters of diet as were enjoined upon him; and the fact that he seemed to require less sleep was accepted almost gladly as the provision of opportunity to get through more work.

The one matter upon which he was disobedient and deaf to all persuasion was in relation to any attempt to induce him to stop work or to slacken its output; and, as Professor G. M. Robertson truly stated in the course of his graceful tribute to Lord's work in the *British Medical Journal* of August 22 last, "Every evening, however, after his official duties for the day were over, he began a second day's work for the Association, working on till all hours of the morning of the next day. The amount of work, mainly of a literary and organizing kind, that he did during these undisturbed hours in the evening and the night-time was colossal."

Consequently, when his name was put forward as President-Elect of the Royal Medico-Psychological Association, there was considerable doubt whether he would feel able to accept the position, and a fear that, if he did, the further claims upon his energies during his actual year of office as President would react adversely on his health. Quite otherwise was the event, and, just as his war-hospital duties had seemed to release a reservoir of pent-up energies, so the offer of this honour and his decision to accept it, besides giving him keen delight, seemed to tap yet another well of energy. His proceeding, during his preparatory year as President-Elect, to his M.D. degree and to the membership of the Royal College of Physicians in Edinburgh—who immediately conferred their Fellowship upon him—was something of a feat; and during his year in the chair he was Vice-President of the Section of Mental Diseases of the British Medical Association; while his activities, attendances at meetings and committees were unremitting, and the fertility of his suggestion was remarkable.

His presidential address on "The Clinical Study of Mental Disorders" was a wide survey of contemporary tendencies in psychiatry, as well as containing a detailed programme of hospital team-work. During his year of office, and mainly at his instigation,

the Research and Clinical Committee came into being, over which he presided, taking the liveliest interest in the work of its various sections. The detailed reports of the Committee, which became a feature of the Association's annual meetings, were from his hand, and each year he was able to record valuable scientific results from its labours.

In the years following his presidency, Lord, with the Research Committee added to his duties as editor, was already doing more in the service of the Association than ever before; but he cheerfully undertook yet further tasks. He shared to a considerable extent in the work of the General Secretary, and, in the latter's enforced absence, several times acted for him at annual meetings. He was as active as ever in medico-political and educational work. He gave much assistance in connection with the Mental Treatment Act. His study of the "Evolution of the Reception Order" did much to elucidate the true purpose of judicial intervention in mental treatment, and facilitated the abolition of such intervention in non-volitional cases. The training and registration of mental nurses was another subject to which he gave much attention, and he devoted time and energy in every endeavour to uphold the status of the Association's nursing certificate. In 1929 he was appointed a member of the General Nursing Council.

His opinion and advice were often sought in such matters as the organization and staffing of psychiatric services overseas. His work brought him in touch with many foreign psychiatrists, and he was an associate member of several medico-psychological societies abroad. Last year he attended the first International Congress of Mental Hygiene at Washington, as representative of the London County Council and of the Association. He presided at several of the sessions, and was elected a member of the permanent committee. At the conclusion of a most strenuous fortnight, he spent his time during the return voyage in writing out a full account of the Congress, with reflections on American psychiatry, which he read to a quarterly meeting of the Association on the day following his arrival.

No memoir of Lord could be complete without some reference to his vivid and striking personality. The following lines of personal appreciation are a record of the impression left by him upon one who knew him well from his Bexley days onward:

There was something a little flamboyant about John R. Lord. He faced life, especially in his earlier years, with an air; even his dress proclaimed it; the task of clothing himself, like everything else

which he undertook, was performed with complete thoroughness, and yet a spice of adventure entered into the performance, as it did into such matters as the cut of his hair or the wearing or not of a beard. The same tendency showed itself in his love of ceremonial, which made him an ideal public orator and master of ceremonies at Association meetings, and made him delight in the designing of the Association's coat of arms and its medals and badges. All that he did, he did intensely and with a zest, and he found, one believes, in spite of the chronic ill-health of his later years, immense enjoyment in life and what it brought him. He lived his life thoroughly and to the full; even from his illness he seemed able to draw a curious interest that was almost a recompense. His tremendous appetite for work was a case in point; his life for many years as a bachelor medical superintendent was, in some respects, an isolated one, and his work absorbed energies which might have found scope elsewhere. Work to him was never an uncongenial burden; he revelled in it, and in its pursuit willingly turned night into day. In the years after 1918 one felt that his work, carried on as it was in face of tremendous disabilities of invalidism, really helped him to survive; the need for concentration upon other things kept his busy mind employed outside the ailments which in a man of less exuberant temper might have overmastered all else. He had, however, a dogged will—no one who ever worked with him could fail to realize that—and he was able to grapple successfully with difficulties before which a lesser nature would have sunk.

The fertility of Lord's mind was shown, not only in the ideas he himself originated, but in his characteristic and somewhat curious manner of receiving suggestions from others. One would approach him with some suggestion for change; his first reaction would be briskly negative—a dozen reasons to the contrary at once appeared. But his active brain was never contented with the first impression; the irritant idea would work and ferment, until presently the astonished and slightly amused propounder of the first crude hint would find himself presented with a fully organized scheme fortified with arguments and supported by precedents. "You know . . . I have been thinking for some time that so and so might be done . . . don't you agree?" One soon learned that the best way to convince Lord was to leave him to convince himself.

Lord loved his life; it was to him so full of interest, so well worth living for the sake of what could be done with it. It is hard to realize now that that eager, questing spirit is stilled, so far as mortal

relationships are concerned. He was necessarily rather a lonely man, yet a more essentially friendly spirit never breathed. He could be generous to a fault in his appreciation of other people's kindness to him, and he was kindness itself to his friends. One never asked him in vain for help which he could give.

He married, in March of this year, Dr. Ruby Thornton Carr, who was a member of the medical staff of Horton. It was with real gladness that his closest friends welcomed the marriage of affection which it seemed would bring a new delight and interest to his maturer life. But a few months of happiness was all that was granted to him, and the sympathy of all who knew him goes out to his widow in the very sad circumstances of her bereavement.

EDITORIAL NOTE.

Dr. Lord's work was so extensive, and its ramifications so widespread, that it has been found impossible to give an adequate account of his life, activities and character in a notice written by a single author. The greater part of the present memoir is the work of Sir Hubert Bond, Dr. E. Goodall and Dr. A. Walk. The personal appreciation at the end was contributed by Mr. R. H. Curtis.

The following is a list of Dr. Lord's principal publications :

Books.

- The Story of the Horton (County of London) War Hospital*, 1920.
Social Workers and the Insane, 1923.
The Clinical Study of Mental Disorders (Presidential Address), 1926.
Mental Hospitals and the Public: The Need for Closer Co-operation, 1926.

Articles.

(Most of these appeared in the *Journal of Mental Science* in the years indicated.)

1898. "The Collecting and Recording of Descriptive and Anthropometric Data of the Ear in the Neurotic, Insane and Criminal—a New Method."
 "A New Nissl Method" (Bronze Medal and Prize Essay).
 "Normal Structure and Morbid Changes in the Pineal Body."
 "Types of Epilepsy."
 "The Care of the Epileptic."
 1909. "Obsessional and Impulsive Insanity."
 1913. "Criminal Types in a County Asylum."
 1920. "Progress of Psychiatry in England."
 "The Nosology of Dementia Præcox."
 "Ministry of Health (Miscellaneous Provisions) Bill."
 1922. "General Improvements in Lunacy Administration, etc."
 "The Trend of Psychiatry in England and Wales."
 "Progress of Psychiatry in the Union of South Africa."
 "The National Council for Mental Hygiene."
 1923. "Lunacy Law and Institutional and Home Treatment of the Insane."
 "Syllabus of Instruction for Probationer Nurses during their first Six Months' Service."
 "Sir Frederick Mott."
 "The Prophylaxis of Insanity, etc."
 "The Administration of Public Mental Hospitals, etc."
 "Chronic Sepsis and Mental Disease."
 1924. "The Training of Nurses and Reciprocity between Mental and General Hospitals."
 "Birth Control—A Critical Review."

1925. "The Royal Commission on Lunacy and Mental Disorder."
"The Law Relating to Lunacy."
"Epilepsy: A Clinico-Pathological Study of Fifty Cases."
"Psychiatry, Legal and Administrative, in some European Countries and in America." (Evidence before Royal Commission on Lunacy.)
1926. "The Foundation of the Royal Medico-Psychological Association."
"Some Psychological Reflections."
"Phillippe Pinel (1745-1826)."
1927. "The Association's Coat of Arms."
"John Coakley Lettson and Psychiatry."
"The Induction of Abortion in the Treatment and Prophylaxis of Mental Disorder."
"The Evolution of the Reception Order for Mental Patients: A Historical Survey."
1929. "The Evolution of the 'Nerve' Hospital as a Factor in the Progress of Psychiatry."
"A Modern Approach to the Problem of the Admission of Mental Patients to In-Patient Treatment."
"The Local Government Act and Administrative Psychiatry."
1930. "American Psychiatry and its Practical Bearings on the Application of Recent Legislation: Including a Description of the First International Congress on Mental Hygiene."
"Psychology, the Science of Mind."
"After-Care and other Aspects of Social Service as an Adjunct to Mental Treatment."
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JOHN CARSWELL, F.R.F.P.S.GLAS., L.R.C.P.ED.,

Late Medical Commissioner, General Board of Control, Scotland.

DR. JOHN CARSWELL, who retired from the General Board of Control for Scotland at the age-limit of 65 on June 18, 1921, died at Cambridge on June 20, 1931.

He was one who continuously and courageously stood four square for the progress of psychological medicine. Though never robust, he had reached the ripe age of 75. Dr. Carswell was born in Glasgow and studied medicine there, qualifying in 1877. It was fortunate for the progress of psychological medicine that he became Resident Medical Officer at Woodilee Mental Hospital, Lenzie, then the most modern institution of its kind in existence, under the superintendence of Dr. James Rutherford, a pioneer in the humane and modern treatment of the insane. These surroundings shaped Dr. Carswell's future career.

Woodilee was the first institution to be built without airing-courts; it had associated with it a large amount of land, and its farm was a model of what farms should be.

Open-air life, the absence of locked doors, and carefully selected occupations for the patients were prominent features of Dr. Rutherford's management. With a knowledge of the actual conditions obtaining there, there is no wonder that Dr. Carswell was inspired to make the study of mental disease his life-work.

At the time the importance of abnormalities of mind was recognized only by a select few of the medical profession, and these mostly associated with mental institutions. There was no special provision, even in the large cities, for dealing with temporary or early cases of mental disease, and it was only when the patient's mental condition became, as it were, obvious to the man in the street that anything practical could be done.

Dr. Carswell was appointed a Medical Officer of the Barony Parish, and later when the Barony and City were amalgamated under the Glasgow Parish Council, the work he had done was considered so effective that he was appointed to take sole charge of the certification of all patients in this large parish with a population of over 600,000. From the first his duties brought him in

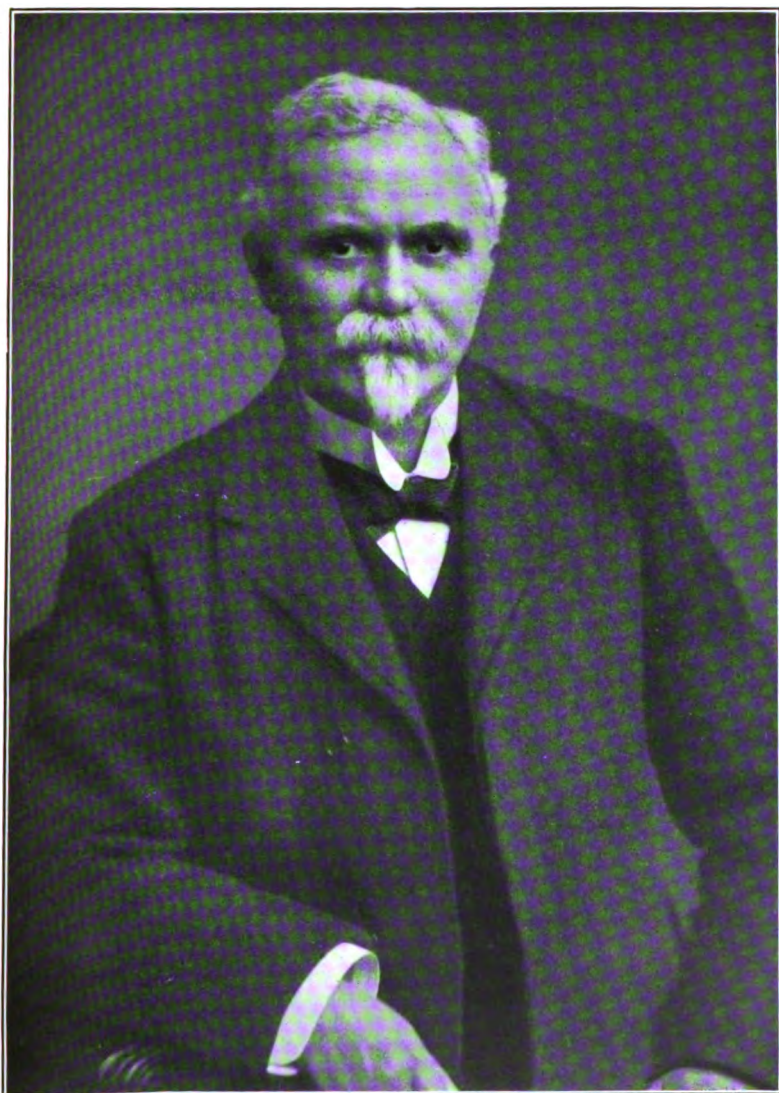


Photo Rannan.

JOHN CARSWELL, F.R.F.P.S.G., J.P.

Born June 18, 1856.

Died June 20, 1931.

Ordinary Member, 1891.

Maudsley Lecturer, 1924.

contact with all classes of society, and made him an interested and devoted student of social and civic questions. One of the problems that was then becoming acute in Glasgow was that of the inebriate and the recidivist; such persons could only be temporarily dealt with in institutions, and only when they were actually exhibiting signs of active mental disease. It was the study of this problem that led to the establishment at Barnhill Poorhouse, the poorhouse of the Barony Parish, of what came to be known as observation wards, for patients whose abnormal conduct had come under the attention of the public authorities. In this way the early treatment of such cases was undertaken, and many of them were prevented from becoming certifiable. The success of this modest endeavour at Barnhill Poorhouse led to the establishment of the observation wards in the new general hospital at Duke Street, and more recently in the hospital at Stobhill.

Dr. Carswell was placed in charge of the observation wards at Duke Street in 1890, and so began the practice of treating early and recoverable cases of mental disorder without legal procedure of any kind. The success of the experiment was wholly due to the special knowledge of mental conditions that Dr. Carswell had acquired through long experience. No one who visited these wards but must have been struck by the fact that many varieties of mental disease could be treated exactly in the same way as physical disorders are treated in a general hospital, provided that those in charge, from the physician downwards had a specialized knowledge, both administrative and practical, of mental abnormalities.

But Dr. Carswell's activities were not confined to the field of medicine. The social studies, which, in his capacity of Certifying Physician for a large industrial parish, attracted his attention appealed to him so strongly that he felt he could be of service to the community in a wider capacity. He became a town councillor in 1896, and as he had the gift of setting forth any subject which he was dealing with in a logical and attractive manner, his influence in the Town Council was soon felt. He took special interest in the care of the inebriate, and the betterment of those conditions and surroundings which lead to criminality and mental ill-health.

Dr. Carswell figured prominently in one of the many medico-legal cases in which he was concerned as an expert witness, and was actually shot at and seriously wounded by an insane person with whom he had been brought into contact in the execution of his medical duties. Fortunately he made a good recovery.

Dr. Carswell was Lecturer on Mental Diseases at the Anderson College Medical School, and several of his students have expressed their indebtedness for their knowledge and enlightened views of the problems of mental disease to Dr. Carswell's lectures, not only theoretical, but also clinical, given at the several institutions which he visited with his classes.

In 1914, under the Mental Deficiency and Lunacy (Scotland) Act, 1913, Dr. Carswell was appointed a Commissioner of the General Board of Control, a post which he retained for seven years. After his retirement, he acted for several years as a member of medical boards under the Ministry of Pensions.

In 1924 he delivered the Maudsley Lecture before the Royal Medico-Psychological Association, and in 1928 the Morison Lectures in the Royal College of Physicians, Edinburgh.

The loss of a son, a promising architect, in the war was a heavy blow to Dr. Carswell, and this bereavement seemed to bind his home, which was always a happy one, with a closer bond. Mrs. Carswell survives her husband; she was a worthy helpmate to him in his varied, courageous and energetic career. Dr. Carswell is also survived by a son, who is a barrister, and a married daughter, both of whom have taken a prominent place in the literary world.

HAMILTON MARR.

Part I.—Original Articles.

SOME REFLECTIONS ON THE PROGRESS OF PSYCHIATRY.

THE PRESIDENTIAL ADDRESS AT THE NINETIETH ANNUAL MEETING
OF THE ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION HELD
IN DUBLIN, JULY, 8, 1931.

By RICHARD R. LEEPER, F.R.C.S.I., M.P.C.,
Medical Superintendent, St. Patrick's Hospital, Dublin.

LADIES AND GENTLEMEN,—I rise, as your President, with a feeling of what the older physicians called præcordial anxiety, chiefly because I am not a teacher of psychiatry, but merely a clinical physician, and therefore possibly may have no real mandate from the gods to address you, except that which I owe to the kindly hearts of my fellow members of our great Association. Whatever work I have done in Ireland in helping to keep alive our interests in psychiatry you have bounteously rewarded, and I heartily thank you, on my own behalf, and also on behalf of the Irish Division, for the great honour you have conferred upon me. The old Shakespearian tag says: "Some are born great, and some achieve greatness," but I assuredly have had this "greatness thrust upon me." It is difficult, all must admit, to leave "footprints in the sands of Time," and, to one who succeeds such men as Conolly Norman, Dawson and Nolan—all Irish Presidents—the task is not easy. The older members will easily remember Sir Thomas Clouston, Dr. Urquhart, of Perth, Sir George Savage, and many others who have kept alive the knowledge of psychiatry and amply added to it, and we, who speak to you in, possibly, "childhood's treble tones," and look at you through the oncoming "silvery fringes of the 'arcus senilis,'" can only feel that the good work of clinical psychiatry will be carried on, in the curative interests of God's mentally afflicted, as it has been done in the past; and it will, I feel sure, be effectually perfected in the future by the younger members of to-day, graced with the present-day knowledge of bio-chemistry and the more modern methods of psycho-therapy. It seems to me that this Association has kept its light somewhat

“hidden under a bushel.” It does not appear to me that the work of our Association has been, at any time, in the limelight of public opinion. It is not generally known that, but for the work of this Association, established in 1841 by Dr. Hitch, there would not be, to-day, a single trained mental nurse in the British Isles, much less in South Africa and the British colonies. More than that, there would not exist a diploma in the knowledge of mental disease in any of the universities or colleges in the British Isles! I am happy to say that our two universities in Ireland and our licensing bodies have responded to our appeals on behalf of this Association, that diplomas in mental disease are now obtainable in Ireland, and that the Government refuse to sanction appointments of assistant medical officers to mental hospitals until they have graduated as holding the necessary qualifications in a knowledge of mental disease. Such work as this, on behalf of our Association, should surely be generally recognized.

Well, watchman! What of the night? Let us consider the treatment of the insane in the past, and in the present, and anticipate, perhaps, what it may be in the future. I, as the Superintendent of the oldest hospital for the treatment of the insane in Ireland, will speak to you, firstly, of the past.

Dean Swift founded our old hospital in 1745. He was a Governor of Bethlem Royal Hospital before he came back to Ireland. After virtually framing the policy of Britain, in London (the most powerful pamphleteer in an age when the Government had no Press), the maker of Harley's and Bolingbroke's Ministry came back to Ireland, as the immortal Dean of St. Patrick's. At the time there was in Ireland not one institution for the care and treatment of the insane. Swift said regarding his own bequest:

“ He gave the little wealth he had
To found a house for fools and mad,
And showed, by one satiric touch,
No nation needed it so much.”

These words were, alas, only too true, for the Government of Ireland made no provision for the care and treatment of the insane people till 1815—the year of Waterloo. What methods were used at that time in the treatment of the insane, both at Moorfields, the then site of Bedlam, and in this country? A chair, revolved until the patients got dizzy and vomited, doses of tartar emetic, till they fainted from exhaustion, iron manacles on their limbs, as depicted in Hogarth's picture of “The Rake's Progress,” and, more humanely, a medication of borage and hellebore. Galen, long before that

time, recommended for all melancholics "Flagellitur saepe in die" —in plain English, that they should be beaten frequently with a stick.

In an old minute book we find that Dryden, a relative of the poet and of the Founder of St. Patrick's Hospital, who was the first Master, or, as we would now call him, Resident Superintendent, reported to the Board of Governors that the patients in the hospital had been very troublesome recently, "the moon being at the full." This mystery is now as great as when my former colleague wrote to the Board of Governors, for nowhere can I obtain an explanation to the causation of the periodic insanity of women to-day. The gynæcologists of to-day are as negative in explaining these medical phenomena as they were in 1745. Why should a woman be sane for three weeks and insane again and again at the menstrual epoch, and, above all, why should the advent of puberty and the climacteric periods be fraught with such strange mental phenomena? Until scientific research throws some light on these obscurities, we can scarcely hope for a rational line of treatment.

When I commenced to write this presidential address I was for long tortured by my responsibility. Subject after subject presented itself to my mind, and as I considered each text from which to preach my sermon, I feared that, if the text had typhus fever, my sermon had little dread of catching any infection, and therefore I chose to review our position as regards psychiatry in the past, in the present and in the future. Well, so much for the past. Now for the present.

Have we, to-day, got a really satisfactory classification of insanity, or should not all mental abnormality be ascribed to one fact—hereditary mental aberration? Nine out of ten forms of mental disease are due to the ever-varying vagaries of hereditary defect. Call these disease entities what you will, I believe insane inheritance, or the outcome of the unions of neurotics, the feeble-minded psychopath, to be the real and everlasting reason for the numbers of the insane population in the world to-day. I put forward the fact that many dreadful tragedies, some of the victims of which I have personally known, are due to the utter neglect of our present-day mental hygienists to educate the public to the danger of persons suffering from delusions of persecution. Many terrible tragedies, to my own knowledge, could have been avoided if persons suffering from these deluded states had been promptly recognized as dangerous to others or to themselves. They are often laughed at as amusing, and even encouraged by their fellows, as in the case

of the unfortunate actor, Terris, till a tragedy occurs, which reveals the fact that the amusing, deluded and persecuted megalomaniac has been capable of a shocking crime. Children in all our schools should be taught the elementary principles of mental hygiene, and I would dearly wish that educationists had this matter brought promptly and permanently before them. The persecuted paranoiac is much more dangerous to the public than a man with a smallpox rash in a public conveyance. The science of eugenics has been brought before us by a recent circular issued by the Association, a *questionnaire*, very lengthy and difficult to answer. In so far as this matter receives our attention, let the answers to this eugenic *questionnaire* be what they will, they can only be of use when public opinion grasps the fact that neurotics breed neurotics, that unstable people breed insane people, and that any such persons contracting marriage may produce, possibly, an occasional genius, but, most probably, many other persons who will become patients in our mental hospitals. The chance shafts of the little naked Cupid's bow are not always productive of a sane posterity. Legislation is useless to stem the stream of these or prevent persons of insane heredity from getting married. Nothing will ever stop these terrible and disastrous unions but public opinion and a generalized knowledge of mental hygiene. In my own experience I have known and treated a married woman who nearly committed suicide by swallowing arsenic, while mentally unsound. This patient was removed (by her husband) in a few days from hospital, and, immediately after, again became pregnant. I have known a young married woman who became insane at her first pregnancy, so that she had to be held down in bed by two nurses and her husband, recovered, had five similar attacks of mania during five successive pregnancies, and finally died insane. These things occur in a country which enforces the compulsory notification of an attack of measles! When such cases as these are brought to the knowledge of the public, and when the public can be got to realize the disastrous effects of these atrocities, then, and not till then, will the numbers of the insane be fewer in the world's asylums.

When I approach the subject of modern psycho-therapy, I confess that I am like the man who cannot see the wood for the trees; to my mind, the verbosity of modern psychiatric literature is overwhelming. A great British statesman once described his political opponent as "a mere sophistical rhetorician, inebriated with the exuberance of his own verbosity." In all reason, are some of our own psycho-therapists wholly exempt from this

description? Of the Freudian doctrine I have read much, "but evermore came out from that same door wherein I went." Much seems to me utterly fantastic and repulsive to a sane, disciplined mind, and, what is even more important, frequently disastrous in its application to the psychoses. Swift, the author of *The Tale of a Tub*, gained the unjust imputation that he was an atheist, which he never was, and I hope that any remarks of mine may not lead my fellow members to think that I am an opponent of the methods of modern psychiatry. Far from me be it! But, one cannot help saying that suggestion is a thing we have been practising for the past half century. Hypnotic suggestion is, in my opinion, dangerous. Ordinary and well-applied suggestion, in my wards, has resulted in many, and often unexpected, cures of mental disease. "Kind hearts are more than coronets," says the poet, and, if one is to effect a cure by suggestion, one must get the full confidence of one's patient and a mutual good feeling between patient and doctor; for the recognition by the patient of this goodwill, and his absolute complete confidence in the doctor, may alone lead to a complete cure. As regards the self-satisfied revealers of dreams, and those who profess to reveal the complete inwardness of mind and of the personalities of their patients to their own satisfaction, I think that surely they should be the latter-day apostles of astrology and necromancy, more to be regarded as disciples of the occult than as physicians brought to the bedside to cure. If I should appear to speak too harshly of certain modern tendencies, it is because I am convinced that it is not along these paths that we shall find the answers to the questions we are all asking, or a more rational and successful method of treatment. I may be wrong, but here are some facts.

In the decade 1910-19, the average Irish recovery-rate was, approximately, 39%. In the last decade it was 38%. In England and Wales the corresponding figures are 32% for 1910-1919, and 31% for the last decade. In Scotland the position is the same. Furthermore, the recovery-rate for England and Wales for the period 1871-1880 was given as just over 40%. Dr. Lord, to whom I am indebted for some of these figures, states, in a recent publication, "It therefore becomes legitimate to ask, Has scientific psychiatry failed?" My answer to this question is that scientific psychiatry has not failed, but that many modern developments, which we have been inclined to regard as scientific, are not really scientific at all, and that, until we have radically remodelled or discarded many of these theories and methods, we cannot expect an improvement in

our recovery-rate. What, in short, have been the boomed advances in psychiatric treatment in the past two decades? They can, I think, be summed up in two phrases—"mental analysis" and "toxic foci." With regard to the former, I am convinced that, instead of its being a therapeutic asset, nothing could be more harmful to some psychotic patients. May not one more firmly impress on a melancholic patient's mind ideas of unworthiness, by frequently discussing and dissecting his self-depreciation with him? With regard to the toxic foci theory, I approve of every effort to improve the physical health of our patients and remove sources of toxæmia, but I am convinced that active measures, such as the extraction of carious teeth, the giving of vaccines, colonic lavage, etc., should certainly be deferred until most of the acute symptoms have subsided for some little time, and this will rarely be under some weeks from the date of admission. To subject prematurely an acutely confused, depressed or restless patient to these procedures will, I believe, have the reverse effect to what we desire. The same applies, but perhaps not so strongly, to ultra-violet radiation and electrical treatment. We may lose the undoubted value of these measures by the wrong timing of their use. Another factor, which I think is still a reproach to our specialty—and one which may have a very direct bearing on our recovery-rate—is the inconsistency with which sedative drugs are administered. One mental hospital uses practically none at all, another huge quantities. Now both of these methods obviously cannot be right. Clouston held what I think was a very sane view on the use of sedatives. In very recent cases it was his custom to restore sleep with these for a few nights, in the hope of aborting the attack, but, when it became obvious that this had failed, he abandoned them. There is probably a field for the use of sedatives in mental disease, but I think that future research will show it to be a very restricted one. Their use to render wards quiet, to facilitate nursing, or to make possible such systems as the "open-door system," deserves, of course, the strongest condemnation. In Ireland, generally, they are used, I believe, to a much smaller extent than in England and Scotland. The whole question is of vital interest to the psycho-therapist, and there is no reliable guidance to be had on the subject.

As superintendent of the oldest hospital in Ireland, you may ask what results of treatment I can show you. I would be very diffident in talking of personal experience, did I not think you were interested in the working of Swift's Foundation. As you probably know, St.

Patrick's is a chartered hospital, maintained almost solely by the fees which it receives for the patients treated. Although, in times of financial depression like the present, many people can ill afford the luxury of private hospital treatment, it has always been the policy of the Governors to retain recovering patients—even at considerable sacrifice.

The average number of admissions is, of course, small compared with the larger hospitals, but every year about 75 patients from all over Ireland are admitted. Within recent years almost half the admissions have been voluntary boarders. The average recovery-rate of the past ten years (1921–1930) works out at exactly 50%—calculated on all the admissions. A further average of 12% was discharged as “relieved” during this period, and I know that many of these ultimately made complete recoveries. The average death-rate for the past five years was 6½%.

With the exception of excluding epileptics, I do not think that our material differs in any psychiatric sense from the admissions to the larger hospitals. Every type of mental illness is admitted. A considerable percentage of our admissions were over 60 years of age, and many were in advanced years and came in simply for care and nursing.

I do not for a moment wish to claim anything outstanding for these figures. I feel they could be considerably improved upon. I think, however, one can fairly state that, among the serious ailments to which human flesh is heir, mental illness is much more hopeful than is generally realized. This fact has, I think, rightly inclined me to be conservative, and to view critically some of the modern tendencies. While many of the latter are, no doubt, in their way excellent, I think the value of rest—both mental and physical—in the early stages is being lost sight of. Of the immense value of stimulation at a later stage, especially by recreations—outings, entertainments, etc.—I have not the slightest doubt.

What of the future? I am afraid, so far, I have been critical and not very optimistic, but I have only been critical because, fortunately, there is a good deal to criticize. Never have I known such activity in psychiatric medicine as to-day, and I have nothing but admiration for the careful and painstaking work which is being daily conducted in the wards and laboratories of our mental hospitals. It is stimulating work, and our younger men are rapidly bringing our specialty to a state of development as advanced as any of the other great branches of medicine. If this work does not seem to have gained its reward, I am convinced that the time is

not far off when, with a finer appreciation of the exact value and use of the newer theories and remedies, we shall see a very definite step forward in the curative treatment of mental illness.

I am afraid I dare not speak of the future development of biochemistry in the field of mental disease, but I confidently leave this to those workers who have already done so much. In the field of clinical psychiatry there is still room for widespread research. I have already mentioned the mystery of those mental states which recur with the menstrual epoch. Other equally profound mysteries are those confusional states which recur without any apparent cause, the cases of recurrent mania, the factors which predispose to hallucinosis—but I could go on and on, as large tracts of the field are still virgin soil.

I shall only refer briefly to legislative proposals, because these are mainly of local interest. We are still patiently waiting for new legislation in the Irish Free State, particularly for a Mental Deficiency Bill that will make proper provision for the care and training of some hundreds of mental defectives. The Mental Deficiency Act of 1913 was not extended to Ireland, and we are still suffering from that injustice.

New lunacy legislation is sadly needed in the Irish Free State, and, when it comes, I hope it will enable out-patient departments to be established in connection with the mental hospitals situated in the cities or large towns, and will also enable our district mental hospitals to accept voluntary patients and recent cases for periods up to six months, or longer, without certification, along the lines of the new English Act. Furthermore, I sincerely hope that any new legislation will provide for the setting up of a strong Board of Control, whose sole function will be the administration of these Acts. In the meantime I feel that our general hospitals in Ireland have not recognized the mass of suffering around them occasioned by the lesser degrees of mental illness, or they would have established psychiatric out-patient departments, which I am sure would be willingly staffed by the medical officers of the adjacent mental hospitals. Whether these clinics be established or not, the dangers of the casual treatment of patients showing nervous symptoms for the first time will have to be recognized. Energetic treatment of these conditions would, I am convinced, prevent the onset of severe mental illness in hundreds of cases every year, and it is up to us to stress these facts in all our contacts with our medical brethren, and, if possible, to see that greater prominence is given to this subject in the curricula of our teaching bodies.

Before concluding, I must not forget my pleasantest duty, which is to extend to all our visitors—both on behalf of myself and the Irish Division—the warmest welcome to Ireland. We have looked forward greatly to your visit, and we appreciate your kindness in coming over to visit us, and only hope that your time in Ireland may be a pleasing one.

You have listened to me patiently, and I am grateful. I have endeavoured to review some of that daily task of ours, which—as science advances—we can scarcely hope will ever grow lighter. Nevertheless, however we may be concerned with differing theories, or pathological or therapeutic speculations, we should not forget the task entrusted to us, and remember, in the words of the poet Longfellow :

“ The poor in body and estate,
The sick and the disconsolate,
Must not on man's convenience wait.”

THE DEVELOPMENT OF THE CORTEX AND THE FUNCTIONS OF ITS LAYERS.*

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THE functions of the different layers of the neocortex are a matter of great importance to the neurologist.

The character of the neocortex and the significance of its different layers are, however, most easily understood when compared with the older forms of cortex, the primary olfactory cortex, which I have called *palæocortex*, and the secondary olfactory cortex or *archicortex*.

In the frog, only the two latter regions may be distinguished, the dorso-lateral region being the *palæocortex*, and the dorso-mesial the *archicortex* or *primordium hippocampi*.

The former receives a large number of olfactory fibres from the *formatio bulbaris*, and, perhaps in addition, some fibres from the dorsal thalamus (Rubaschkin), but the cortical ending of these latter fibres is still doubtful, and certainly so insignificant in comparison to the former that we are fully justified in calling this cortex a primary olfactory or *palæocortex*.

Its cells show a very primitive arrangement, being mostly localized near the ventricular endyma, as is also the case in the mammalian neocortex in an early stage of development.

Most of the dendrites of these cells extend to the lateral surface of the *palæopallium* (*cf.* P. Ramón y Cajal and others), to the olfactory tracts which are practically unmyelinated in frogs. The stimuli of these tracts cause their outgrowth in this direction (*neurobiotaxis*, Kuhlenbeck).

The *palæocortex* of frogs gradually continues into the *primordium hippocampi*, which is not yet differentiated into layers, but whose cells have migrated further away from the periventricular matrix than those of the *palæocortex*, a consequence of the larger number of fibres running in the superficial zone of the *archicortex* (tertiary olfactory largely), which fibres, moreover, are myelinated, thus showing a greater functional efficiency.

* A paper read before the Association, July 7, 1931. This paper also appeared in *Acta Psychiatr. et Neur.*, 1928, ii.

The cells of the archicortex are also larger than those of the palæocortex, especially the more peripheral ones.

In reptiles a further differentiation occurs. In serpents and lizards three cortical layers may be observed in the mid-region of the hemisphere, more or less joining each other in front and behind. These layers may topographically be called the lateral, dorsal, and medio-dorsal layer.

The lateral and dorsal layers consist of large pyramidal cells, but the medio-dorsal layer consists of small granular cells.

In the lateral layer, frontally, the olfactory tract ends. Its frontal part, consequently, is a primary olfactory cortex or palæocortex, a primitive homologue of the mammalian pre-piriform cortex in Brodmann's nomenclature.

Posteriorly it passes into what corresponds to piriform cortex (Elliott Smith) and there extends into the archistriatum (the piriform cortex extends into the amygdala in mammals).

Although the frontal part of this cortex is the primitive homologue of the pre-piriform cortex and the caudal part corresponds to the piriform cortex of mammals, it everywhere has approximately the same simple structure, in which no distinct layers may be recognized; thus showing a lower plan of organization than the pre-piriform and especially the piriform cortex of mammals.

The dorsal and medio-dorsal layers, though different in structure, belong together, establishing the archi- or hippocampal cortex, which, as in mammals, consists of two layers, for the most part adjoining each other, although the medio-dorsal cells lie somewhat nearer the surface.

The dorsal layer represents the ammon-pyramids, and the medio-dorsal or granular layer the fascia dentata (Adolf Meyer).

As in mammals, so in reptiles, the relation between the fascia dentata and the ammon-pyramids is such that the latter, only for a short distance, extend below the former as subgranular pyramids.*

Concerning these two strata of the archicortex, we know that the cells of the granular layer or fascia dentata generally have short axons (shorter than those of the ammon-pyramids), which moreover, mostly arborize in the neighbouring cortex (some extending into the septum).

We also know (P. Ramón y Cajal) that the dendrites of these granular cells all extend to the surface of the pallium, where the

* In lizards, in addition to these, some pyramid cells are found lying above the fascia dentata (really they are a part of the fascia dentata itself, which passes upward and changes its granular character into a pyramidal one).

ascending tertiary olfactory neurons run. From this it is apparent that this *granular layer or fascia dentata is predominantly a receptive or correlative layer*, transmitting the impulses to neighbouring structures.

Contrary to the latter, the cells of the dorsal layer, the ammon-pyramids, have large axons passing into the lining of the ventricle, and then leaving the hemisphere to enter either the hemisphere of the opposite side (commissural fibres) or run backward into the hypothalamus (fornix) and epithalamus (tr. cortico-habenularis). Consequently the *ammon-pyramids are cortico-fugal and commissural neurons*.*

Recapitulating the above, we may say that the archicortex of reptiles consists of two layers—a receptive (correlative) granular layer, and a cortifugal and commissural pyramidal layer, which partly extends under the granular layer.

This is the first clear example of a laminar differentiation. It is found again and in the same way in the hippocampus of mammals, and the functional division it shows is very instructive, as it gives us a key to the understanding of the lamination in the mammalian neocortex.

Before proceeding to the mammalian relations, I shall briefly discuss the question whether a neocortical primordium is already present in reptiles.

We immediately meet with the difficulty of recognizing it, since it is evident that in lizards we do not find any structure so complicated as the mammalian neocortex, *i.e.*, consisting of several (five or six) superimposed layers.

Yet there might be a primordium *neopallii*, as Elliot Smith called it—or “general cortex” (*cf.* Miss Crosby)—in an undifferentiated way.

In order to know if such a primordium *neopallii* is found in reptiles we must determine whether there are any fibres proceeding from the neothalamus which end in the cortex, since the typical feature of the neocortex is that it receives, not olfactory, but neothalamic projections (sensory, visual, etc.).

It is not impossible—it is even likely—that a few of such fibres occur.

As appears in Fig. 72 of my book on the *Evolution of the Nervous System*,† in reptiles a strong tract of fibres runs from

* Elliot Smith also found a lamination in *Lepidosiren* and an indication of it was found by Röthig in *Bufo*. But these laminations are by no means so distinct in their functional significance as those in reptiles.

† *The Evolution of the Nervous System in Invertebrates, Vertebrates and Man*, Erven F. Bohn, Haarlem, 1929.

the neothalamus to the forebrain, most of them ending in the neostriatum.

Some of these fibres, however, seem to continue their course frontally and laterally beyond the neostriatum and to the cortex. They end (some perhaps begin) in that part of it where the dorsal edge of the palæocortex stops, or where (in lower reptiles) it joins the ammon-pyramids.

Consequently this spot lies between the palæocortex and the ammon-pyramids of the archicortex.

This proves that, if there is a primordium neopallii, it is represented by cells connected with or arising at the dorsal edge of the palæocortex, in the latero-frontal region of the cortex.

This location is very interesting, since we know that the mammalian neocortex, too, develops frontally between the palæocortex and archicortex (or hippocampus), pushing the latter backwards in its later development.

Whereas, however, even in the lowest mammals (*cf.* Miss Obenchain's paper on *Cænolestes*) this neocortex is larger and much thicker than either of the other forms of cortex, in reptiles it is a mere vestige, only characterized by this fibre-connection and a slight increase of cortical cells just in front of the place where the neostriatum is in contact with it.

From the above it appears that if a vestige of a neocortex occurs in reptiles, it is only present in the latero-frontal part of the pallium, lying between the archicortex and palæocortex, and connected with the latter.

Proceeding to the cortex of mammals, I shall first discuss the fate of the palæo- and archicortex in these animals.

The neocortex of mammals being intercalated between the palæo- and the archi-cortex, its large development in mammals pushes the palæocortex ventrally, causing a limiting fissure between them—the *fissura rhinalis*.

The palæocortex or pre-piriform cortex of mammals, moreover, shows a higher stage of development, exhibiting two layers—a superficial granular and a deep pyramidal layer, the former being mainly receptive-correlative, the latter sending out large efferent tracts to various parts of the fore- and 'tween-brain. Apparently we are here dealing with a similar differentiation as in the archicortex, with the difference, however, that in this palæocortex the various layers lie on top of each other.

On the other hand, the dorsal and medial extension of the neocortex causes the adjacent pyramidal layer of the archicortex

to be lifted up and pushed medially, thus forming the semicircular curve so characteristic of the ammon-layer, the lower point of which remains underneath the hook-like fascia dentata.

This folding of the ammon-pyramid layer gives rise to the fissura hippocampi, which is not a limiting, but an axial furrow lying in the area of the ammon-pyramids (not limiting an area as the fiss. rhinalis does). The cytological difference between the mammalian and reptilian archicortex consists chiefly in a relative increase of ammon-pyramids at the expense of the granules of the fascia dentata, the cells of which apparently are partly embryonic or matrix cells. This corresponds with an increase of fibres of the psalterium or lyra and of the fornix.

The first development of the neocortex reminds us of the arrangement in the palæocortex and archicortex of the frog. All the cells are located in a ventricular matrix, as is the case in the palæocortex of the frog. Only later some of these matrix cells shift in the direction of the zonal layer,* as is also observed in the archicortex of amphibia. Still later the neocortex starts to develop into different laminæ. In this stage the neocortex is already much thicker than the palæo- and archicortex. In *Dasyypus* at birth, in man already in a prenatal stage (Brodmann), it consists of five cell-layers,† showing a granular layer (IV) in the middle, and two layers of larger cells on either side of it (above and beneath). The supra-granular layer at birth is still small in man (Bolton).

These five cell-layers may, however, be classified in three groups: the supra-granular cells (layers II and III of Brodmann), the granular layer (IV of Brodmann), and the subgranular cells (V and VI of Brodmann).

We shall see that the relation of these three layers to the two layers of the older cortex forms is such that the granular layer (IV) of the neocortex is homologous with the granular layer of the archicortex (fascia dentata) and with the superficial granules of the palæocortex, while the large subgranular cells (V and VI) of the neocortex are homologous with the ammon-pyramids of the archicortex and with the deep pyramids of the palæocortex.

The supra-granular pyramids of the neocortex, however, are a new development, typical of the mammalian neocortex. Though arising

* This occurs in the human embryo about the fourth to fifth month (Kuhlenbeck).

† Generally six cortical layers are distinguished: (I) Zonal layer (which is not a cellular layer); (II) layer of small pyramidal or stellate cells; (III) the supra-granular pyramids; (IV) the internal granular or granular layer "*tout court*"; then (V) the ganglionic layer; and finally (VI) the polymorphic layer. Campbell's division is very similar (differing slightly in nomenclature).

from the granular layer they have a more highly developed receptive-associative function than the granule-cells.

The laminar homology of the large subgranular cells of the neocortex with the ammon-pyramids is seen from the fact that the ammon-pyramids continue directly in the subgranular pyramids of the neocortex, as do also the deep pyramids of the pre-piriform cortex. From this also results the homology of the neocortical granular layer (IV) with the granules of the palæo- and archicortex, as in both cases the deep pyramids lie beneath these granules (in the archicortex partly under the fascia dentata).

The function of the granular layer (IV) and of the subgranular pyramids is also the same in the three forms of cortex; the granularis having a correlative-receptive function, the subgranular pyramids giving rise to efferent tracts and to commissural fibres. This is seen from the following facts:

The granular layer is strongly developed in those regions of the neocortex that have an exquisite sensory function—the post-central or sensory region, the frontal cortex (which receives fibres from the red nucleus, the auditory and visual cortex. In the area striata (visual cortex) afferent fibres running in the stria Gennarii and Vicq d'Azyr, end chiefly in the granular layer.* Only a few of the fibres end in other layers (Poljak).†

This does not mean that in the neocortex the granular layer is the only layer which receives afferent impulses. Afferent impulses, among which are those transmitted by the corpus callosum (van Valkenburg) also reach the supra-granular pyramids.

On the other hand, the prevailing efferent-commissural and corticofugal character of the subgranular pyramids is shown by the fact that section of the corpus callosum (v. Valkenburg, J. de Vries) or the centro-fugal tracts (Holmes and Nissl) causes a degeneration of subgranular pyramids, while lesions of the supra-granular pyramidal region give no cortico-fugal degenerations, although some of the callosum fibres may also originate here. So in the granular and subgranular layer of the neocortex we find a similar localization of functions as in the older cortical areas.

The specific neocortical character of the *supra*-granular pyramids, however, is evident, and appears from the fact that, in the palæo- and archicortex, no layer of pyramidal cells occurs on top of the granular layer (the few pyramidal cells in which the fascia dentata

* This granular layer is single in the lower mammals. In primates and man it is doubled.

† Poljak, "An Experimental Study of the Association, Callosal or Projection Fibres of the Cerebral Cortex of the Cat," *Journ. of Comp. Neur.*, 1927-28, xlv.

of lizards continues dorso-laterally, giving off fibres in the zonal layer, may be the only indication of such a process).

Besides, the more recent character of the supragranular layer of the neocortex appears from the fact that this layer is the last one to mature ontogenetically (Bolton, Brodmann).

That, however, the supragranular layer is chiefly a kind of extension of the granular layer (IV) is proved by van't Hoog, who showed that in the case of animals of the same sub-order, but differing in size (as cat and tiger, sheep and cow), in the larger animal the supra-granular cells are increased at the expense of the granular layer.

This is apparently due to the fact that in large animals sensory functions increase more than motor functions (Dubois), for the latter increase only with the bulk of the muscles, while the former increase both with the bulk of the muscles (proprioceptive sensibility) and with the surface area of the skin and sense-organs (exteroceptive sensibility).

That the supra-granular cells at the same time become larger than those of the granular layer may be the result of their axis cylinders (the area covered by it) growing out more in the larger brains, transmitting the received impulses over larger areas of the hemisphere. In addition to receptive they have associative functions, as appears also from the fact that the callosum fibres end here.

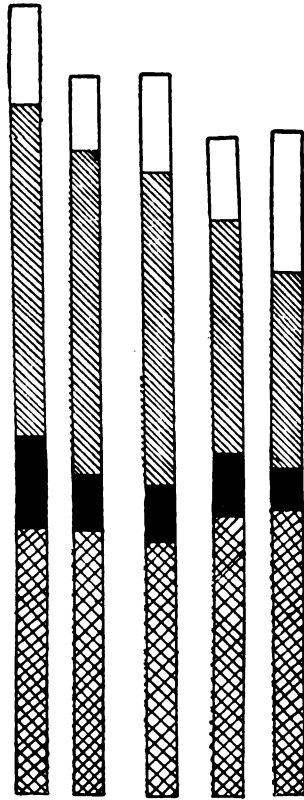
Finally the higher, associative character of the supra-granular layers appears from the fact, first observed by Mott, and confirmed by van't Hoog (see fig.) that in higher mammals this layer is much more developed than in lower ones.

Moreover Bolton observed that at birth this layer is still very small, and that in cases of extreme idiocy it may show a lack of development. A similar conclusion may be drawn from some of the cases described by Hammarberg.

The germinal character of the granularis explains why the degeneration of cells in dementia præcox chiefly occurs in that part of the supra-granular layer (III) that lies nearest to the granularis, and also in that part of the subgranular cells that lies nearest to the granularis (Sioli, Alzheimer, O. Vogt, Josephy, Naito, K. H. Bouman). This may be understood, as K. H. Bouman* pointed out, as a lack of vitality in the layers that lie nearest the germinal matrix (IV), the more so as Mott found a striking lack of basi-

* K. H. Bouman, "Die pathologische Anatomie des Zentralnervensystems bei Schizophrenie," *Psych. en Neur. Biaden*, Amsterdam, 1928.

chromatin in the nuclei of the granularis itself. Probably this involutive degeneration is an anatomical corollary of the dissociated thoughts and actions (K. H. Bouman).



Homo Troglodytes Lemur catta Felis leo Rusa hipp.

Relative development of the supra-granular and other layers in an ungulate, carnivore, lemur, chimpanzee, and in man. Granular layer black. Supra-granular cell layers striped obliquely, subgranular layers crossed. Post-central region. After van't Hoog.

SUMMARY.

Summarizing the facts, we may say that the primitive arrangement of the cortex as it appears in the palæo- and archipallium, shows two cell layers—the lamina granularis, which has mainly a

receptive-correlative function, and the deep pyramids, which have a cortico-fugal and commissural efferent function.

The principle of this lamination is kept up in the neocortex, with this difference, however, that the receptive-correlative granular layer has given rise to supra-granular cells, which again are subdivided into two sub-laminæ: the upper cells (II) still retain a smaller size, while the cells (III) lying nearer the granularis (IV) acquire a pyramidal form.

This differentiation of the supragranular cells does not seem very important. In some parts of the neocortex, in the regio retrosplenialis especially, the differentiation of the supragranular laminæ fails.

In this area, according to Brodmann, whose observations I can only confirm, the lamina zonalis is still very wide, the original granular layer (IV) still large, and the lamina supragranularis, between the zonal and granular layers, is only poorly developed and shows no subdivision.

As far as concerns the cause of the development of the supra-granular layer, Kuhlenbeck, and later, but independently of him, Faul, have given the following neurobiotactic explanation of this process, which is perfectly in accordance with the facts.

As in the palæocortex and in the archicortex the afferent cortical fibres, carrying corticopetal impulses, run in the zonal layer—a fact most fundamentally represented by the primary and secondary olfactory tracts—similarly in the neocortex, callosum fibres and part of the ascending thalamic fibres run in the more superficial parts of the cortex, between the surface and the granular layer.

Since therefore the space between the surface and the granular layer originally is an important region for corticopetal impulses, it is not strange that these impulses give rise to a much greater outgrowth of matrix cells of the granular layer in a superficial direction, and thus to the formation of supra-granular cell-layers, which, in maturing, at the same time acquire a larger size.

INSANITY AND ITS RELATION TO THE PARTURIENT STATE.*

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IN acquiescing to Dr. Leeper's request that I should produce something for this Meeting, I thought that the best subject would be the relation of insanity to the parturient state. It is interesting to find that the description of the symptomatology of this disease only dates from 1875, when Fürstner (1) first described it.

GENERAL CONSIDERATION OF INSANITY.

(a) *Puberty*.—It may seem strange that this subject should be brought up in this connection. The girl at puberty *must* be told that menstruation is a normal function of the body, and that she may carry on her usual occupation and pastimes during menstruation. Many girls have been frightened to such an extent by the presence of the blood that a condition approximating insanity has been observed by the writer. The connection between a calm onset of puberty and future pregnancy is obvious.

(b) *Marriage*.—Somewhat the same remarks apply to the question of marriage.

Although it may seem unnecessary to many at the present day, it is definitely necessary that the married state should be explained if mental trouble is to be avoided. Too often a woman continues to suffer for years from dyspareunia due to stenosis of the vagina, when a timely visit to the gynæcologist would allow a cure to be effected in a condition which might otherwise terminate in an asylum. The question is sometimes put whether a girl should marry when insanity is present in the family. The writer's experience is that she will marry, no matter what the answer given may be. It seems wiser, however, that marriage should be avoided in this type of case. When considering this problem, the question of "cousins' marriages" arises. In an investigation made by the writer some years ago, he found that insanity and other abnormalities did not

* Read before the Royal Medico-Psychological Association, July 9, 1931.

occur more often in the marriage of cousins than in other marriages, unless the "inbreeding" continued in the next generation.

Pregnancy.—If a woman, who has been insane or in whose family there is a history of insanity, gets married, should she become pregnant? The answer in the former is definitely in the negative; in the latter—it is wiser not.

STATISTICS OF INSANITY.

Statistics with regard to insanity are not easy to get; so rarely does it occur in maternity hospitals that by at least one hospital from whom inquiry was made, the answer was given "that a note of this condition had not been kept." The number at the Rotunda varies between 1 and 6 in the year, and an investigation over a long period of years demonstrated 81 cases in 54,000 labours, *i.e.*, approximately 0·15%.

At Queen Charlotte's Hospital there were only 9 cases in five years, 1926–1930. *Æ*tiological factors were ascertained in three, two of whom had sepsis, one severe albuminuria. None of these cases recovered while in the hospital. As there were 10,730 births at Queen Charlotte's Hospital during this period, the incidence was 1 in 1,192, or 0·08%.

With regard to statistics of other places, the writer is much indebted to Dr. Donelan, Chief Superintendent of Grangegorman Asylum, for the information which is best seen in the following table:

	Insany cases admitted.	Puerperal insanity cases admitted.	Recovered.	Died.	Relieved, not improved.	Remaining on register.
1928 .	220 .	10 .	4 .	2 .	3 .	1 .
1929 .	241 .	10 .	6 .	2 .	— .	2 .
1930 .	233 .	15 .	7 .	4 .	— .	4 .
Total .	694 .	35 .	17 .	8 .	3 .	7 .

The percentage of cases of puerperal insanity to all cases of insanity admitted was, therefore, 5.

It is interesting to compare these figures with those obtained by Sir Robert Jones (3) in 1903. He stated then that the percentage-rate was 6·4 in the private class and 8·1 in the poorer classes to the total average admissions from all causes.

On inquiry from the Registrar-General for the Free State I was informed that I had applied to the wrong place, but the Registrar-General, to whom I am deeply indebted, procured for me the following information:

	Number of births in Free State.	Number admitted to mental hospitals.
1928 .	59,176	58
1929 .	58,280	51
1930 .	58,274	53
Total .	175,730	162

That is a percentage rate of 0·09 of puerperal insanities to the complete number of births. Berkeley (4) found, in 1878–82, that 1 in 1,950 parturients were sent to mental hospitals—a percentage-rate of 0·05.

These figures cannot be taken as infallible, for there must be many patients kept at home by relatives unwilling to allow them to enter a mental hospital.

CAUSES OF INSANITY.

The various causes of puerperal insanity, as suggested by different authors, may be indicated as follows :

- (1) Heredity.
- (2) Previous insanity.
- (3) Epilepsy.
- (4) Illegitimacy.
- (5) Fear from previous difficult labour.
- (6) Mental disturbance, such as worry, probably starting as hysteria.
- (7) Primiparity.
- (8) Dystocia.
- (9) No cause discernible.
- (10) Toxæmia.
- (11) Chorea.
- (12) Sepsis.

Heredity should hold a high place in the list, but a careful inquiry into cases met with by the writer in hospital and private practice failed invariably to elicit any heredity factor; perhaps those with histories do not marry often.

The woman who has been insane in a previous confinement is strongly advised not to become pregnant again; when she does she is supposed to be liable to recurrence. There has been no case of this kind encountered.

Epilepsy with labour sometimes ends in insanity.

Illegitimacy has become so much more common in recent years that it does not seem to worry the patient at all in most instances. Illegitimates from the Rotunda will not worry the alienist. The fear of labour arising from a previous difficult confinement should

not affect the patient if she is psychologically treated by the obstetrician in the pre-natal period, and this remark also applies to "mental disturbance arising from worry." The primigravida is not more prone to insanity than the multipara—although this has been suggested—nor does dystocia affect the issue. Indeed, one of the well-known remarkable facts about dystocia is the speed with which the severe pain is forgotten.

In many cases in my experience there is no cause discernible.

We now come to a group of diseases which are very definite obstetrical factors in the causation of insanity—the toxæmias, sepsis and chorea. In a search of the hospital records these three emerge as winners in the race. Following a severe eclampsism or eclampsia, a patient is very apt to get a cerebral hæmorrhage, or at any rate to suffer from cerebral irritation; accompanying these symptoms are usually a high degree of albuminuria and a systolic blood-pressure raised to 190–240 mm. Hg. I have lately been converted to the necessity for a close observation of the blood-pressure, and while I was brought up on the futility of venesection, I have become convinced of its excellence, and now take 8 or 10 oz. if the blood-pressure is 180 mm. Hg. or over. Success has followed this treatment.

Melancholia or mania may occur about the end of the first week of the puerperium in this type of case.

Unfortunately the end-result of a severe attack of septicæmia is sometimes insanity, and we have observed patients for whom much treatment was necessary develop mania just at the time when recovery from the primary disease was occurring. While the cerebral condition may be said to account for the occurrence in the toxæmic patient, it is difficult to state the causal factor in sepsis unless the necessary interference, such as intravenous and other medications, may be held responsible.

Chorea is too rare a condition to generalize about, but it is a fact that some form of insanity sometimes follows its occurrence in the puerperium.

SYMPTOMS.

I do not intend to say much about symptoms in a gathering where the majority know far more than I do. Suffice it to say that the obstetrician is rather at sea when symptoms of melancholia or mania arise in the maternity hospital, and it is for the alienist to deal with the condition. These symptoms usually occur in the first two weeks of the puerperium at latest and suicidal

tendencies are common. According to Berkeley, the age-incidence is 25-29 except in the lactation variety, when it is 30-34. The onset is gradual in the melancholic form, starting with a growing moroseness, while in the maniacal variety the onset is very sudden. The general appearance is that of the pyretic patient, with sordes on the lips and tongue ; there is nearly always a rise of temperature.

VARIETIES.

The varieties which we treat are melancholia and mania occurring in pregnancy, labour, puerperium or in the lactation period, the last being any time two weeks after labour.

Jones says that melancholia is more common than mania in pregnancy, but that puerperal mania is seen more frequently than melancholia. In the lactation period mania is more usual. In Hoppe's (5) well-known investigation of a hundred cases he found the following :

Acute confusion	. . . . .	63
Melancholia	. . . . .	11
Periodic insanity	. . . . .	11
Mental disturbance with hysteria	. . . . .	7
Paranoia	. . . . .	5
Epilepsy	. . . . .	1
Dementia paralytica	. . . . .	2

Treatment.—So far as the obstetrician is concerned, he can only ensure the thorough nursing of the patient, especially with regard to the prevention of self-injury. Large doses of bromide with morphine and hyoscine have been our sheet-anchors. Removal to a mental hospital when the disease is definite is imperative, as it is quite impossible to nurse these cases in a maternity hospital. The preventive treatment has already been dealt with.

With regard to recovery, this depends to a large extent upon the doctor in charge. If I may be excused for boasting, may I say that our alienists in Dublin, headed by our worthy chairman, obtain the most wonderful results? It is interesting to read in the Grange-gorman statistics, already referred to, that in 35 cases there were 17, or nearly 50%, cured, 3 relieved or not improved, 8 died, and 7 remaining on the register have still a chance.

According to Hoche (6), 40% recovered, 30% remained insane and 30% improved. Lewis gives 80% recoveries, and this is more in accordance with my experience.

The time which recovery takes varies considerably. Six months is an average time.

TYPICAL CASES FROM THE ROTUNDA.

I do not intend to give details of every case of insanity which has occurred during recent years—merely a few types.

(1) M. K—, æt. 30, 5-para, March 17, 1927: Some post-partum hæmorrhage. Fourth evening melancholia. Sent to Grangegorman.

(2) G. G—, æt. 39, 5-para, June 13, 1927: Mania from seventeenth evening until discharge to Grangegorman. Confinement normal.

(3) M. E. M—, æt. 34, 4-para, September 29, 1927: Melancholia after puerperal eclampsia. Recovered before leaving hospital.

(4) L. D—, æt. 33, 1-para, November 13, 1928: Mania in pregnancy, admitted violent. Albuminuria present; eclampsia developed; irregularity of pupils with extreme strabismus. Fits continued unabated (31 altogether). *Mors.* The *post-mortem* examination revealed the case to be a very typical eclampsia. The superficial veins of the brain were distended. A few small scattered areas of hæmorrhage on the base, especially on the under-surface of both temporal lobes. Subcortical hæmorrhage, the size of a pigeon's egg, on left temporal lobe.

(5) M. W—, æt. 34, 7-para, December 22, 1927: Induction of labour because of pregnancy melancholia. Baby normal. Transferred to Richmond on eighth day.

(6) C. F—, æt. 22, 1-para, May 12, 1928: This patient was in a mental hospital until November, 1927. No recurrence at labour or puerperium.

(7) J. M—, æt. 37, 9-para, May 27, 1928: Previous history of encephalitis lethargica 1920, since when patient has had four live children. Admitted over term. Spontaneous birth was followed by puerperal sepsis. Transferred to Grangegorman. Returned on July 30, 1928, quite sane enough to apologize for having been insane.

(8) S. K—, æt. 25, 3-para, May 7, 1929: Epilepsy-eclampsia-mania. Subject to fits for some years before admission. Previous pregnancies ended normally. Mania before birth, *epileptic* fit; cyanotic; treated as eclampsia, but it seemed both were present. Infant had three fits on delivery. Lumbar puncture: Cerebrospinal fluid under pressure. Eyes normal. Sent to Grangegorman. Blood-urea 21 mgrm. %. Toxæmia tests negative. 73 fits.

(9) K. K—, æt. 36, 8-para, June 7, 1929: Chronic delusional insanity. Mental for some months. Quite docile. No albumen. Had had myoma and ovary removed. Discharged normal.

(10) M. McN—, æt. 30, 4-para, June 9, 1929: Chronic delusional insanity. Sent up by doctor, who attended patient in acute mania. During this pregnancy a boy was burnt to death. Depression-insanity. On admission screaming when under treatment for eleven days, and still mental. Induction. Spontaneous birth. Grangegorman eighth day.

(11) E. D—, æt. 23, 4-para, July 2, 1929: Attempted suicide with lysol.

(12) M. F—, æt. 22, 1-para, January 5, 1929: Post-rheumatic chorea gravidarum; mitral disease; mania. *Mors.* Patient had been treated with bromide, etc. On admission patient was wasted and cyanotic. Impossible to undress her. Hyoscine. Pulse 170; acute mania. Morphine and hyoscine repeated; decompensation followed; cyanosis. Section ruled out because of bronchitis; decided to continue with hyoscine and morphine; to induce by tents. Patient had temporary periods of consciousness. Septic submaxillary glands and septic throat. No sedatives could be given by mouth or rectum. Restlessness; morphine, intravenous mag. sulph. and hyoscine. Spontaneous delivery after induction. Three days later recurrence of mania. Hyoscine gr. $\frac{1}{5}$. Movements very intense and uncontrollable. Swallowing inco-ordinate. Incontinence two days before death on seventh day. Presystolic murmur. On all days hyoscine only drug useful.

CONCLUSIONS.

(1) The description of the symptomatology of puerperal insanity dates only from 1875.

(2) An investigation of 54,000 cases of labour at the Rotunda Hospital revealed 81 cases of insanity, *i.e.*, 0·17%.

(3) At Grangegorman Asylum the percentage-rate to all cases of insanity was nearly 5.

(4) The number of cases of insanity to the number of births registered in the Free State in the three years 1928, 1929 and 1930 was 162 to 175,730, *i.e.*, 0·09%.

(5) Venesection should be employed in cases of high blood-pressure, in order to avoid cerebral symptoms.

(6) Toxæmia, sepsis and chorea are probably the chief predisposing factors in puerperal insanity.

References.—(1) Furstner, *Arch. für Psychiat.*, 1875.—(2) *Rotunda Hospital Reports.*—(3) Jones, *Journ. of Obstet. and Gynecol. B.E.*, iii, 1903, p. 109.—(4) Berkeley, *A Treatise of Mental Diseases*, London, H. Kimpton, 1901.—(5) Hoppe, *Arch. für Psychiat.*, xxv.—(6) Hoche, *ibid.*, xxiv.

THE MECHANISM OF PERSONALITY.*

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OUR conceptions of how the organs of the body work are primarily derived from experiments done on muscle, the organ from which experimenters have been accustomed over many decades to ascertain the fundamental properties of living tissues; the principles there learnt have then been directly applied to the problems presented by other organs. Such having been, and still being, scientific practice, it follows that, if we find out about the working of muscle something fundamentally different from that hitherto suspected, we not only obtain therefrom new ideas of the working of muscle, but also new principles to apply to our ideas of the working of other organs. It could happen, however, that new knowledge concerning the fundamental working of the organs of the body should actually come from some other organ than muscle. In that case the newly discovered phenomena would not be directly explicable in terms of the fundamental principles derived from muscle. Two courses would then be possible. The discoverer could re-consider his fundamental principles, and thereby be led to re-examine the workings of muscle in the light of the information supplied by the other organ, or he could frame an *ad hoc* hypothesis concerning the supposed peculiar behaviour of the other organ. The latter has been the usual course followed, though it would not appear that the framing of such hypotheses has been made with full awareness that they really resolve conflict between principles derived from muscle and principles derived from the other organ.

The existence of the practice being appreciated, it is further to be appreciated that the number of special hypotheses framed in connection with any organ gives a rough index of the extent to which knowledge of its workings is in advance of our knowledge of the workings of muscle. On that basis, present knowledge of the workings of the organ of mind must be placed well ahead of current

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muscle physiology. But the point remains that an advance in muscle science can mean the re-stating or discarding of a greater or less number of the present special hypotheses of mental science. We therefore turn to our advances in muscle.

As is well known, an induced shock applied to the excised muscle of the frog causes contraction, and hitherto it has been tacitly assumed that the electric current directly acted on and exploded, as it were, some explosive, or excitable substance in the muscle, the energy thereby set free being in some way manifested as the contraction. But we find a duality of muscular structure, in that one part is concerned in reception of, or excitation by the electric current, and then this excitable part, in its turn, evokes the activity of the contractile material (1) (8).

Muscle, in fact, works something like an ordinary gun cartridge, where the stimulus or trigger detonates one explosive, which, in its turn, evokes the activity of the propellant. In addition, in muscle all drugs, etc., influencing its activity act primarily on the excitable part.

If my muscle results be generalized, we expect to find two anatomically and physiologically distinct parts in every organ. There will be first the responding part concerned in the proper responses of the organ; there will next be an excitable part, in immediate contact with the organ's environment, determining what the responding part shall do.

This generalization is next applied to the organ of mind, and gives us two parts in it. There should be a responding part in which the proper responses of the organ occur, and these for mind should be thoughts: there should next be an excitable part in immediate contact with the perfusing fluids or other environment of the whole organ and determining the activity of the responding part. Thus, so far as my own results on muscle indicate, we could render the whole organ quiescent by an anæsthetic without that anæsthetic exerting any direct action whatever on the responding part (3) (5). The energy of the responding part of the organ of mind I would term psychic, that of the excitable part, neural.

The theory just given is very similar to that of psycho-physical parallelism, but with this marked difference in its genesis, that the present one comes directly from muscle, whereas the other is a special *ad hoc* hypothesis framed to explain what was believed to be the peculiar nature of the organ of mind. But while priority in the realization of this duality is to be conceded to the psychologist, we yet get something much more definite than he ever believed.

We find, for instance, "action at a distance" as the nexus between the two parts; in addition we find it necessary to place definite limits to the capacity of the responding organ (8).

We give also some words of caution in regard to terminology. "Neurasthenia" and "psychasthenia" can quite possibly imply quite different conditions when used in connection with the machinery we find and the conditions the clinicians find. It may therefore be pointed out that while in my judgment there is some agreement in regard to neurasthenia, it seems to me that some of the conditions at present labelled "psychasthenia" would be more accurately indicated by the term "dysneurometria."

THE TWO TYPES OF AUGMENTATION OF ACTIVITY.

I find that cardiac activity can be augmented in two ways. The one way is peculiar to the action of calcium and its relatives. In this the augmentation rapidly reaches its full effect when its producer acts, and next, when the producer is taken away, the augmentation as rapidly subsides. That is all we have to say about this type of augmentation, and it is readily seen that its characters are amply described by the word "rapid." The rapid type of augmentation rapidly appears and disappears with its generator (4) (6).

There is, however, much more to be said about the second type of augmentative change, as may readily be grasped when we enumerate some of its chief properties, which are :

(1) The augmentation definitely takes time to produce, and so, as a direct result of this time factor, if a stimulant be not allowed to act long enough it cannot produce its full effects.

(2) When the effect of a stimulant is an augmentation of moderate intensity, the amount of change produced may be regarded as roughly proportional to the time of action of the stimulant. The rate of production, however, tends to fall away when augmentations have become large.

(3) A given amount of augmentation is produced more rapidly by a strong than by a weak stimulant.

(4) When this type of augmentation has been produced, removal of its producer is not followed by removal of the augmentation. Instead, the change persists in being a short time and then slowly subsides.

(5) The greater the amount of augmentation, the greater the

time required for its subsidence after removal of its producer, though times and amounts are not directly proportional to one another.

(6) An augmentation may subside regularly, or else in a series of waxings and wanings (overswing phenomena).

This type of augmentation has, thus, many properties, and one naturally seeks to give it a name. A comprehensive name, however, would be longer than any word at present in our language, and so it was instead nicknamed by its most prominent character, which, to me, was the property it possessed of subsiding in its own time after removal of its producer. Accordingly I termed this type of change the "hysteresial," or the lagging-behind change (4). This word was originally used by the physicists, and has also been used by investigators of colloidal systems to express what seems to be a fundamental property of them. It was my intention to imply, when I used this word "hysteresial," not only that there was this lagging behind, but also that the change was mediated by aggregation changes in a colloidal system (4) (6).

Now this hysteresial change was found by me in muscle, and so it is to be anticipated that the same type of augmentative change is to be found in any other organ, provided the experiments are done in a manner permitting the organ to demonstrate this change to us; and the proviso is important, because the traditional methods of experimenting on muscle have actually prevented observers from seeing this change there before (8). It can happen, however, and it has happened, that experiments can be performed on other organs under conditions permitting observation of change possessing the characters of this change which I have observed in hearts. When that happens, then, because the experimenter does not know of the occurrence of a similar type of change in muscle, an *ad hoc* hypothesis will be framed in explanation of the supposed peculiar behaviour of the other organ. In addition, there will be differences of nomenclature—a point we may immediately consider.

Other observers have noted what was termed above, on a biochemical basis, hysteresis, but have called it by different names. Thus the psychologist speaks of perseveration, the ophthalmologist of after-images, the neurologist of after-discharge and so on, each observer giving it a name according to the bias of his experiments.

Nomenclature may also be affected by the end the experimenter has in view. If, for example, the end were to produce a definite amount of this change, then the time taken in developing that amount could quite reasonably be measured as a delay instead of developmental time. The statement above, that a given amount of

this change is produced more rapidly by a strong than by a weak stimulant, would then become transmuted into the statement that the delay is shorter with strong than with weak stimuli.

If we next add to the qualities of this change the fact that it is adversely influenced by inadequate oxidation, and then make allowances for differences of nomenclature arising from the causes just mentioned, it will be appreciated that there can be found in hearts an augmentative change having most of the qualities hitherto believed to be specific to the activities of reflex arcs. But when these qualities were found for reflex arcs, it was not known that a change of similar qualities could be produced in either muscle or nerve. The cause for this lack of knowledge, so far as the heart was concerned, was that tradition developed experimental rules, preventing the change being observed. The same probably holds good for nerve-trunks; at any rate the phenomena of electrotonus, re-interpreted in the light of the two changes observed in hearts, show that nerve-trunks can undergo hysteretical change. It is probably also of significance that these changes can only be conveniently observed in a rhythmically active organ. But whatever may have been the actual cause, the fact remains that investigators of reflex activity were able to evoke somewhere in the reflex arc activities of a type which we have found it possible to make hearts undergo. To these investigators, however, these activities were entirely novel, and outside their experience of the behaviour of either muscle or nerve-trunks. They therefore sought in the reflex arc some structure which was neither muscle nor nerve, and assigned to it these supposed peculiarities of activity. As is well known, the structure considered to possess these properties was the synapse.

It can no longer be considered, however, that a particular element in the reflex arc alone possesses these believed peculiar properties: instead, having found muscle also to possess them, and concluded that they are based on aggregation changes in a colloidal system, we should expect them to be general properties of such other colloidal systems as are the nerve-trunk and nerve-cell. Moreover, having regard to other evidence pointing to the synapse acting as a semi-permeable membrane, it really is the last element in the reflex arc, to which one should assign these properties (2). The synapse should therefore be relieved of its supposed peculiar properties—a relief which leaves it with the duty of passive conduction. Having done that, we are in a position to appreciate that the properties of reflex arcs are dependent on the production of hysteretical

augmentation in a fundamentally rhythmic structure, probably the intercalated neuron. But having thus relieved the synapse, it should be clearly understood that the theories at present current, which are based on the assumption that the synapse alone possesses these peculiar properties, automatically perish. In turn, that means an entire re-casting of current neurological ideas concerning the mode of working of the nervous system.

THE VALUE "T."

Every heart so far examined by me has a definite limit to its normal capacity for response, and so I assume the same holds good for the mind. This limit for the mind I call "T" (8).

It would be accepted by most, I think, almost as axiomatic that there must be a limit to the power of the mind, but, so far as I know, no one has used this axiom in the propositions or theories framed concerning the mind. Yet, as we shall see later, use of this axiom can make all the difference to the deductions that can be drawn from the facts of the case.

A SECOND DUALITY.

All visible cardiac activity may be regarded as being essentially an augmentation above the zero level of beating. The augmentations, however, are never of pure type; they always consist of mixtures of our two types. But while the living machine requires both to act, it can work as strongly with a predominance of the one as of the other. And what this comes down to is that if you want a beat of a particular height, though both calcium and colloidal aggregation are necessary, the more you use of the one the less you require of the other, a relationship we express by the simple indeterminate equation—

$$X + Y = C.$$

In this equation X denotes calcium, Y colloidal change, and C the height of beat required, and in it we reach our second duality, that of the excitation processes. The first, it will be remembered, was a structural duality in that we divided organs into two parts, the one concerned in response, and the other concerned in reception and control. We are now finding that the excitable structure's energy is derived from two independent sources. These facts make

it possible that drugs, etc., which act on this excitable structure, should be able to exert two independent actions.

In a previous communication it was shown that alcohol exerted two independent actions on the excitable structure of the heart, and so, presumably, it will do the same to nerve-cells (7). It happened, however, that the experimental technique devised for muscle as effectively prevented observation of this double effect of alcohol as we have already noted it to prevent observation of the hysterical augmentation. But, just as hysterical change was readily observable in reflex arcs, so also a double effect of alcohol was readily deducible from its effects on the organ of mind. Hence, because the effects observed on mind did not lead to a re-examination of the effects of the drug on muscle, two things, higher and lower centres, had to be imagined to exist in the organ of mind in order to have two things for alcohol to act on there. But having found the two things in every cell, the hypothesis of higher and lower centres can now be dropped.

If we next attempt to state the actions of alcohol and cocaine in words appropriate to the Freudian terminology, we can only conclude that, in the rapid change, we have the physical basis of his reality principle, and that in the hysterical change we have the physical basis of his pleasure-pain principle.

The relation between these "principles" can be illustrated by the analogy of a petrol motor. In a petrol motor two "principles," petrol vapour and air, can be considered to fight one another for possession of the limited space of the induction pipe and cylinders. Wherefore, because of the limited space, the more you have of the one the less you can have of the other. Therefore the two principles might be thought to be antagonists, than which there could be no more misleading conception of the working of a petrol motor.

Reverting to mind, we have to note that in the latter also there is a limited capacity which determines that the more you have of the one principle the less you can have of the other. That relationship was appreciated by Binz, and gave rise to his theory of the existence of inhibition between higher and lower centres; it was appreciated by Freud as well, and gave rise to his theory that his two psychological principles were antagonists. We considered petrol motors above to indicate that, while we consider inhibition and antagonism to be reasonable deductions, yet nothing could be further from the true workings of the organ of mind. Our finding is that this organ works always on two things which, because of the

limited capacity of the organ, have to one another the relationship the more there is of the one the less there can be of the other.

The position we have reached therefore is that we accept Freud's two psychological principles as facts of the case, but consider that to call them antagonists provides a highly misleading half-truth.

THE DIVISIONS OF MIND.

The conception reached above that thoughts are of the nature of binary alloys has been previously used by me to make subdivisions of the mind, the dividing being made entirely by deduction. For, if thoughts be based on alloys, there must be some optimum mixture of the two constituents of the alloy. Next, on either side of that optimum, the quality of the alloy must grade away until impure elements rather than alloys are reached. Such results follow from the inherent properties of any regular series of mixtures of two things. In this way the territory of mind was divided into a central cognoscible region, where thoughts are what we think thoughts ought to be, and placed on either side of this was an infra-cognoscible and an ultra-cognoscible region respectively, in which thoughts have not the qualities we customarily assign to them. Thus, if we strain to see a black hat in a dark room our cerebral visual perceptive mechanism works hard, but, in the absence of data, there is nothing in the result we should call by the name of "vision" (11).

The cognoscible region was further subdivided into the para-critical or emotional region, and the eu-critical or region of sound solid fact (11). It now seems worth while, however, to interpose a dimly-lighted or hypophasic region between the eu-critical and the infra-cognoscible region. Possibly also it may be found worth while later to place a paranoiac or ultra-critical region between the para-critical proper and the ultra-cognoscible. But, however many further subdivisions may be made, a point always to note is that mind is like the spectrum, where, while you may accurately distinguish yellow from green, you cannot say where green ends and yellow begins. These divisions we show in the diagram (see Fig. 1).

So far as I am aware, while everyone has previously appreciated that memories could die and be buried in the infra-cognoscible mind, no one has before realized that memories could be "lost" by translation to the ultra-cognoscible mind, the region of the super-abundant vigour of mental poltergeists. It was therefore not

appreciated that a memory could be as automatically "lost" through its strength, as it is automatically "lost" by increasing weakness. Nevertheless the fact remained that memories could get lost otherwise than by merely fading away with the passage of time, and so to explain this other way of losing a memory the mechanism termed "repression" was postulated.

On the whole, discussion of this repression mechanism would now be profitless. Rather should we admire the patience and toil of those who found there were two kinds of "lost" memories, and acknowledge they did the best that could be done with the material at their disposal.

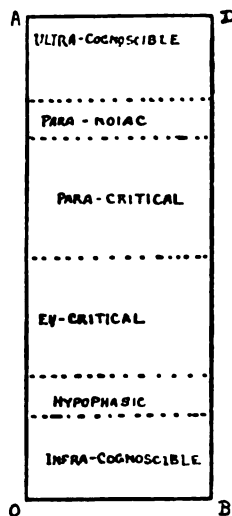


FIG. 1.

THE MECHANISM OF PERSONALITY AS DEDUCED FROM THE FOREGOING.

It has possibly been appreciated from some of the foregoing that many of the difficulties of the psychologist or psychiatrist are created by the method of approach to the facts rather than by the facts themselves. To speak, for instance, of a sensation "entering" consciousness, or of something being "made" conscious, precludes one from realizing that consciousness, by addition to something else, gives an alloy whose properties are typical of neither of its constituents. In the same way the question is begged when the mind is regarded as a storehouse of memories. Our

finding is that the mind is a storehouse of memory-traces, or L (8) (9), and also a manufactory of a judging or conscious-making factor, H . That gives us an entirely different view of what the mind of a normal person may be. We endeavour to present this view in our next diagram (see Fig. 2).

We have a rectangle, $AOBD$, divided into four regions (*cf.* Fig. 1), and we represent the strength of memory traces, or their content in L , by lines inside the rectangle and vertical to the line OB . The amount of H normally applicable is represented by the distance between the lines representing L and the line AD .

In interpreting this diagram some words of caution are necessary; no distinction is made between the L of an idea derived by integration from already internal sources—theory-framing, meditation—and

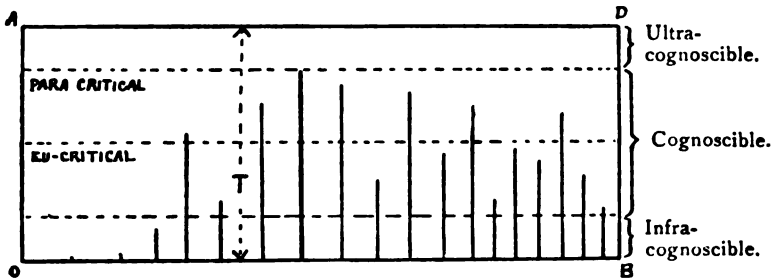


FIG. 2.

the L directly derived from some event in the environment. We merely concern ourselves with L content, and treat each packet of L as a neurogram or memory trace.

Now the ordinary John Citizen is expected to be honest, truthful, patriotic, moral, to believe himself possessed of the best woman in the world for a wife or *fiancée*, and, if he be a father, to have children somehow or other superior to other people's children. So, in the diagram, the L of the man's wife extends well into the para-critical region, whereas the L mediating any other woman should be, if not actually eu-critical, at any rate much less para-critical. The same holds in respect of children.

None of us knows, of course, what we ourselves, or anyone else, is really worth. We only know what we think we or they are worth; wherefore I am inclined to think that the "ego" is normally really an idea with much L . When we imagine we actually know what we are worth, the L mediating our ego has become eu-critical.

But the original of an idea which possesses so much L in it that enough H cannot be added for accurate judgment necessarily appears to have an overwhelming value. Hence, if some change take place in us reducing the incalculable value to the calculable, the latter must appear worthless in comparison with the former. We should also note here the possibilities associated with the all-pervading T . The ego may appear overwhelmingly valuable because of its very strength in L , or a normal strength in L may appear of overwhelming value because its possessor has a small T .

Now when the individual is truly honest, patriotic and moral, he never requires to do any hard thinking before he exercises these virtues. He just acts without pausing to consider the matter. His practice of virtue is, in fact, of that effortless type which denotes little H (10). Hence we place the virtues in the para-critical region. On the same basis we would assign to the good woman's conception of her virtue an amount of L which places it beyond her appraisal, but the prostitute's corresponding L would be eu-critical. But, if the average man has a greater T than the average woman—which seems likely—and a man and a woman develop equal amounts of L to mediate a virtue, the man should be more "reasonable" about it than the woman and so appraise its value more accurately. Wherefore the average man should be more "reasonable" about these affairs than the average woman. But a virtue that can be "reasoned" about ceases to be what we regard as a virtue. On the other hand, when we consider inborn capacity to tell the truth, the possessor of the smaller T is at a disadvantage.

The para-critical region, then, is the region where are the memory traces of all the ideas on which we place a high or incalculable value, that is to say where a man keeps the memories of his parents, wife, children, and his virtues. The eu-critical region is the region of technical skill. Thus, when the architect "dreams" a new building he works in the para-critical sphere; when he draws up the plans and estimates, he works eu-critically.

In the diagram above (Fig. 2) a specially thick line has been drawn extending far into the para-critical region. It may be considered in fact, if we make a subdivision between the paracritical and ultra-cognoscible, to extend into the paranoid or ultra-critical region. That long line is intended to represent its possessor's "bee in the bonnet"—that superlative idea which to him is the most important thing in the world. Because of its strength in L , that idea must be ever prepotent to attract his H (10), and only by continuous effort can he add H to any other idea. To be possessed of such an idea is quite

a normal phenomenon, and when he "marries the girl" everyone is satisfied. We may, or may not, be satisfied if the possession of such an idea leads its owner to devote his life to the conversion of the heathen. We are usually dissatisfied when the idea is one of conspiracy. But we should no more expect to argue the young man out of his conspiracy idea, than we should expect to argue the young man out of his love for the lady because these ideas are to their possessors beyond reason. They can only feel "in their inmost soul" that these ideas are true. But they get that feeling because there is so little *H* and so much *L*. Our minds are built for self-deception!

We consider next what would happen to the person after taking alcohol, the drug which adds *L* and removes *H*. Ordinarily this drug is taken because the resulting accretion of *L* to all ideas gives feeling-tone to what in its absence is plain, cold fact. Thus also it comes about, since *H* mediates effort (10), that many things now can seem effortless which, without alcohol, would be effortful; the eu-critical tends to be para-critical.

But the same change that makes para-critical of things eu-critical makes ultra-cognoscible the "bee in the bonnet," and its possessor thereby temporarily "loses" what without alcohol was his most treasured possession. Admittedly also it could be his most thoroughly disagreeable possession. If it be the latter he will take alcohol to lose it, at least temporarily; if it be the former he dare not take alcohol for fear of losing, even though temporarily, his most treasured possession.

Emotion can do the same as alcohol, and temporarily "lose" for the individual all that, without the emotion, he stood for.

Our next step is to assume that there are toxins which can selectively increase the content in *L* of neural excitation processes even more effectively than alcohol. If such happen within us and we possess a "bee in the bonnet" that bee will be the first to go. The result will be an altered personality, for the result of sending an idea into the ultra-cognoscible region will not be a mere "cooling off," but a complete loss of that idea from cognoscibility. We shall get, in act, complete frigidity—*une belle indifférence*. The new person will know nothing of the old, but be dominated instead by the next "highest" idea. Moreover this "new" person, while perfectly oblivious to its predecessor, should yet be known to, but be despised by that predecessor—though despised is, perhaps, a harsh word. The point is that the largest *L* should value less highly and so look down on, as it were, ideas with lesser *L*.

It seems to me possible that these altered personalities are more common than are generally supposed. One that came under the direct cognizance of the psychologist was a young lady, keen on some form of good work, who suddenly left it and went in for a "good time" instead. Then there is the engaged girl who suddenly realizes that her *fiancé* really means nothing to her and breaks off the engagement, and renews the engagement some months later when the "normal person" once more returns. It seems to me that these events are just as much cases of altered personality as those which the psychologists describe, for there could be no more radical change of outlook than that implied by a broken engagement.

Returning to our honest John Citizen, who has settled down with his wife and family, we expect his behaviour to be dominated by them and his responsibilities to them. If, then, some change take place in him, giving a general accretion of *L* to all his ideas, we should expect those he holds dearest to pass first to the ultra-cognoscible. His wife, children, and his responsibilities pass to the ultra-cognoscible, and mean nothing to him. The same change gives added feeling-tone to his former eu-critical ideas. Therefore he may believe he has money to spend; he can no longer exactly appraise his possessions; he can only believe he possesses much. As regards his personal capacity, that will be believed infinite, for with so much *L* he cannot have the *H* which gives the "sense of effort."

L also is energy, some of which is lost in fatigue. Hence, with such an abundance of *L*, there will be abundance of energy, and little, if any, fatigue. Accordingly I consider such conditions should be considered to be exhausting neuroses, not exhaustion neuroses, because the patient does not get neurosis through exhaustion, but gets exhaustion through the neurosis.

We will examine next the possible happenings if *L* decreases and *H* increases. In this case, instead of being entirely oblivious of his responsibilities, he knows that they are much less important than normal people imagine. He has also gained some knowledge of the real value of his wife and family through the *L* of his responsibilities, wife and family having passed from the para-critical to somewhere near or in the eu-critical level. On the other hand, his "possessions" will have passed from the eu-critical to the hypophasic or even infra-cognoscible region. If they get only to the hypophasic he will believe himself on the verge of ruin, whereas if they get to the infra-cognoscible he will have lost all.

And it will be useless to argue with him, because he has seen with his own "eyes" these things fade away. For all we ever "see" of our possessions is their L within us, and that we "see" through H .

Our melancholiac will find everything hard work, of course, because all his thoughts contain much H . He can also be expected to be careless about his personal appearance, through his ideas of those matters losing enough L to teach him that they do not matter.

Melancholia and mania were selected above to show how a personality could be dissolved solely by dysneurometria without change of total intensity. Neurasthenia and its opposite "neurosthenia" should be equally potent. There may also be conditions in which the brunt of change falls only on H , and others in which the brunt falls only on L .

The mind is a collection of discrete packets of the factor L sorted out according to size, and we are constrained to estimate the value or importance of any idea or thing in terms of the size of the packet of L mediating it for us. But after a certain optimum has been passed, our capacity to estimate L automatically decreases as L increases, with the result that the L eventually becomes for us incalculable, though actually quite finite.

Practice, training or meditation increase the value of L , and so, if we live amid an environment where the ten commandments are regularly practised, the L mediating them must eventually assume an incalculably high value. If, then, the individual is properly responsive to his environment, he must eventually hold in the highest esteem his own environment; there will be, in fact, "nothing like leather." Moreover, by appropriate training the machinery can develop any sort of "mad" idea, which to its possessor will be held of the highest importance, and, quite rightly, beyond reason; at least it will be beyond its possessor's reason. To another man, of course, this high ideal can well be a "fact" to which the full power of discrimination can be applied.

The man who is normally responsive to his environment thus holds certain ideas in high esteem, and among them, through constant practice, will be his name, occupation, family and so on. We expect him, again in accord with his environment, to hold other things of lesser account. So long as those things happen, we consider him a normal person. Accretion of L "dissolves" the personality, the things normally held of most value going first, those normally held of least value going last, so that at that last

the victim can only find the greatest delight in things and doings once utterly despised. Depletion of *L*, on the other hand, should give the altered person a low idea of the real value of the things he once prized too highly.

References.—(1) Burrige, *Journ. of Physiol.*, 1911, xlii, p. 359.—(2) *Idem*, *Quart. Journ. of Physiol.*, 1912, v, p. 347.—(3) *Idem*, *ibid.*, 1913, vii, p. 145.—(4) *Idem*, *ibid.*, 1915, viii, p. 303.—(5) *Idem*, *Quart. Journ. Med.*, 1915-16, ix, p. 43.—(6) *Idem*, *Quart. Journ. Physiol.*, 1920, xii, p. 339.—(7) *Idem*, *Arch. Int. de Pharm. et de Thérap.*, 1922, xxvii, p. 239.—(8) *Idem*, *Journ. Ment. Sci.*, 1929, lxxv, p. 371.—(9) *Idem*, *ibid.*, 1930, lxxvi, p. 96.—(10) *Idem*, *ibid.*, 1931, lxxvii, p. 341.—(11) *Idem*, *ibid.*, p. 345.—(12) *Idem*, *ibid.*, p. 358.

STUDIES IN EXPERIMENTAL PSYCHIATRY: I.—A CASE OF GENERAL INERTIA.

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INTRODUCTION.

THE present paper is a forerunner of what is hoped may be many devoted to psychiatric material by experimental psychologists of the Spearman School of Factors.*

Results will be available, later, of a preliminary survey of general psychotic material, in which the experimental methods of the School of Factors are employed. At the moment, however, there is required some initial exposition of these methods, of the *factors* that are theoretical guidances, of the tests that are used; in the following pages an introduction is offered to the Spearman p-factor.

The record that forms the body of this paper is taken from one subject. By describing the p-measurement for this, we hope to illustrate the theory of "general inertia" (which is taken to be an account of objectively determined p-factor), showing at the same time the details of some of the p-tests, and explaining the kinds of responses obtained. The exhibition of our methods in terms of the work done by one subject can supply an illustration that would be impossible of description in future papers, where p-measurement will be *used* rather than explained.

P-FACTOR AND THE THEORY OF GENERAL INERTIA.

Experiments with tests such as those described below, with colour disc, light adaptation and the like have supplied evidence of a common factor, which, non-committally, is called the p-factor. The facts of the p-factor appear to unify a multitude of related

* The Studies introduced by this paper were initially under the supervision of Professor Spearman and the late Dr. J. R. Lord. They are directed and now supervised by Dr. Stephenson, the work being centred at Horton Mental Hospital, Epsom. Subsequent papers will introduce other *factors* and their experimental technique for work in mental hospitals, followed by an account of the results of the preliminary survey of psychotic material. See *Abilities of Man*, C. Spearman, F.R.S., 1927 (Macmillan); *Psychologies of 1930* (Clark University Press); C. Spearman, "Maudsley Lecture," *Journ. Ment. Sci.*, 1929, lxxv, p. 357.

observations of Müller, Wiersma,* Gross, Benecke, Jung, and others. As a general account of the facts, Prof. Spearman has suggested the theory of *inertia*.

An individual's intelligence, his g-factor, can be regarded as available general mental energy; and p-factor is then the amount of inertia of this energy. The amount of "p" is characteristic of an individual, just as is his "g." We may picture general mental energy "switching" with extreme sluggishness from a group of neurons subserving a particular mental activity to another subserving a different activity, as when a mental activity begins or ends in an individual who is sleepy or narcotically drugged; antithetically, the energy may "switch" with great facility, instantaneously, from one operation to another, as, perhaps, occurs in the maniacal patient. Degrees of this sluggishness-instantaneity antithesis, it seems, is what is measured by p-factor. The sluggishness is high "p," high inertia, the instantaneity is low "p." The shadow, however, should not be mistaken for the substance; p-factor is factual, given by experiment; *general inertia* is theoretical, a work-a-day "explanation" of the p-factor. It should indeed be re-emphasized that it is a matter of fact that certain tests show a common factor, and that the question to be considered in the present paper only concerns the interpretation to be given to these facts. The facts have been "explained" by Prof. Spearman in terms of a concept of general inertia, and in the present paper we are to show the pertinency of the concept, using for our material a few details observed in the application of p-tests to one individual.

X-Y P-TESTS.

Perhaps the most fruitful p-tests are those of the kind first used by Heymans and Brugman (1913), and by Jones, Lankes and Bernstein (1914-1924) of the Spearman School. In these the guiding explanation is a possible "continuance, subconscious or even completely unconscious and purely physiological, of the effect of a past experience," as shown by the degree of hindrance which the inertia effect of the past mental activity effects upon a similar, new, activity. Thus the X-activity may be that of writing Z's as quickly as possible with good quality; a succeeding activity (Y), possibly hindered by the X-activity, may be that of writing Δ 's. If this ZZZ test were of high p-saturation, the individual of high "p" would write Δ 's with relatively great

* Wiersma, *Journ. Ment. Sci.*, Jan., 1930, lxxvi, p. 1.

difficulty, and on some occasions *Z*'s may be written instead of Δ 's. On the other hand, the individual of low "p" would write Δ 's relatively as easily as he writes *Z*'s. It is tests of this X-Y type that we are to describe in the following pages.

At once, if p-tests of the *ZZZ* kind are used, the reader may desire to bring forward reasons for supposing that such tests are perhaps dependent upon fatigue effect for some subjects, perhaps influenced by g-factor for others, perhaps a measure of effortfulness rather than inertia for others. What, it may similarly be asked, of handwriting anomalies, of motor neuro-muscular disabilities? What of speed in the activities, of inhibitions, of memory? These are but few of many explanations that similarly may be put forward to explain the facts obtained, and their value can be appraised from details of the kind we are about to consider. We are to show that it is not because these various possible influences in p-tests have not been considered that we use the concept of general inertia as our "explanation" of the general facts shown by p-tests.

THE SUBJECT AND THE P-TESTS APPLIED TO HER.

The p-tests were applied to a Miss M—, æt. 30 on admission to hospital (first admission), where she had been for a year. M— stands, or sits, with her head down or averted; appears to take no interest in outside matters; makes lip movements as though talking to herself, but does nothing voluntarily otherwise. Given time, she answers questions put to her, but by lip movements. Only once or twice was audible speech made in answer to questions, and this usually only when plenty of time was given her, and when the questions were pressed. It seemed at first that it would be impossible to test her, but, in the course of an hour, the following tests were given:

(1a) *e-writing Test.*

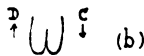
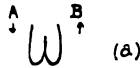
This is an X-part for Test No. 1, the others being applied later. The subject writes *e*'s, as in Fig. 1(a), for 30 seconds.

(2) *XXX Test.* (See Fig. 2.)

- (a) Subject writes *X*'s for 30 seconds, at an easy, comfortable, natural rate.
- (b) The same as (a).
- (c) Subject writes *X*'s as rapidly as possible, with good quality, for 30 seconds.
- (d) The same as (c).
- (e) Subject writes *X*'s, again at an easy, natural rate, as at (a) and (b), for 30 seconds.

(3) *www Test.* (See Fig. 3.)

- (a) Subject writes *w*'s for 30 seconds, as quickly as possible, with good quality.
- (b) and (c) The same as (a).
- (d) Subject writes reverse-stroke *w*'s, as quickly as possible. (Instead of writing from A to B, shown at (a) in the accompanying figure, each letter is written by commencing at C and ending at D, shown at (b)).

(4) *Strokes Test.* (See Fig. 4.)

- (a) Subject makes series of three short strokes and one long stroke, quickly, for 60 seconds.
- (b) and (c) The same as (a).
- (d) Subject makes series of two short strokes and a long one, quickly, for 60 seconds.
- (e) Subject is required to make, first, three short strokes and a long one, second, two short strokes and a long one, and so on, alternately three and two throughout. For 60 seconds, quickly.

(1b) *e-writing Test.* (See Fig. 1.)

This is the same as No. 1a above, but 1 minute is allowed.

(There follows, usually, a cancellation, a colour-saying, and an adding p-test. M—'s work at this juncture is mentioned below.)

(1c, d, e) *e-writing Test.* (See Fig. 1.)

The test has been commenced already, at 1a and 1b above.)

- (c) The subject repeats 1a, and 1b, for 1 minute.
- (d) Subject writes reverse-stroke *e*'s, for 1 minute. (As in the case of the *w*-writing the stroke is commenced where it is usual to end it.)
- (e) The same as (d).

(5) *ZZZ Test.* (See Fig. 5.)

- (a) Subject writes *Z*'s for 1 minute, quickly.
- (b) The same as (a).
- (c) Subject writes Δ 's for 1 minute, quickly.
- (d) The same as (c).
- (e) Subject writes ΔZ 's, alternately *Z* and Δ , for 1 minute, quickly.

The general testing procedure is to give first a demonstration of the requirements in the (a) part of the test; to allow the subject to make samples on a scrap of paper; and then to let her

proceed on the test paper. Approximately 20 seconds' rest is allowed between any two parts of a test, *i. e.*, for instance, between (a) and (b). All new activities are similarly demonstrated and allowed a short practice on scrap paper.

The tests above (five in number) are part of a battery of ten that are being used for examination of patients in the mental hospital. The testing hour for M— proceeded as follows:

Tests were given in the order No. 1a to 1b. A cancellation test was next attempted, followed by an adding test (they are not described above), 15 minutes in all being spent at this juncture. The record of work done showed that M— understood both test requirements, but at this point she appeared to be sheerly immobile. She did XOI cancellation (cancelling these letters from a list of mixed letters) for $1\frac{1}{2}$ minutes, cancelling only eight letters. She did six additions only, in 3 minutes, adding 1 correctly to 9, 2, 7, 3, 6 and 5. These tasks were done uniformly, but very slowly. Thus M— appeared to be at a minimum condition of activity, as though thoroughly wearied, or "shut in."

After a period of 5 minutes' rest the tests No. 1 (c, d, e) and No. 5 were applied. There can be no doubt that M— would have shown effects like these to be described below, had she been in a condition similar to that under which she did the tests here reported, had other p-tests been used instead of Nos. 1, 2, 3, 4 and 5.

For the purpose of this paper we could have chosen the records for a patient to whom had been applied a full, and wider based, battery of p-tests. We selected M—'s work for brevity, and because various effects are well illustrated. Her record is typical of that obtained from many subjects.

A RECORD OF THE WORK DONE BY MISS M—.

The work done by M— is given in Figs. 1 to 5, each an accurate copy of the test paper for each test applied. The printed letters in the figures were put in later, by myself, for the purpose of the present description; the small dots, running parallel with the letter-writing, were put on the paper whilst M— was writing, and show the position of the work at the end of each five seconds of testing time.

(I) *The e-writing Test.* (Fig. 1.)

(1a). I showed M— a set of *e*'s, which I did before her, next indicating that I wanted her to write the same letters for me. She did those at Fig. 1a, with uniform speed.

(1b). (It will be recalled that tests Nos. 2, 3 and 4 were next applied, and that this 1b followed No. 4.) The work shown at Fig. 1(b) was done only after the directions had been repeated several times. Note the timing irregularities; she did the writing sluggishly, and whispered softly and slowly at odd moments. At A she had to be loudly shouted at to proceed. I let her continue for 65 seconds, when she stopped at the end of the page.

(1c). (This followed the 15-minutes' interval mentioned in the previous section.) It was only after repetitions of the requirements that M— did the work shown at Fig. 1(c). At A she is urged on by me, but she proceeds well from B onwards.

(d). M— received the usual demonstrations, and did the work shown at (d), Fig. 1. The requirements are now reverse letters.

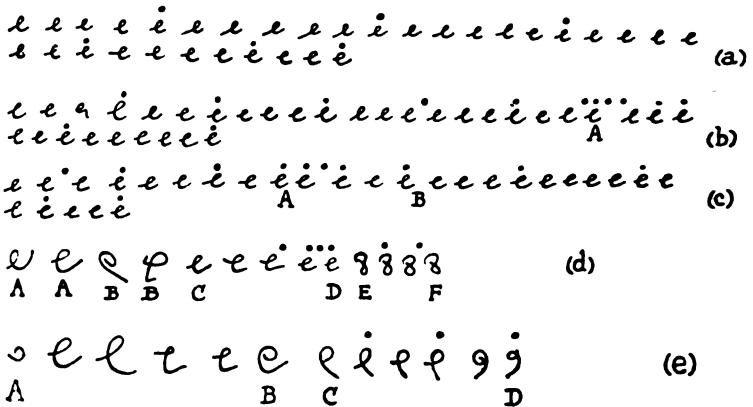


FIG. 1.

She fails at AA, but does BB as demanded, *i.e.*, in the reverse stroke way. I restart her at C, but she does the first five letters in the normal way, *i.e.*, here incorrectly, since reverses were asked for. At D she is told that she is incorrect, and the next four letters, from E to F, were done with some success, the reverses being made, although not with *e*-shape as a result.

(e) The directions are again repeated, reverse-writing being slowly demonstrated. She then produces the writing from A to B, (e) of Fig. 1. She knows the requirements, because each letter is done with renewed effort; but each letter is done normally, *i.e.*, here incorrectly. At each attempt she shows disappointment, makes mouth movements to the effect of trying and despair, puckers her eyes and brow, shakes her head slowly after each failure, and finally looks away from the paper at B. I get her to try again, and she does C with success, but will not continue. I then take her hand and trace out, in reverse way, a dozen *e*'s. She then tries once again, and gives C to D correctly, *i.e.*, all done with reverse strokes.

We note the following findings: (i) We have evidence that M— recognizes the test requirements throughout; (ii) the reverse writing is accomplished only after apparent difficulty has been overcome; (iii) when M— failed in reverse, she gave normal *e*-writing instead.

It will be well to consider the theory and function of the various *p*-tests as we come to them in our record.

The suggestion may be made, immediately, that the result at (ii) above is attributable to the fact that M—, like a child, has to be taught a new activity; that it is acceptable to "explain" the apparent difficulty in *Y*-activity as due to M—'s "lessened consciousness," her low ability for learning new activities of any kind, her low "g," with, in addition, effects of motor or neuromuscular disabilities. We hope to show, however, that such an explanation does not cover all, and not the most interesting facts presented to us by M—'s work in this test.

Some individuals of "g" as low as M—'s can manage the reverse writing almost as well as they write normally. And, as (d) and (e) show, M— was aware of the test requirements—she did at last succeed. The normal *e*-writing that is done at (d) and (e) in Fig. 1 was the outcome of striving by M— to make reversals. Prefacing each letter that was written, for a matter of some seconds, there were preparatory movements by M— of the kind associated with both normal and reverse *e*-writing—although there can be no record of it on the test paper, other than the time record, M— was trying to make reversals; yet, when the attempt was put on paper, each "tumbled" into a normally written *e*-letter. Again, it should be observed that the reverse stroking is not so very different from that done in making the "tails" of the letters *g*, *j*, *y*, and part of *s*. M— could make these letters with ease. Thus, nearly similar reverse stroking must have been made thousands of times previously by M—. Taking the above details into consideration, the *Y*-activity difficulty is not merely that M—, like a child, has to be taught new ideational and neuro-muscular activities.

"Difficulty" of the kind considered above does not, in any case, explain why *X*-activity occurs at the failure of *Y*-activity. This recurrence of *X*-activity is important. It need not show on paper, whilst yet being experienced by the subject. The latter, instead of experiencing nothing but *Y*-activity, may be having the ideation, the memories, of normal *e*-writing, without giving overt expression of this experiencing. The pauses and movements that preceded M—'s reverse *e*-writing (or failure at it), those mentioned in the

previous paragraph, were undoubtedly intricately woven with movements preparatory to normal and reverse writing, showing that both were in mind, voluntarily or otherwise, during these intervals. Thus, it may be that M— was unable to depart from the normal *e*-writing, both in its purely motor and its ideational functioning, if the two were separable. It seemed as though the normal *e*-writing was *persisting*. This, to a large extent, might explain M—'s difficulty in Y-activity. The persistence, so we could theorize, is an expression of M—'s high general inertia. Strictly, from the fact that X-activity reappears when Y-activity is called for, and from the subtle details that are observed, but cannot show on paper, we can say that the normal *e*-writing has *recurrences*; but, as Wiersma notes,* there is ample evidence of non-conscious functioning of the mind in hypnosis, hysteria and psycho-analysis, and we popularly use the word "*persisting*" to imply that the X-activity has continuity; it may be at times subconscious, later to rise fully into consciousness as "*recurrences*"; it may rise into overt expression without being consciously experienced; it may, when subconscious, influence other, similar, conscious activities.

With the question of "*recurrences*" in mind, we can draw attention to M—'s work in later tests, where unexpected *e*-writing is done, on occasions that called for altogether different activities (see Tests 2 and 5).

Before we leave the present test, the question of "will," "willing," "will-expression," *w*-factor, etc., may arise to the critically-minded, asking how far these enter into the work done by M—. This, however, will be better considered when results for other *p*-tests have been recorded.

(II) *The XXX Test.* (Fig. 2.)

As recorded above, this test followed the part (a) of the *eee* test, *i.e.*, after M— had been writing *e*'s for 30 seconds.

(a) After the usual demonstration, M— does the test, and gives (a), Fig. 2. Two minutes had elapsed since test No. 1a had been done. At A she broke down into *e*-writing. She was stopped.

(b) Easy, natural, X-making is again required; the directions are again repeated, the X-writing is slowly demonstrated.

The demonstration at (a) and (b) includes a set of letters done very quickly, and a set done extremely slowly, it being shown that neither is required. Just what is natural, the easiest writing possible is wanted. It is difficult to know whether M— has understood, but she produces the set of X's at Fig. 2 (b), in half a minute, with uniform ability.

* *Journ. Ment. Sci.*, Jan., 1930, lxxvi, p. 1.

(c) It is now demanded that the X's be made as quickly as possible. After a demonstration, M— produces the work shown at Fig. 2(c). It is obvious that she understands the test directions.

(d) A repetition of (c). Also well done.

(e) Easy, natural X's are now required. In the demonstration her work at (a) and (b) is pointed to, and she is shown equally slowly made X's. Her work is shown at (e), Fig. 2. I have numbered the five-second sections 1 to 6. Sections 1 and 2 appeared to be done with control, but at 3 M— goes ahead; 4 and 5 are controlled, it seems, and at 6 she goes ahead again. In the sections 1, 2, 4 and 5 there is a more deliberate making of X's, with a waiting period after each. At 3 and 6 the writing is done very quickly, with only a slight pause between each letter.

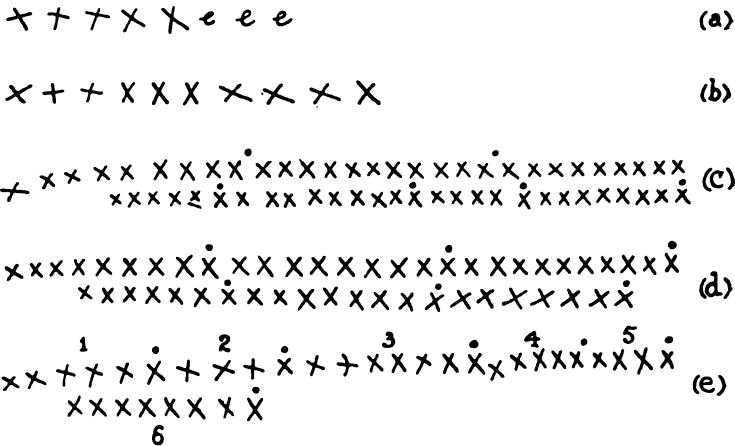


FIG. 2.

We note, once more, the following points : (i) The test directions are understood ; (ii) fast X-activity appears to persist at (e) ; (iii) there is unexpected recurrence of e-writing at (a).

What are we to say of this appearance of e-writing ? M— has to make X's in a comfortable, free, natural way, *i.e.*, without effort. The test condition is thus probably propitious for free, spontaneous recurrence of a past activity. The past activity, too, is in its totality a very new one, and is therefore likely to be the more thoroughly " set." After 15 seconds of this effortless X-making (as the later parts of this test show, M— must have appreciated the test requirements), e-writing appears, of the kind that had been made a few minutes before in Test 1. If M— has not been antagonistic or negative, we have here an example of a

spontaneous recurrence, overtly, of a past activity. We return to this matter later.

We take sections (c) and (d) to be the X-activity, and section (e) the Y-activity of the p-test. There can be no question of objective difficulty in the Y-activity. We note, again, that M— shows that the test requirements are understood. There is no defect in M—'s "willing," *i.e.*, in making decisions preparatory to, or contemporaneous with, activity. Furthermore, the Y-activity cannot be criticized, as a p-indicator, on the ground that M—'s "will," as purposiveness and striving to overcome difficulties, is defective. For, if M— has understood the test directions, *striving* in the (e) activity would show itself, if at all, as a controlling influence, a check on the natural tendency to persist with the fast X-activity. If M— had "willed" to make strokes as slowly as she had done at (a) and (b), with the result showing at (e), her ability to strive against native difficulties must be, true enough, extremely weak. On the other hand, if M— well knew that care-free conditions had to be attained, the work done at (e), observed by M— to be fast in comparison with that done at (b), may have received temporary checks as in sections 1, 2, 4 and 5. In either case the result is that of Y-activity influenced but slightly by M—'s "will" (effortfulness). But this "willing," if at all effective, here acts in a direction *opposing* that of persistence of previous activity. The theory of persistence of X-activity is thus tenable, no matter what is said of the "will" or "willing."

It cannot be accepted that M— has misunderstood the test directions at (e)—the work done in comparison with that done at (c) and (d)—and the subtle characteristics that we have described militate strongly against the suggestion. Again, that M— can, at will, change from the effortless writing at (b) to the fast writing at (c) and (d) is far from showing that M— is a sheer automaton. The fast X-activity is understood by assuming that M— was definitely striving to do her best, consistently and with success. The high degree of effort, we conclude, leads to a thoroughly "set" fast-activity, which "persists" in the manner shown in the work at (e).


Finally, it may be proposed that a theory of "suggestion," or "suggestibility," could explain the Y-activity effect that is shown by this test in M—'s case. In answer to such a proposal, however, we have to say that, as correlational data will show, the phenomenon observed in this Y-activity at (e) must be taken to be like that found in other p-tests, in some of which "suggestibility" cannot acceptably be said to play a part.

(III) *The www Test.* (Fig. 3.)

(a) Fig. 3(a) shows M—'s first *w*-writing, after the usual demonstration had been given. She starts with well-made letters, but thereafter makes extra loops. She does this in spite of effort to do otherwise, and fails until she arrives at A. Thereafter, however, the extra loops are made again.

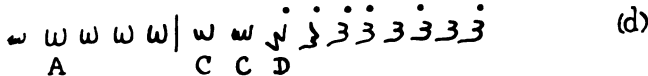
(b) The directions are again given, a letter with two loops only being asked for. She uniformly gives extra loops, under various degrees of concentration I think. From A onwards I demand only two loops, but each letter "tumbles" into a series of loops.

(c) The same normal *w*-writing is required. She starts with a many-looped letter; I stop her, and show her the proper letter, by writing the letter at B for her. I start her again at C but she goes on doing many loops.


(a)


(b)


(c)


(d)

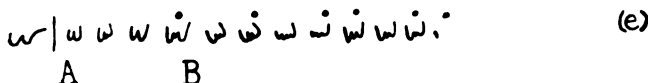

(e)

FIG. 3.

(d) The reverse *w*-writing is now required. M— would not, at first, try the reverse writing, showing that the requirements were understood. She makes two correct reversals on scrap paper. By way of encouragement I make the first four letters at Fig. 3(d), *i.e.*, at A. She then commences the test herself, at C. Her first two letters are done in the normal way, without reversing, but on her own initiative she manages reversals from D onwards. She fails to make the reverse *w*'s as though written on a horizontal line, but each is made by commencing at the top, and they are all approximately correct.

(e) I try her again with reversals. She fails at the first, is stopped, the directions are given again, and she then commences the test again at A, Fig. 3(e). She fails in each case, but from B onwards she knows her mistakes: from B the letters are written after a pause, with what seems like an effort to make the reversal. The timing shows this quite clearly.

We note the following details: (i) there is ample evidence that M— understands the test directions, and tries her best to do what is required; (ii) M— makes many loops per “*w*,” in spite of effort made to control the writing; (iii) the reverse writing is apparently very difficult; (iv) when Y-activity fails, X-activity is given instead.

First we note that M— fails to make just two loops to each letter, except when it is made deliberately and slowly. In quick writing the loop-making seems to persist, as though the writing can be itself an indication of inertia. The phenomenon is very frequently observed for subject of high inertia.

Secondly, M— was partly successful at (d), making approximate reversals. The paper cannot show what was observed, namely, that prior to the making of each reverse letter, M— made a network of movements preparatory of both normal and reverse writing, precisely as had been done in the *e*-writing in Test 1. Later, M— could make 3's (her writing at (d) is really 3-writing) with ease. It is not sufficient to say that M— misunderstood the test directions at (e), but it is possible that her best efforts were not put into this work. If only poor effort was given to the work at (e) this need be no criticism of the test as a *p*-measure; tests for *p* should have effortfulness as a factor of uniform influence in both X and Y activities, and there is such a uniformity for, say, parts (a) and (e) of this *w*-writing.

Finally, the reverse writing may, no doubt, be “difficult,” and all that has been said of this matter for the *e*-writing will apply equally in the case of this *w*-writing. We add, however, that *p*-measure is a relative measure (X/Y) which need have no correlation with either X or Y ability; further, the *p*-measure for tests such as the *e*-writing or *w*-writing correlates with the *p*-measure provided by tests, such as the XXX above, which are free from difficulty in the Y-activity. “Difficulty” is thus not a relevant explanatory consideration. Rather, the “difficulty” in the Y-activities is in part a consequence of high inertia in a subject such as M—.

(IV) *The Strokes Test.* (Fig. 4.)

(a) It will be recalled that this part of the test requires three small strokes to be made, followed by a longer stroke. M— does the work shown at (a), Fig. 4, with excellent concentration. As in *w*-writing we note a tendency for continuing the stroke-making—a fourth small stroke is made on occasion before M— regains control.

(b) The directions are repeated, the stroke-making is again

demonstrated, and it is emphasized that only three small strokes are required. The work is started, but M— produces the set of *w*'s, at (b), Fig. 4. After 15 seconds of this writing I stop M—; I repeat the directions and demonstration, and M— makes the required strokes on scrap paper. She is asked to make the strokes (I point to her samples) on the test paper, the same as those already done at (a) (I point to her work at (a)). She then gives the letters at A, Fig. 4 (b₁). After making three *w*'s M— is stopped; I say that they are incorrect, and I demonstrate once again, this time doing the set of strokes at B (b₁). Started once more, she

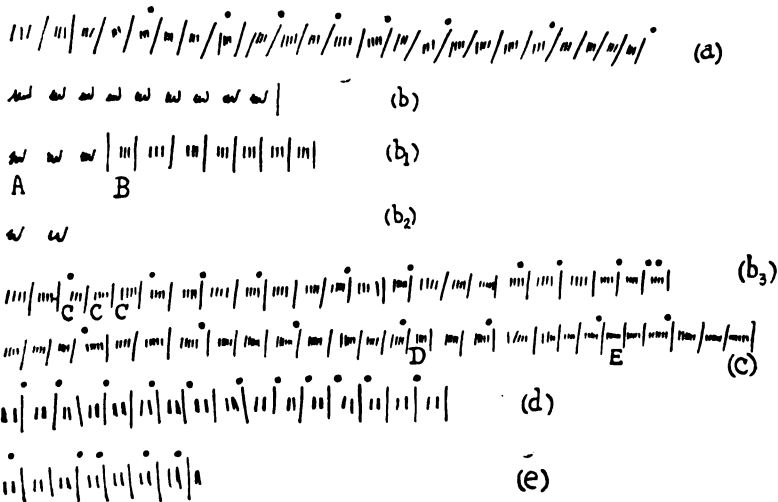


FIG. 4.

immediately produces two further *w*'s (at b₂); however, she now knows fully that she is in error, and restarts voluntarily at (b₃). She first gives four strokes, and at CCC I command her to do just three small strokes and a big one. The rest of the stroke-making at b₃ is done, apparently, with various degrees of attention given to the matter; here and there she pauses at the end of the fourth small stroke, as though noticing her errors.

(c) The directions are again repeated, but she gives the work at Fig. 4(c); *i.e.*, it seems as though many-stroke-making is persisting. At D and E she is commanded to do just three small strokes, and, although appearing to try, she is not successful.

(d) The test now requires two small strokes only, followed by a longer one. The test is done successfully so far as outward appearances go, but each small stroke is the result of many strokes, made one on top of the other, so that M— is really repeating the stroke-making of section (c), keeping in mind a number or spatial relation at the same time.

(e) Alternation is now required—first three small strokes, a longer one, then two small strokes, a longer one, and so on. She continues to do the type of work already give at (d). I considered that it would require 10 minutes at least for me to get M— to do the required strokes: I therefore passed on to Test 5.

We note the following observations for Test 4: (i) There is spontaneous recurrence of the previous *w*-activity; (ii) it is a matter of apparent difficulty for M— to make just three small strokes when quick writing is attempted; (iii) there is shown disturbance when M— has to break the X-activity at (d)—the X-activity small stroke-making appears to persist, and the total work done is considerably more effortful or more difficult, to judge from the timing record at (d).

The making of many strokes shows the "tumbling" noted already for *w*-writing. The work at (a) seemed to have "set" the small stroking activity; the group of three (or more) small strokes is made rapidly, and a distinct effort has to be made to "break away" for the long stroke. The work at (c), undoubtedly, may be said to show "lack of control," but this is no real disadvantage from the point of view of *p*-measure—the point to be noted is that, for uniform X and Y effortfulness, some individuals can alter the stroke-making from one to another number per group, apparently without showing the slightest tendency to persist in the mere stroke-making, whilst here, for similar uniform effortfulness, M— continues to make strokes, persistently, as though great inertia were involved. After the work of sections (a), (b)₃ and (c) the stroke-making is well "set," and her work thereafter is undoubtedly influenced by this "set." Thus, each apparently single stroke at (d) and (e) is the result of many strokes made one on top of the other. M— had appreciated the test directions, but had taken the line of least resistance—the line set by her inertia.

The spontaneous recurrence of the *w*-writing at (b) is of real interest. There is raised, again, the question of display of negativism by M—. On this matter the psychiatrists of the hospital and two fellow psychologists are in agreement that M— shows *no* negativism in her general reactions. Throughout our tests (as in others applied by other members of the Research Staff) M— shows appreciation of the various test requirements. Notice, for instance, the timing of the various Y-activities, even when they show failure; we add, too, that M— showed by her mouth movements, signs of despair, and the like, that the various difficulties were being faced; and further, the work done by M— is similar in essentials to that done

before this ZZZ test was commenced, M— was giving good attention to ϵ -writing. Her work in the ZZZ test is as follows :

(a) M— was shown the test demonstration, etc., and she did some Z's on scrap paper. She commences the test on the proper paper, but gives ϵ -writing instead of Z's. After five or six seconds of such writing she is stopped. I write the four Z's A to B at (a₁), Fig. 5, and thereafter M— does the required writing.

(b) I now call for quicker writing, and M— gives that at (b), Fig. 5.

(c) The test then calls for backward letters (Δ 's). She is successful on scrap paper, underneath the demonstration Δ 's, but she fails throughout at (c), Fig. 5. I say, "No, I want them made around the wrong way" most of the time, and, as at C, she frequently appears to try to do writing other than Z-making.

(d) The directions and demonstration are repeated. M— now gives the work at (d), Fig. 5. The first letter is done the normal way, that is, incorrectly here, and the second is commenced wrongly. Of her own initiative M— thereafter succeeds with Δ 's. Her success is partly due to the fact that she really makes S's from A onwards.

(e) Writing Z's and Δ 's alternately is now required. After demonstration she produces (e), Fig. 5. She makes error at A, and again from B onwards. She is now, at B, persisting with Δ -making.

The following details may be noted : (i) There was no difficulty, *per se*, in the Δ -making, because M— did the Δ 's quite easily at (e) ; (ii) at (e) the test directions were clearly in mind for 30 seconds, but, from B onwards, M— seems to be conscious only of Δ -making. When a normal person shows this kind of work, as frequently happens, he or she is surprised when the error is observed.

We note that the Z-making at (a₁) is no more efficient than the alternations at (e) for 30 seconds, and that the type of work done is very similar in these two instances. Actually, however, M— was able to make Z's rapidly at (b) ; we can be certain that she could not, without very much practice and good " set," make alternating letters with the efficiency shown at (b)—her work would show failure completely, as at (c), if greater speed at (e) were attempted. Furthermore, the work at (a₁) is perhaps naturally slothful, for it is at first almost as difficult a matter for M— to make Z's as it is to make Δ 's.

At (a) we have the third instance of spontaneous recurrence of a past activity. M— had just completed the ϵ -writing test, and the test directions for Z-writing had been in mind (she had made Z's on scrap paper) ; but, shall we say, I had not allowed sufficient

time to elapse for the Z-idea to be well "set," for the e-idea to fade away, and because of this the past activity *must* needs appear.

At (c) M— fails to make a single Δ . Nor are there made any movements preparatory of the Δ . M— automatically seems unable to do other than Z-writing, the X-activity previously experienced. It may be that other ideas are influencing her subconsciously, or that she is merely effortless, but, in any case, the result is in accord with her general p-character. We note that Δ -writing is not, *per se*, difficult for M—; the *commencement* of any relatively new activity affords the difficulty.

GENERAL RESULTS.

We particularly note the following facts shown by the five tests applied to M—:

(1) There is observed a disturbance in the Y-part of the tests. Thus, (i) there is poor success at reverse writing of *e* or *w*; (ii) fast X-writing continues at (e), Test 2; (iii) although ostensibly the required two small strokes were made in Test 4 at (d), really the X-activity was persisted in, because each "stroke" showing at (d) was the result of several strokes made one on top of the other; (iv) there are peculiar results in Test 5, at (c), (d) and (e).

(2) When failure is shown in the Y-activity, the normal X-activity is given by M— instead. This is shown, for instance, in Tests 1, 3 and 5.

(3) There is unexpected appearance of X-activity, as at Test 2 and Test 5 (where *e*-writing appeared), and at Test 4 (where *w*-writing appeared).

(4) When quick writing was attempted M— made many loops in the *w*-writing, and many strokes, likewise, in the strokes test, in general, in spite of effort made to control the writing.

The above, and the subtle details observed in the course of the testing (together with masses of similar data gathered for correlational purposes from many subjects of experiment and for many p-tests) are the facts. In terms of M—'s testing we have tried to anticipate, and counter, theories that the reader might suggest in explanation of the facts observed.

Various suggested general explanations of the facts have been found to be unsatisfactory, even from discussion of the fragments of data here presented. Thus, "difficulty," "neuro-muscular effects," "negativism," "willing and striving" anomalies, "suggestion," all lack general application. The XXX test counters any

claim that fatigue effects contribute generally to the facts. The facts are independent of anything relevant to *g*-factor; the various activities are cognized, and the required relations are undoubtedly at times in mind, whilst other equally low (and lower) "*g*" individuals give no effects of the kind shown by *M*—. In fact, normally, "*p*" and "*g*" have no correlation. Again, a theory of insufficiency of mental energy for *Y*-parts is inadequate, since this does not explain facts in the *XXX*, the *Z*, and the strokes test. A term such as "automatism" only partly describes the observations, and fails to provide the guidance in research that an acceptable theory offers. A theory of "oscillation" is not adequate as a general theory for the facts. It is true that *M*— may be of low "*g*" (she is rated as "medium intelligence"), perhaps low "*w*" (although frequently she struggled, with what seemed to be every effort at her command, against insuperable inertia), is no doubt easily fatigued in general, is prone to misunderstand test directions, and gives "recurrences" and other effects that occur concomitantly with fluctuations of attention. Practice effects, or previous habituation in the various activities used in the *p*-tests, intrinsic difficulties in the *Y*-parts of the tests, emotionality, intelligence (*g*-factor), associative theories, memory effects, etc., all these, and more, will be considered by the reader, perhaps, to have much to offer by way of explaining the phenomena shown by *p*-tests. None of these explanations, however, sufficiently covers all the facts observed by use of the *p*-tests. A general explanation, or theory, is required, to cover very many statistically correlated phenomena, a few only of which are described in the present paper.

The theory of general inertia, and what appears to be general in the facts, fit hand in glove. We have to submit that *persistence*, a recurrence effect, of a set or well-habituated activity, the phenomenon of "continuance, subconscious or even completely unconscious" of the effects of past activities, as shown by spontaneous recurrences of the activities, or by hindrances to activities which closely resemble those set—in short, the concept of general inertia—admirably covers what is general in the facts. We have found spontaneous recurrences of past activity at (3); there is direct persistence of past activity in the *XXX*, *ZZZ*, *w*-loop and strokes tests; and there is evidence of hindrance to *Y*-activities which closely resemble *X*-activities in the *e*, *w* and strokes tests. The hindrance may be by way of "recurrences" of the *X*-activity, of which we have direct evidence, and the theory is helpful that takes these "recurrences" to be the conscious efflux of activities that are

at times unconscious, but then effective still as a hindrance to the Y-activity.

Thus it is, then, that we understand the p-factor shown by correlational means. We have described for one subject effects that seem to be observable in some degree in all individuals.

Finally, what of M—'s p-measure? If x is a measure of work done in X activity, and y that for Y-activity, the p-measure could be x/y ($x-y$), $(x-y)/x$, or some similar measure. The method chosen, however, must depend upon correlational findings, and only when these are available can we decide which to employ. The method of scoring, the technique and standardization of the tests, the suitability of various tests for different conditions, etc., are matters that must await work which shows contact of the tests with psychiatric material.

THE PSYCHOLOGICAL ESTIMATION OF THE EFFECTS OF CERTAIN DRUGS UPON THE SYNTONIC AND SCHIZOPHRENIC PSYCHOSES.

WITH A BRIEF INQUIRY INTO A PHYSIOLOGICAL BASIS OF
TEMPERAMENT.*

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REACTIONS produced by experience fall into two great groups. The larger group consists of the reactions of those individuals whose mental mechanisms are accurately attuned to the demands of life; the smaller group is composed of the reactions of those unfortunates who are unable to adjust or adapt their mental processes to the ever-increasing complexities of civilization. The individuals forming the former group are called normal. Kræpelin termed the mal-adjustments of those in the latter group the "biogenic psychoses."

A further division of the biogenic psychoses was elaborated by Bleuler (1), who distinguished between those reactions which tend to produce a fixed emotional tone and hence a defective growth of the personality, which, however, maintains its integrity, and those reactions which result in the disintegration of the personality. The first he called the syntonics, the second the schizoid group. The most important member of the sytonic group is the manic-depressive psychosis, while the outstanding entity of the schizoid group is schizophrenia.

The psychology of Jung (2) throws much light upon the psychopathological problems encountered in the study of these two major psychoses, while his category of the four basic forms of psychic activity, thinking, feeling, sensation and intuition form an introduction to his final conception of temperamental types. Although distinctions in organic types have been recognized from the time of Hallé (3), and find their ultimate exposition in the work of MacAuliffe (4) and Kretschmer (5), it was not until the latter correlated

* Abstract of a thesis which was awarded the Bronze Medal of the Royal Medico-Psychological Association, 1931.

the organic type with the psychological type that the psychological element obtained adequate recognition.

Since James (6) described his "tough-minded" and "tender-minded" man, there have been many attempts to formulate a classification of psychological types, and in his studies of type psychology Jung (7) has evolved in considerable detail a working hypothesis that can be applied not only to the normal individual but also to the psychotic.

His elaboration of two general-attitude types—diametrically opposing and fundamentally differing—was a prior concept to the development of the four function types which form an integral part of his psychological teaching. The basic distinction between the two general-attitude types lies in the form of reaction displayed by the subject towards the object. When the libido is directed outwards and the subject's interest is fundamentally objective the general-attitude type of extroversion is observed, while, on the other hand, the interest of the typical introvert is primarily subjective and his psychic energy is directed inwards upon the contents of the collective unconscious, from which, according to Jung, the energy of psychic life is derived.

It is of importance to note that extroversion and introversion are descriptions of a conscious general attitude, the unconscious attitude, as revealed by Jung's method of psychological analysis (8), being the direct opposite. Hence the unconscious of the extrovert is introverted, while that of the introvert is extroverted. Excessive functioning of either general-attitude is liable to provoke the thwarted unconscious to demand more adequate expression, with the possibility of correspondingly psychic upheaval.

Attempts to elucidate the causal factors that lie at the basis of temperamental differences have encountered much difficulty, both by reason of the diversity of types—the clear-cut type being almost solely of academic interest—and on account of the multiplicity of possible and probable factors that are involved. Furthermore, the lack of reliable scientific means by which variations in degree of temperament may be estimated and recorded leaves much of the subject in the realm of hypothesis and theory. It is the object of this dissertation to endeavour to investigate practical means for the estimation of temperamental differences, and to indicate in some fashion a possible connection between the findings of psychology, psychopathology and physiology.

Jung points out that there is a close connection between biological laws and temperamental types, and he holds that the general-attitude

types are fundamental and incapable of change. They are "due to some unconscious instinctive cause" (8), and in cases where, owing to environmental and educational factors, a falsification of type has taken place, this is invariably followed by the development of a neurosis. Individuation may be obtained by psychological analysis, and tendencies towards the extremities of the scale may be checked by making elements of the unconscious conscious, but a reversal of type, according to Jung, is impossible, and attempts to alter type reactions are fraught with danger.

That the bodily organs with their vague sense-impressions have a profound influence upon temperament is a fact obvious to even the occasional sufferer from dyspepsia. The cœnæsthesia thus irradiates mental life with a slight though definite penumbra.

Adler points out (9) that physical inferiority and bodily imperfections are reflected psychologically, compensatory phenomena often take place and a modification of temperament ensues. The power of combating fatigue and the facility for rapid recuperation from physical and mental stress, according to McDougall (10), are factors in the development of temperamental differences.

The influence of the ductless glands upon temperament has become increasingly apparent, and, especially in the case of the thyroid (11) and the adrenals, the endocrine secretions appear to play a major part in modifying and even, as some think, determining (12) temperamental changes.

The connecting link between the endocrines and the central nervous system lies in the vegetative nervous system with its two opposing divisions, the sympathetic and the autonomic systems. Increased activity of the autonomic system or vagotonia (13) is associated with mental hebetude, while increased irritability of the sympathetic system or sympathicotonia is probably associated with increased activity of the adrenals and the thyroid, and hence a more rapid reaction to external stimuli. A due and proper balance between the two systems with their endocrine ramifications may well result in the well-adapted organism. Constitutional departures from an equable balance may therefore be an important factor in temperamental determination (14).

Transitory temperamental alterations may be produced by the action of drugs; the familiar effects of alcohol, chloroform, opium and cocaine, amongst others, tend to show how even small quantities of chemical substances may produce striking psychological changes, and with their continued use corresponding effects upon character. De Quincey with his 12,000 drops of laudanum a day draws an

illuminating picture of temperamental modifications resulting from the effect of the narcotic (15).

From a consideration of the factors already touched upon, it becomes abundantly apparent that temperamental differences are the resultant of many complex forces probably acting upon inborn constitutional peculiarity. Modification of these forces may be induced by environmental conditions, early training and mental hygiene, but in all essentials temperament has its basis in constitutional idiosyncrasy. The correlation between inborn idiosyncrasy and physiological findings forms the basis of the theory that will be discussed at a later stage in this dissertation.

It has been said that there is a fundamental tendency in man to externalize inner conflicts, and to make mechanical forces responsible for psychological troubles (16). This tendency is perhaps responsible for the somewhat tardy appreciation of the rôle that the psychological factor plays in the ætiology of mental disorder. That the form of certain mental disorders bears a close relationship to psychological types is evident from a study of schizophrenia and the manic-depressive psychosis. As Brill (17) remarks, there is a tendency to gravitate towards that form of insanity which is compatible with the personality of the individual.

The schizophrenic type of reaction is always apparent in those of a certain type of personality, and is the expression of a certain type of constitution. Kretschmer (5) designates latent or potentially psychotic schizophrenics as schizothymics; Bleuler uses the expression "schizoid" to differentiate a type of "psychic reaction which exists in everybody more or less pronounced" (18). While schizophrenia is characterized by an inability to adjust to reality added to disturbances of affectivity and association, the schizoid personality is marked by a "seclusion from reality . . . or an adjustment to reality by means of inventions." There is a withdrawal "from the affective influences of the living as well as the dead environment," and "a retention of independence towards the surroundings" (18).

Jung's introverted personality-type is pre-eminently the soil from which the fantastic blossoms of schizophrenia arise. A constitutional predisposition to a certain type of reaction may, and in the majority of cases will, under favourable circumstances, exert but little influence upon the essentials of social and individual conduct, but let the circumstances be unfavourable, the environment uncongenial, the necessary adaptations impossible, then the inherent basic temperamental traits assume overwhelming importance and definite psychotic symptoms are apt to make their appearance.

On considering the ætiology of the manic-depressive syndrome, while much emphasis has been placed by Kooy (19) and others upon the part that organic changes play in this psychosis, the most striking psychological factor encountered is the individual constitution.

Exaltation and depression form the characteristic cyclic phases of the manic-depressive psychosis, but moods of exaltation and moods of depression are common in the normal individual. It would seem, therefore, an admissible hypothesis that the manic-depressive psychosis has a possible psychogenic foundation, and that its two phases are fundamentally akin to the normal alternations of mood. Where a marked liability to alternation exists in the normal individual a distinct temperamental type may be described, and Kretschmer has named this the cyclothymic or cycloid temperament, and divides all cycloids into two groups, the hypomanic and the melancholic. In the former a state of exaltation predominates, and in the latter a state of depression.

McDougall (20) traces a connection between these two phases of temperament and the oscillations within the sentiment of self-regard of the two conative dispositions of self-assertion and submission, seeing a domination of one or other instinctive tendency with its primary emotion prevailing in the psychic make-up. The regressive symptoms of the manic-depressive psychosis, and the marked tendency for instinctive responses seen in this disorder, would appear to support McDougall's contention.

While there is some difference in degree between Kretschmer's cycloids and Jung's extroverts, there is no doubt that the two can in all essentials be identified, and that extroversion may form a constitutional predisposition to the manic-depressive psychosis. It may be assumed, then, that temperamental differences are of the utmost psychological importance in the ætiology of schizophrenia and the manic-depressive psychosis.

Titchener (21) describes a psychological experiment as a trial test or observation made under special conditions. In the light of this definition the experimental evidence of temperamental types falls far short of the evidence obtained by objective observation.

In this connection the experimental work of McDougall and his use of ambiguous figures offers a fruitful field for study, and his methods, with modifications, have been followed in the ensuing experiments.

Ambiguous figures have proved to be of much value in the study of psychological problems. They serve to illustrate what

Woodworth (22) calls "the law of shifting" in attention. Within recent years the *Gestalt* school has used ambiguous figures in its studies of the psychology of perception, and by their aid has superseded the "bundle hypothesis" of the earlier psychologists.

An illusion may be defined as "a subjective perversion of the objective content of sense perception" (23), and ambiguous figures fall into the group of geometrical optical illusions, and are better named illusions, of reversible perspective.

In his experiments upon the effects of alcohol, McDougall found that the rate of alternations of an ambiguous figure presented to the subject appeared to vary according to the subject's position on the introvert-extrovert scale (24). While the number of subjects tested by McDougall was small, each subject after a little practice recorded a fairly constant and regular rate of alternations, and they all adhered to the general rule that introverted subjects experienced rapid alternations, while extroverted subjects showed a slow rate of alternation (20). A more delicate method of obtaining the phenomena of fluctuating perception was devised by McDougall, and consists of the "windmill illusion." The arms of a small laboratory windmill rotated at a fixed rate are regarded by the subject, and the illusion consists of an apparent reversion in direction of rotation taking place at fairly regular intervals. The duration of these intervals, and therefore the rate of alternation, is characteristic of each subject in his normal state. Using this apparatus McDougall found that the differences between subjects were large and constant, and that, as in the experiments with the alternating appearance of ambiguous figures, introverts showed a rapid rate of alternations and extroverts a slow rate.

Experimental methods on these lines were applied in the following tests to cases of schizophrenia and manic-depressive psychosis.

Ten typical cases of schizophrenia and ten cases of manic-depressive psychosis were selected. All the patients were detained under certificate and were females, it being thought advisable, in the series at present investigated, on account of possible temperamental differences between the sexes, to restrict the tests to one sex.

The time chosen for the application of the tests was such that it could be reasonably expected that the stomach was empty.

TECHNIQUE OF TESTS.

The ambiguous figures presented were Schöerder's staircase figure, Scripture's blocks and Necker's cube. Following the

exhibition of these the subject was instructed to look at the arms of a small windmill rotated by means of an electric motor.

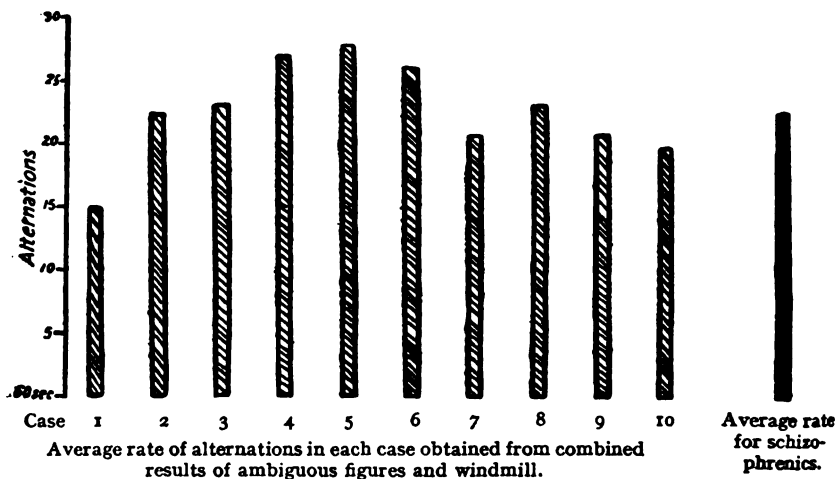
In all the tests the stop-watch time allowed was one minute for each individual presentation. All the subjects had ten minutes' practice before the actual test was commenced. Instructions were given to hold each phase of alternation for the longest possible period, and at the commencement of each alternation the subject pressed the key of a simple recording apparatus. At the end of 60 seconds a graphic record of the number of changes experienced was obtained.

SCHIZOPHRENIA.

Rate of Alternations per Minute.

Case.	Staircase.	Block.	Cube.	Windmill.
1	13	16	14	16
2	25	22	22	20
3	25	23	22	22
4	26	27	30	25
5	25	29	30	27
6	29	26	25	24
7	22	20	21	20
8	23	25	21	23
9	21	19	23	20
10	23	20	17	19

FIG. 1.

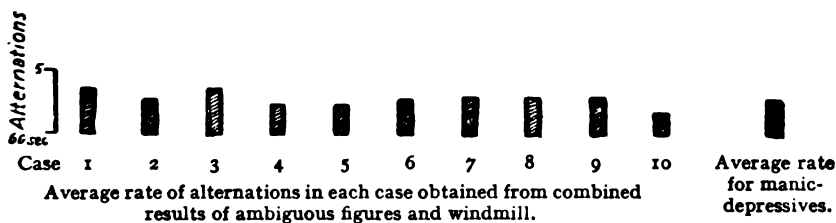


MANIC-DEPRESSIVE PSYCHOSIS.

Rate of Alternations per Minute.

Case.	Staircase.	Block.	Cube.	Windmill.
1	3	4	3	3
2	2	2	5	2
3	3	4	3	4
4	2	3	2	2
5	3	2	2	2
6	3	4	2	2
7	2	3	3	4
8	3	3	3	3
9	3	4	2	3
10	2	1	2	2

FIG. 2.



A comparison of the results obtained from schizophrenic and manic-depressive patients shows a marked difference in the rate of alternation experienced. While the schizophrenics' average rate was 22.5, the manic-depressives averaged 2.75.

Although the primary purpose of this investigation was concerned with the reactions of definite psychotics, it was thought that a similar testing of normal individuals would be of interest both for the purpose of comparison, and owing to the fact that McDougall's tests were confined to a small number of subjects.

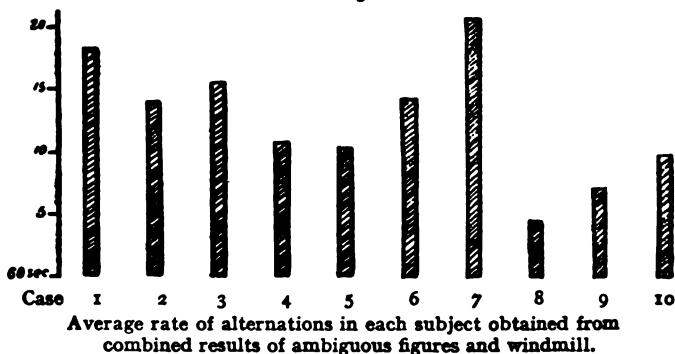
Accordingly 10 normal female subjects were selected for this purpose. No special restrictions were employed in the choice of subjects except that those of an age between 20 and 30 years were chosen. The following results were obtained :

NORMAL SUBJECTS.

Rate of Alternations per Minute.

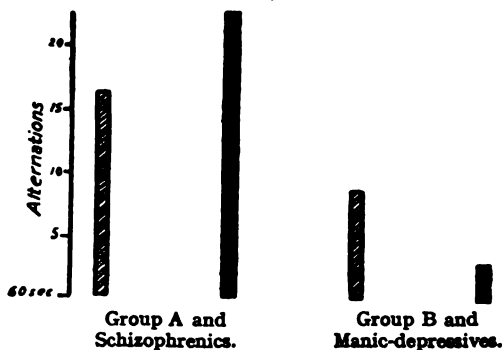
Case.	Staircase.	Block.	Cube.	Windmill.
1	18	12	22	20
2	17	11	12	15
3	14	18	13	16
4	9	12	12	10
5	20	11	5	5
6	20	13	8	15
7	25	17	22	18
8	3	8	4	2
9	7	8	8	5
10	12	10	8	9

FIG. 3.



It will be seen from the above results that the ten normal subjects tested gave very varying rates of alternations. A group (A) of five subjects, Nos. 1, 2, 3, 6, 7, experienced a rapid rate of changes, while the remaining five showed a slower rate (Group B, Nos. 4, 5, 8, 9, 10). A diagrammatical comparison is given below :

FIG. 4.



In these four figures it will be noted that the rapid rates were experienced by Group A and the schizophrenics, while the slow rates were obtained from Group B and the manic-depressives.

That a normal individual's position on the introvert-extrovert scale can be temporarily altered by the use of drugs is a fact of common experience. The effect of drugs upon those suffering from the psychoses which may be regarded as the functional disorders common to individuals lying at the extremities of the scale, namely schizophrenia and the manic-depressive syndrome, has been studied rather from the restricted clinical point of view than from the psychological standpoint.

Drugs affecting temperament may be divided into an extroverting or intoxicating group on the one hand, and an introverting or fantasy-producing group on the other. Prominent in the first group are alcohol, ether and chloroform. Important members of the second group are caffeine, opium and strychnine. The effects of these antagonistic groups of drugs on the normal individual have been studied experimentally by McDougall (24), who found that the subjective effects are by no means a safe criterion of the objective results. His experiments tend to show that the determination of temperamental differences is affected by these chemical substances circulating in the blood.

Using the windmill illusion he found that the rate of alternation of the phases, which in the normal state stood at 10-12 per minute, was reduced to 1 per minute under the influence of alcohol. Chloroform reduced the phases to 2 per minute, while conversely strychnine increased the rate to 30 per minute, and tincture of opium accelerated the phases to 22 per minute.

The subjective effects of these classes of drugs is most profitably studied in relation to alcohol. Alcohol, being an extroverting drug, has its most obvious influence upon the introvert, who by its aid frees the bonds of his shut-in personality and expands into a sociable and emotional being living in and for the moment. In other words, the introvert under the influence of alcohol becomes extroverted. The extrovert, being already in a state in which free emotional expression is habitual, requires but little alcohol to push him to the point of intoxication.

Bleuler includes alcohol under the active precipitating factors of schizophrenia, but it is more probable that, as Gregory observes (25), the schizophrenic resorts to alcohol as a means of sublimation, the latent psychosis becoming evident when its use for this purpose has failed.

In the manic-depressive psychosis the use of alcohol may shorten or even prevent a breakdown, and several cases have been recorded (26) where the length of an attack has been prolonged in a patient who has temporarily abstained from its use. Here the extroverting effect of the drug is exerted upon an individual who is already in a state of extreme extroversion, and it is possible that an alcoholic bout may give a vicarious satisfaction to temperamental trends which would otherwise find an outlet in a prolonged attack of the psychosis.

It would appear, then, that extroverting and introverting drugs have a profound effect upon the temperamental peculiarities of the normal individual. Their effect upon the mentally unstable is apt to be masked by the psychosis present. The estimation of their psychological effect in cases of schizophrenia and manic-depressive psychosis is the object of the experiments now to be described.

ALCOHOL.

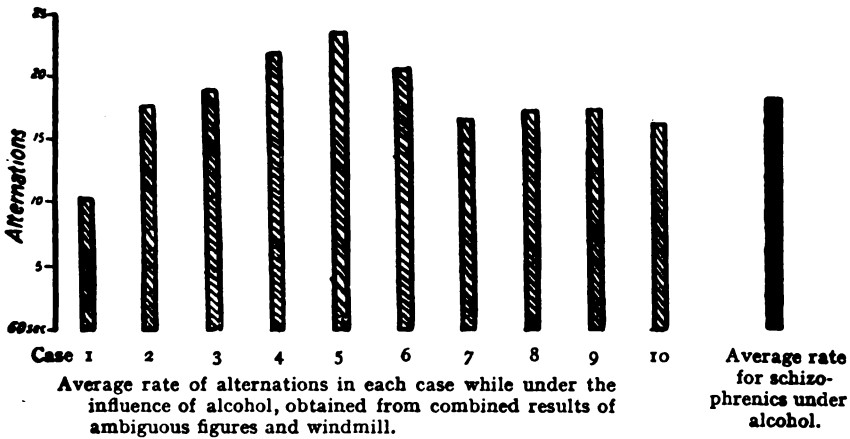
The same ten cases of schizophrenia that were tested previously were taken in the same order. Each patient was given 15 c.c. of absolute alcohol diluted with three times its bulk of water. The last meal had been taken some three hours previously. Thirty minutes after the taking of the alcohol each patient was tested by the ambiguous figures and the windmill illusion. The results were as follows :

SCHIZOPHRENIA AND ALCOHOL.

Rate of Alternations per Minute.

Case.	Staircase.	Block.	Cube.	Windmill.
1	9	12	10	11
2	19	17	18	17
3	21	20	17	18
4	20	22	24	22
5	21	23	25	25
6	24	20	21	18
7	18	15	17	17
8	17	19	17	16
9	18	15	20	18
10	20	16	15	14

FIG. 5.



A consideration of the above figures shows that schizophrenics under the influence of alcohol give a reduction of the rate of alternation of phases with a corresponding increase of duration of successive phases.

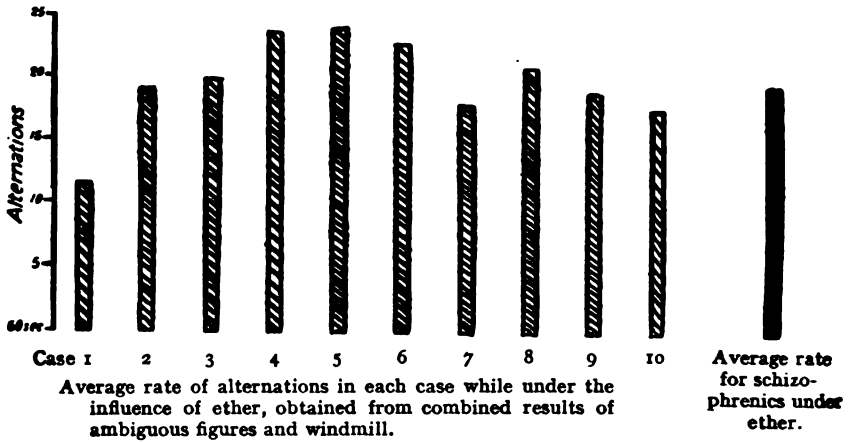
SCHIZOPHRENIA AND ETHER.

The effect of ether inhalation on schizophrenic patients was obtained as follows. Each patient was instructed to take five deep inhalations from an anæsthetic mask sprinkled with ether held in front of the face. Directly afterwards the patients were tested as before.

Rate of Alternations per Minute.

Case.	Staircase.	Block.	Cube.	Windmill.
1	8	10	13	15
2	20	17	20	20
3	19	17	21	23
4	21	20	28	26
5	19	22	27	28
6	23	21	24	23
7	17	16	19	20
8	18	20	22	24
9	16	17	22	21
10	18	16	17	20

FIG. 6.



It appears that the effect of ether upon the schizophrenics tested is very similar to that of alcohol. The reduction in the rate of alternations is most marked in the first two tests employed. The windmill test gives an approximation to the schizophrenic normal figures, showing the evanescent effect of the ether.

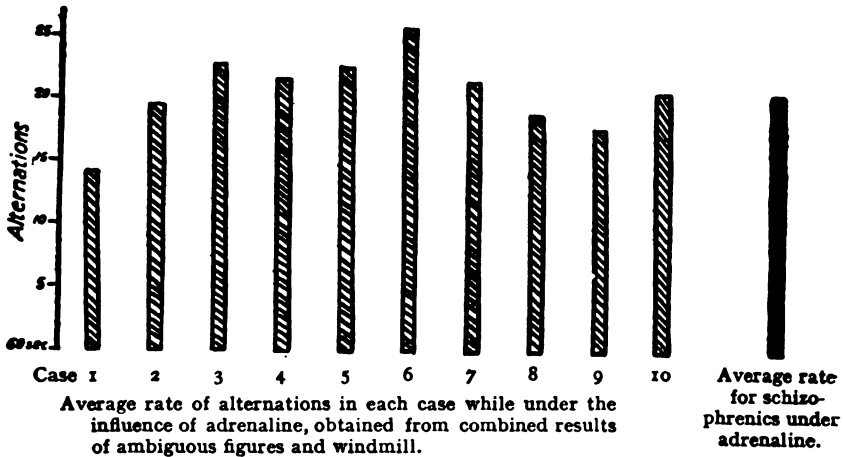
SCHIZOPHRENIA AND ADRENALINE.

A hypodermic injection of 3 m of a 1 in 1000 solution of adrenaline hydrochloride was given to each patient. Thirty minutes later each patient was tested.

Rate of Alternations per Minute.

Case.	Staircase.	Block.	Cube.	Windmill.
1	14	15	14	13
2	21	18	19	19
3	25	22	22	22
4	21	20	24	21
5	20	22	26	22
6	29	26	24	24
7	23	21	21	20
8	20	20	17	18
9	18	16	20	17
10	24	20	18	20

FIG. 7.



On the whole, the results given by adrenaline show a reduction in the rate of alternation. This reduction is not so marked as in the case of alcohol and ether, and a minority of the patients (Cases 3, 6, 7, 10) gave their normal test results.

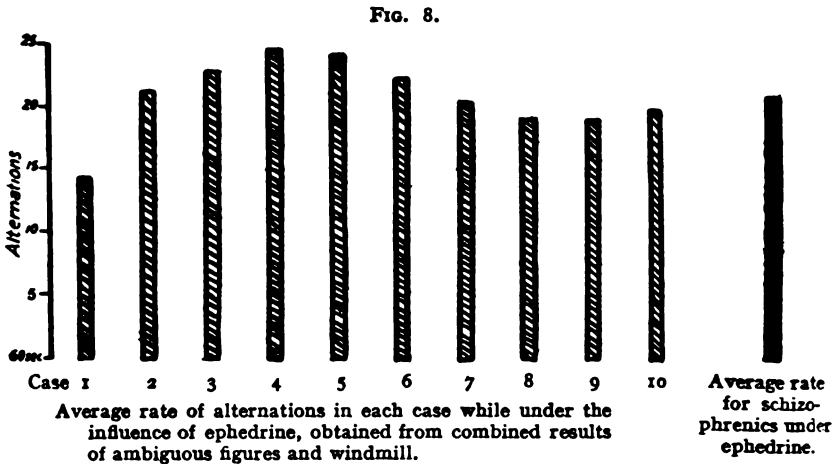
The main action of adrenaline is upon the sympathetic nervous system, and as vagotonia is frequently observed in schizophrenics, the increased tonus of the sympathetic system obtained from the stimulating effects of the administration of adrenaline would possibly account for the reduction of the rate of alternation.

SCHIZOPHRENIA AND EPHEDRINE.

As likely to serve in some measure as a control to the results obtained from adrenaline it was decided to test the effects of ephedrine upon the type of reaction displayed by schizophrenics. Each patient was therefore given $\frac{1}{2}$ gr. of ephedrine hydrochloride (B.D.H.) hypodermically and 30 minutes later was tested as before.

Rate of Alternations per Minute.

Case.	Staircase.	Block.	Cube.	Windmill.
1	13	16	13	15
2	23	21	21	20
3	25	23	21	22
4	25	25	24	24
5	23	24	26	23
6	25	23	21	20
7	22	19	20	20
8	20	21	17	18
9	18	18	20	20
10	23	19	18	19



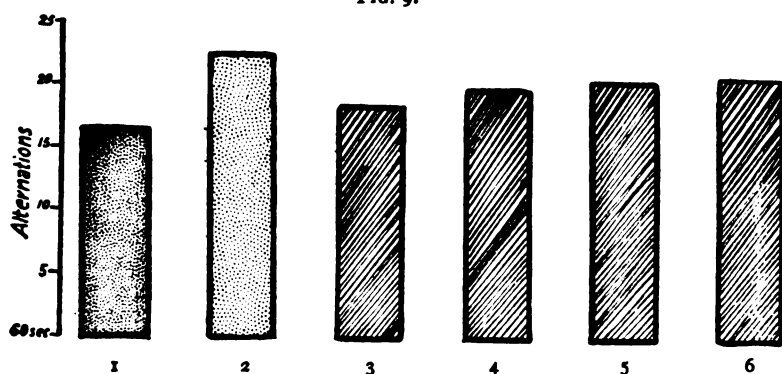
The figures obtained were similar to those given by adrenaline. The majority showed a reduction in the rate of alternations, possibly, as in the case of adrenaline, due to the stimulating power of ephedrine upon the sympathetic nervous system.

SUMMARY OF THE EFFECTS OF THE DRUGS USED IN SCHIZOPHRENIA.

The great majority of the schizophrenic patients under the influence of the drugs investigated by the methods of ambiguous figures and the windmill illusion gave a reduction of their "normal" figures in the number of alternation of phases. The most prominent reductions were found to be those given by alcohol and ether. Adrenaline and ephedrine reduced the rates of alternation in the majority of cases tested. The nearest approximation to Group A of normal subjects, which has been taken to represent the normal introvert test-result, is the result given by alcohol. It would appear that, judged by the experimental methods used, the above substances may be placed in the extroverting group of drugs, and that their effect, at the doses given, upon pathological introversion, as typified by the schizophrenic psychosis, is a tendency to alter the type of reaction from that of extreme introversion to the type of reaction of introversion compatible with normality.

The following diagram indicates the average variations of reactions obtained in Group A, in the schizophrenic, and in the schizophrenic under the influence of the drugs investigated.

FIG. 9.



1, Group A, average 16.3; 2, schizophrenics, average 22.5; 3, schizophrenics and alcohol, average 18.15; 4, schizophrenics and ether, average 19.7; 5, schizophrenics and adrenaline, average 20.4; 6, schizophrenics and ephedrine, average 20.7.

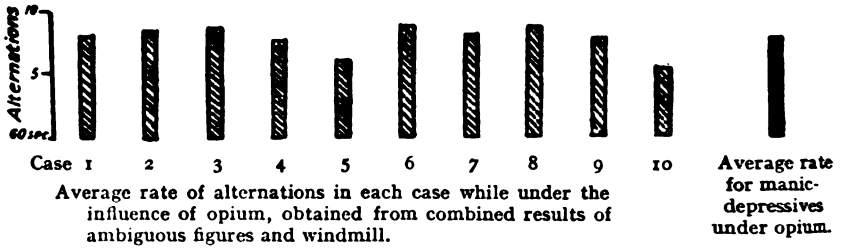
MANIC-DEPRESSIVES AND OPIUM.

In estimating the psychological effect of opium and the following series of drugs, the ten cases of manic-depressive psychosis previously tested were used in the same order as before (Fig. 2). Each patient was given orally 40 m of the tincture of opium B.P. One and a half hours after the administration of the opium the usual tests were performed, with the following results :

Rate of Alternations per Minute.

Case.	Staircase.	Block.	Cube.	Windmill.
1	7	9	9	7
2	8	7	10	8
3	9	9	8	8
4	7	8	7	8
5	8	6	5	5
6	9	10	7	9
7	8	7	7	10
8	9	9	8	8
9	8	9	7	7
10	6	5	5	6

FIG. 10.



In every case of manic-depressive psychosis to whom opium had been given, a marked increase in the rate of alternation was observed, with a corresponding decrease of duration of the successive phases.

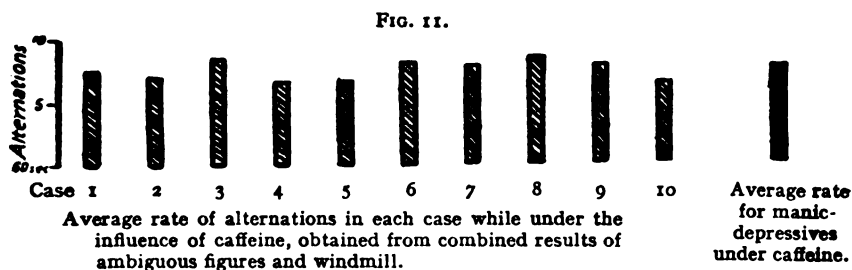
In connection with this test it should be pointed out that all the patients tested were women, and the reaction of women to opium preparations is sometimes a reversal of the customary depressive effect observed in male individuals under opium. It has been said that in women opium produces an excitement instead of a depression, owing to an idiosyncrasy to the drug (27). This effect was not observed in the cases under review.

MANIC-DEPRESSIVES AND CAFFEINE.

Caffeine citrate was used rather than a strong tea infusion, in order to eliminate the effects of the other constituents of tea, but in practice very little difference exists in the stimulating properties of the two substances, for the theobromine present in tea exerts less effect upon the central nervous system than caffeine, but this is counterbalanced by the strong stimulation obtained from the theocine.

Caffeine citrate gr. iij was given in a little milk to each of the ten manic depressive cases, and 30 minutes later the tests were applied as before.

Case.	<i>Rate of Alternations per Minute.</i>				Windmill.
	Staircase.	Block.	Cube.		
1	7	8	7	8	
2	6	7	9	6	
3	8	9	8	9	
4	6	7	7	7	
5	8	7	6	6	
6	9	9	6	8	
7	8	7	7	9	
8	9	8	8	8	
9	7	9	8	7	
10	7	6	6	6	



Here again it will be noted that all the patients tested showed an increase in the rate of alternations.

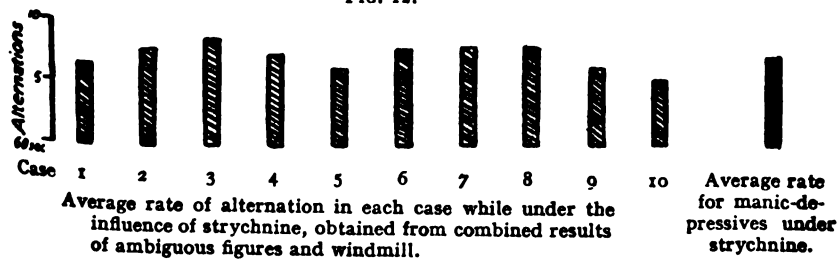
MANIC-DEPRESSIVES AND STRYCHNINE.

Strychnine nitrate $\frac{1}{8}$ gr. was given by mouth with a little water to each of the manic-depressive cases. Two hours later the usual tests were employed.

Rate of Alternations per Minute.

Case.	Staircase.	Block.	Cube.	Windmill.
1	5	6	8	6
2	7	6	9	8
3	9	8	8	8
4	7	6	7	8
5	8	5	6	5
6	7	9	6	8
7	7	7	8	9
8	9	8	7	7
9	7	6	5	6
10	6	4	5	5

FIG. 12.



The effect of strychnine upon manic-depressive cases was therefore an acceleration of the alternation of phases.

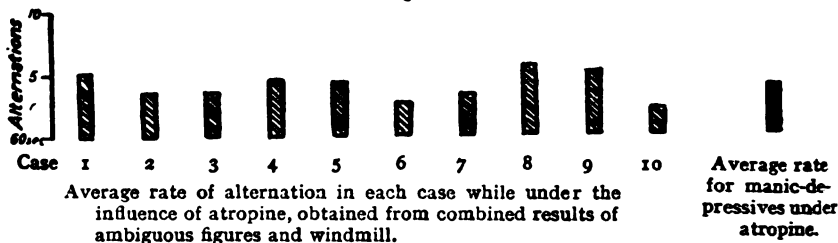
MANIC-DEPRESSIVES AND ATROPINE.

A hypodermic injection of $\frac{1}{100}$ gr. of atropine sulphate was given to each case. Thirty minutes later the patients were tested as before.

Rate of Alternations per Minute.

Case.	Staircase.	Block.	Cube.	Windmill.
1	6	5	4	5
2	3	4	4	3
3	3	4	3	4
4	4	5	4	5
5	5	4	3	5
6	3	4	2	2
7	2	4	3	4
8	6	5	5	6
9	4	6	5	5
10	2	2	2	2

FIG. 13.



Six of the ten patients tested (Cases Nos. 1, 2, 4, 5, 8, 9) gave an increase in the rate of alternations. The remaining four showed no change.

According to Cushny, atropine is a stimulant to the central nervous system, but its main action is upon the parasympathetic or autonomic nervous system. Following its stimulating action there is a depressive action, and in acute mania a dose of 1 gr. of atropine sulphate may cause sleep (28).

Manic-depressive cases are frequently characterized by great responsiveness to external stimuli, possibly due to an heightened

excitability of the sympathetic nervous system. This condition of sympathicotonia may be accompanied by augmented activity of the thyroid and adrenal glands. The temporary effect of atropine upon the autonomic system may perhaps account for the acceleration of the rate of alternations, but the results are inconclusive.

SUMMARY OF THE EFFECTS OF THE DRUGS USED IN MANIC-DEPRESSIVE PSYCHOSIS.

Manic-depressive cases under the influence of the drugs used showed an increase in the rate of alternation of phases of the ambiguous figures and of the windmill illusion. There was a corresponding decrease of duration of successive phases.

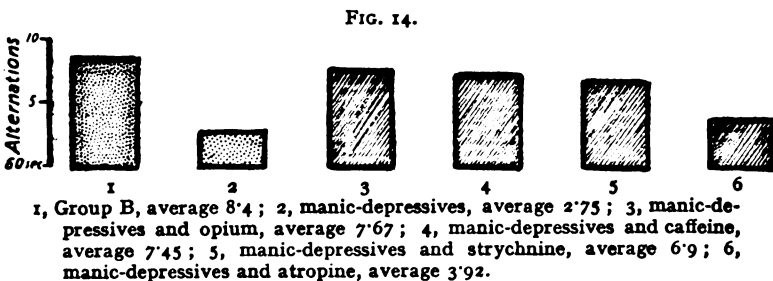
Opium, caffeine and strychnine increased the rate in all the cases tested, and they may be regarded as important members of the introverting group of drugs.

The results given by atropine were not conclusive, some patients showing an increase, while others gave their normal reading.

Opium gave the nearest approximation to the results of Group B of the normal subjects, which group has been taken as representing the rate of change in normal extroversion.

The following diagram indicates the average reactions of the normal extroverts, the manic-depressives in their pure state and the manic-depressives under the influence of the drugs used:

Rates of Alternations per Minute in the Normal Extrovert, the Manic-depressive, and the Manic-depressive under the Influence of the Drugs Investigated.



It is manifestly unwise to generalize upon the results of the foregoing experiments. Although the total number of tests carried out was over 460, it must be borne in mind that the number of subjects tested was relatively small, and also the probable presence

of other factors was disregarded. The following points, however, appear worthy of notice :

The results obtained suggest that in the method of ambiguous figures, and in the observation of the windmill illusion, there are means of differentiating experimentally gross temperamental differences in the normal subject. Further, the same methods are of some value in the investigation of the psychological factors that have an important bearing upon the ætiology of schizophrenia and the manic-depressive psychosis. They also show that the tests employed offer some indication of the psychological effect of drugs. By their aid it has been possible to classify provisionally certain drugs under the headings of an introverting group and an extroverting group, connecting in part the known subjective effect with experimental evidence. Finally it has been shown that while under the influence of these classes of drugs, the reactions of psychotics, as measured by the methods employed, approximate to the reaction results of normal individuals of the same temperamental category.

Little has been said, however, of the fundamental basis of temperamental differences. The question of temperament is so obscured by environmental influences, by educational equipment and by parental training, that the causation of the native factor remains buried under the accumulation of a diversity of influences.

On turning to the temperamental classification of Jung the difficulties encountered are not so numerous, and while the problem maintains its complexities, it is possible to elaborate some explanatory hypothesis.

It may be assumed that psychologically considered the syndromes of schizophrenia and manic-depressive psychosis are expressions of an extreme degree of introversion and extroversion respectively. It has been shown in some admittedly inadequate manner, but nevertheless in a manner that is capable of experimental verification, that there is a tendency in the action of certain drugs to alter the type of reaction, as estimated by recognized psychological methods, from the type of reaction associated with the two psychoses, to the mode of response which is common to normal individuals having the same basic temperamental tendencies as is found in the psychoses in question.

It would seem, then, that a consideration of the mode of action of the extroverting and introverting groups of drugs would throw some light upon the causal factors determining degrees of extroversion and introversion.

McDougall, in his studies of fatigue (29), has put forward evidence that tends to show that fatigue has its primary location in the synapses of the central nervous system. The synapses are the vulnerable points in the pathways of the nervous system along which pass the nervous impulses. The degree of resistance to the nervous impulses is conditioned by the state of the synapses, aided possibly by an inherent resistance of a specialized interneural cementing substance separating the neurons (30). The signs and symptoms of fatigue are due to the action upon the synapses of the poisonous products of metabolism. These products raise the resistance of the synapses to the passage of the nervous impulse, and the heightened resistance tends to produce a state of relative isolation of the neurons, resulting in a partial dissociation of the nervous system. The alternation of ambiguous figures, according to McDougall (31), is due to the state of the synapses on the pathways involved.

It is probable that certain drugs have the power of interfering with the synaptic resistances; amongst these the groups of extroverting and introverting drugs previously described would have a prominent place.

On the analogy of the hypothesis of the physiological causation of fatigue, the action of alcohol on the central nervous system can be described as resulting in an increased resistance of the synapses. Its psychological effects in producing a state of extroversion may be explained by its physiological action of raising the resistance of the synapses on the nervous channels which serve as interconnections between the various centres concerned with the higher intellectual faculties. These nervous pathways, being a relatively late development in the history of the race, come under the influence of the drug early, and the already high resistance—high because of comparatively recent development—is increased to a point compatible with relative neuronc dissociation.

The effect of alcohol upon schizophrenics may therefore be explained by an increased synaptic resistance, and hence a lowering of the rate of alternations experienced. It must, however, be remembered that the very name "schizophrenia" implies a splitting of the mind—a separation of cerebral functions—and that a state of dissociation is already present in the schizophrenic, apart from any influence alcohol may have. Dissociation being an essential feature of schizophrenia, it should follow that the synaptic resistance of the schizophrenic is normally of a high degree, and hence the rate of alternations experienced in the foregoing experiments (Fig. 1) should

be a slow rate. This, however, was not the case. The rate of changes was found to be rapid. This evidence would point to a low synaptic resistance being present in the normal schizophrenic, although dissociation is a marked characteristic of the psychosis.

It would appear from the test results that the dissociation encountered in schizophrenia is not a dissociation conditioned by a high synaptic resistance, nor is it a dissociation of the same character as is found, for example, in hysteria—a mental disorder of extreme extroversion. It follows that there are two types of dissociation of the mind, one type being due to some impediment placed in the path of the neural impulses, possibly of the nature of some synaptic barrier, resulting in a mind divided against itself, the other type being of the nature of dissociation, but not a true dissociation. It may be regarded, perhaps, as a want of integration, a lack of that interbalanced cohesion of mental faculties whose presence results in the well-integrated mind, and whose absence shows itself in schizophrenia in the typical loss of emotional and affective *rappor*t characteristic of this psychosis.

This explanation of the presence of dissociation existing in conjunction with a low synaptic resistance is only tentative, but it receives some support from both Bleuler and Kraepelin, who sought to distinguish between the dissociation found in the hysteric—a mind divided into water-tight compartments—and the dissociation encountered in the schizophrenic—a mind split into a multitude of antagonistic fragments.

In the light of the foregoing argument the effect of alcohol upon the schizophrenic is the effect of the drug upon the synapses of the central nervous system. There is a raising of synaptic resistance, and therefore a diminution of the rate of alternations.

The creation of a state of true dissociation is conditioned by the alcohol. Dissociation in the introvert, as McDougall maintains (24), is only obtained while under the sway of dissociating influences.

The action of ether, in general, is alcoholic action concentrated in a brief period of time.

On considering the action of the introverting group of drugs, it has been pointed out that in the cases of manic-depressive psychosis tested while under their influence there is an increase in the rate of alternations experienced.

The action of opium upon the central nervous system is depressant. Its pain-influencing action has been explained by the theory that it has a paralysing effect upon the synapses of the basal ganglia.

It is possible that the increase of alternations obtained in the manic-depressive cases while under its influence (Fig. 10) is due to an effect of the drug upon the synapses—an effect which tends to lower their resistance. McDougall maintains that the extrovert is pre-eminently liable to dissociation, and as the hypothesis of the cause of true dissociation is a high resistance of the synapses, the rate of alternations in normal manic-depressives would be low, and would be increased by introverting drugs. This has been found to be the case with regard to opium, caffeine and strychnine (Fig. 14).

The action of caffeine is a stimulating one upon the central nervous system, and under its influence flow of ideas is promoted and the effects of fatigue disappear. Bearing in mind that the hypothesis of the causation of fatigue is a state of high resistance at the synapses, it would appear that caffeine also has its effect upon the synaptic junctions—an effect that is instrumental in lowering their resistance.

Strychnine has its principal action upon the spinal cord, and the actual location of its action has been considered to be upon the region situated between the sensory and motor nerves. Here, again, it is likely that the synapses throughout the central nervous system are affected, and that the rate of alternations is increased in the cases tested by reason of its power of reducing synaptic resistance.

On consideration of the facts enumerated above it appears that the action of the principal members of the introverting and extroverting groups of drugs is upon the synaptic junctions of the central nervous system, one group, the extroverting group, raising the resistance of the synapses, the other group, the introverting group, lowering them.

On reviewing the results of the tests, the inference to be drawn is that introverts and schizophrenics have a low synaptic resistance, and that extroverts and manic-depressives have a high synaptic resistance.

Hence the temperamental types of introversion and extroversion may be conditioned by the state of the synapses of the central nervous system. But it is a likely hypothesis that the resistances of the synapses are profoundly influenced by the action of drugs. It would therefore appear a justifiable assumption that the essential basis of temperament variety, the causal factor lying at the root of inborn idiosyncrasy, is the presence in the organism of some substance akin to the two classes of drugs investigated. This substance, possibly derived from the activities of the endocrines, may influence temperament through its action upon the sympathetic or autonomic systems, as some of the results obtained from adrenalin,

ephedrine and atropine would appear to indicate. The main body of evidence, however, points to an action upon the synaptic junctions, an action that is brought about in all probability as a result of the influence of some product of general metabolism circulating in the body. That there is a resulting change in the molecular constitution of the synapses is a conjecture that is perhaps as admissible in this connection as it is in the physiological explanation of the law of neural habit (32). It has been stated (33) that the present trend of physiological opinion is that nerves produce their effects through the intermediary of chemical agents. The researches on acetyl choline and histamine would appear to substantiate this contention, and to show a close connection between nerve action and chemical stimuli.

That the product postulated has a chemical nature akin to the classes of drugs examined is an hypothesis that would appear to have some foundation in experimental fact.

The identification of the product lies in the realms of physiology and biochemistry. Its psychological effects are objects of study for the psychiatrist and the psychologist, and while psychology offers one way of approach to the study of temperament and its morbid manifestations, it must not be forgotten that the findings of physiology and pathology offer an alternative path which yet remains comparatively untrodden.

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EXPERIMENTAL TREATMENTS OF SCHIZOPHRENIA.*

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IN a recent publication entitled *Schizophrenia* (1928), issued by the Association for Research in Nervous and Mental Diseases, there are articles by thirty-one authors. The symposium contains 460 pages, of which only 18 are devoted to treatment. Does the ratio of 18 to 460 represent the relative interest existing in the treatment as compared with other aspects of the disease?

This thesis is an attempt to enumerate various treatments of schizophrenia, whether successful or not, and to form some idea as to the relative value of the methods employed.

MATERIAL.

The diagnosis of schizophrenia is, in many instances, difficult, and cases diagnosed as such by one observer may not be diagnosed similarly by another. Thus, the opinion may readily be expressed that the good, or bad, results obtained by one clinician were not due to the method of treatment, but to the choice of cases. What evidence is there of this without examining the cases? If the cases have been examined by the second clinician, what evidence is there that the opinion of the second is more accurate than that of the first? Clearly none, unless supported by the unbiased opinion of a third observer—and which of us can give an unbiased opinion?

We are thus brought to the position that all diagnoses of others must be accepted unless there is strong evidence to the contrary, and, with this precept before us, we must accept the diagnosis of schizophrenia as made by the various authors quoted below.

A search of the literature reveals that many treatments have been used for schizophrenia, but that many authors describe their results imperfectly. In consequence, certain methods have been

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omitted from this study, and only those in the case of which information is given as to the relative proportions of successes and failures have been included. This numerical consideration is important, as so many cases of schizophrenia improve without specific treatment.

With the exception of the method involving the intravenous injection of manganese chloride, no treatment has been tested upon a sufficiently large number of cases to warrant its firm establishment. Therefore the term "experimental" has been applied to the various treatments described.

CONTROL SERIES.

At the outset the number of cases that improved without specific treatment must be determined, and this has been done by several workers (Table I).

TABLE I.—*Untreated Cases.*

Number of cases.	Number of improvements.	Author.
186 .	38 (20.4%) .	Strecker and Willey (1924).
100 .	18 (18%) .	Reed (1929).
32 .	8 (25%) .	Kirby (1923).
<hr/> 318	<hr/> 64 (20.1%).	

The cases reported by Strecker and Willey (73-75) were drawn from a private hospital, "where admission is decided upon a basis of acuteness and the favourable aspects of a psychosis," so that series of cases not so selected would be expected to show a lower rate of improvement. The symptom-free period varied from 7 months to 8 years, with an average of 5 years. All the patients were females. Reed (59) reported on his series one year after admission to the hospital.

Strecker and Willey (73-75) limited the term "improvement" to those cases who showed sufficient alterations for the patients to be adjusted to social or family levels, and excluded all changes of a slighter degree. Reed (59) likewise included only discharged cases in his series of improvements. Kirby (29), on the other hand, included the cases that had recovered, and those that had merely improved mentally, under "improvements." This practice will be followed in this article, "improvement" being taken to include all forms of advance in the patients' mental condition, even though

discharge from the hospital does not take place. Physical change alone is excluded.

METHODS OF TREATMENT.

Table II gives a list of treatments applied to a sufficiently large number of cases to give an approximate estimation of the values of the methods :

TABLE II.

Method.	Number of cases.	Improvement per cent.	Authors.
Salicylates	76	75	Margulies (1927).
Aseptic meningitis	64	57·8	Carroll, Barr, Barry and Matzke (1925).
Sodium nucleinate	32	39·7	(1) Donath (1913), (2) Lundval.
Sulfosin	59	39	(1) Schroeder (1929), (2) Salinger (1929), (3) Marcuse and Kallmann (1929).
Manganese chloride	308	35·26	(1) English (1929), (2) Reed (1929), (3) Schrijer, (4) Reiter and Bisgaard (1927).
Occupational therapy	20	35	Main (1923).
Malaria	48	33·3	(1) Yakubovsky (1929), (2) Rudolf (1927), (3) Wizel and Markuszewicz (1927).
Ringer-Locke solution	49	28·6	(1) Morowoka (1927), (2) Ikeda (1926), (3) Sato and Morita (1918).
Somnifen	26	25-33	Kläsi (1922)
Calcium	30	23·3	(1) Dodel, (2) Rudolf, (3) Bernolt and Kolle (1926).
Removal of sepsis	35	22·8	(1) Kirby (1923), (2) Holmes (1921).

Of the above methods, the administration of calcium, the removal of sepsis and, possibly, the use of somnifen give results too close to those of untreated cases to be of any value.

Table III shows some methods used on smaller groups of cases, and so of less statistical value :

TABLE III.

Method.	Number of cases.	Improvement per cent.	Authors.
Assisted respiration	12	83·3	Peters (1930).
Lectures	10	80	Lazell (1930).
Vitamin D	12	50	Rudolf.
Thyroid	16	88	Hoskins and Sleeper (1930).
(selected)			
"	15	0	Walker (1924).
(unselected)			
T.A.B. vaccine	15	0	(1) Berkley (1929), (2) Raphael and Gregg (1921).

Table IV shows the methods employed upon the smallest number of cases. The results obtained are only an indication that certain methods might be of value if tried on larger series of cases.

TABLE IV.

Method.	Number of cases.	Improvement per cent.	Authors.
Salvarsan	5	100	Page (1923).
Hæmotherapy	6	83·3	Pascal and Davesne (1925).
Psycho-analysis	5	80	Coriat (1917).
Ovary transplants	4	75	Sippel (1925).
Parathormone + calcium	3	33·3	Bowman (1929).
Thyroid + pituitary	7	0	Smith and Hill (1927).
Vitamin C	3	0	Rudolf.

TYPE OF CASE.

Strecker and Willey (73-75) found that the discharge-rate in untreated cases varied with the type of case, as shown in Table V, which demonstrates that if the predominating type is unknown

TABLE V.—Discharges in Untreated Cases (Strecker and Willey).

Type.	Number.	Discharges per cent.
Catatonic (C.)	45	40
Hebephrenic (H.)	49	16·3
Paranoid (P.)	85	14
Simple (S.)	7	0

in any series, the value of the treatment cannot be assessed unless an improvement-rate of over 40% is obtained. Such a rate was obtained with salicylates, aseptic meningitis, assisted respiration, hæmotherapy, lectures, salvarsan, psycho-analysis, ovarian transplantation, and thyroid administration in hypothyroid cases.

Table VI shows the treatments in which the type of case treated was specified. Clearly the results of the treatments of catatonia

TABLE VI.—Treatment of Certain Types.

Method.	Type.	Number.	Improvement per cent.
Salvarsan	H.	5	100
Occupational therapy	C.	20	35
Manganese chloride	C.	108	37·4
	H.	45	33·3
	P.	37	32·4
	S.	9	44·4
	Vitamin D	P.	8	27·5
	C.	3	66
	H.	1	100

when occupational therapy or manganese chloride is used are no better than when no treatment is given. The numbers treated with vitamin D are too small for comment.

In the hebephrenic group manganese chloride appears to double the improvement-rate, but the improvements with salvarsan treatment are no doubt due to the fact that each case treated showed syphilis in its antecedents.

Manganese chloride gives an improvement-rate of over double the untreated rate in the paranoidal cases, and vitamin D, although the series is small, also gives a greater rate than appears with untreated cases.

Whereas no cases of the simple type improved in the untreated series, 44.4% improved in those treated with manganese chloride.

Of the treatments considered in Table VI, manganese chloride appears to be of value for hebephrenic, paranoidal and simple types, and vitamin D for paranoidal and, perhaps, catatonic types. Salvarsan is of value in hebephrenic cases with syphilis in their antecedents.

SEX.

Strecker and Willey's series of untreated cases were females. A comparison as regards sex can be made with the cases treated with manganese chloride and vitamin D. As regards the first

TABLE VII.—*Treatment of Female Cases.*

Type.	Strecker and Willey.		Manganese chloride.		Vitamin D.	
	Number.	Improvements per cent.	Number.	Improvements per cent.	Number.	Improvements per cent.
Catatonic	45	40	53	35.8	3	66.7
Hebephrenic	49	16.3	5	20.0	—	—
Paranoidal	85	14	13	38.4	7	28.6

treatment, no improvement is made by treating catatonic cases, but manganese chloride improves the rate amongst paranoidal and hebephrenic types, although the last group is of too small dimensions to be accurate. Vitamin D apparently increases the improvement-rate amongst female catatonic and paranoidal cases although the numbers treated are too small to give a reliable result.

DURATION BEFORE TREATMENT.

English,(19) analysed his cases treated with manganese chloride in regard to the length of the disease before treatment (Table VIII).

The table clearly shows that a far greater rate of improvement is obtained in cases treated comparatively early. In the case of the treatment with aseptic meningitis, this factor of duration of disease before treatment is also of value. Barr and Barry (1926 (4)) found that of 48 cases with durations before treatment of from 1-9 years, improvements occurred in 70·8%, whereas in 16 cases with durations of from 2-32 years (mean 9 years), improvements occurred in 56·25%.

TABLE VIII.—*Duration of Disease before Treatment with Manganese Chloride.*

Number.	Type.	Duration in years.	Improvements per cent.	Strecker and Willey (1 month-5 years). Improvements per cent.
22	C.	1-3	59·1	40
9	H.	1-3	77·7	16·3
7	P.	1-3	28·6	14
38	C.	11-42	23·7	—
17	H.	10-26	17·6	—
13	P.	10-49	23·1	—

MAINTENANCE OF IMPROVEMENT.

In Strecker and Willey's series the improvements had persisted for an average of a little over 5 years at the time of reporting. In Reed's series treated with manganese chloride, improvement was recorded at the end of one year after treatment. Of the cases treated with malaria, the improvement persisted for only a few months in many instances (Rudolf (64), Wizel and Markuszewicz (81)). Of 3 cases treated at Claybury Mental Hospital, 2 improved markedly for 2-3 months, but then relapsed to their former state. Templeton (1924) (76), who treated 20 cases, stated that at the end of 2 months after the cessation of the treatment there were few who had not relapsed, and "it seems only a matter of time before all or most will have resumed their former mental state." Between 1 and 2 years after treatment with aseptic meningitis improvements were present in 39·6% and remissions in 6·25% of cases, whereas from 2 to 11 months after treatment the figures were 58·3% and 12·5% respectively (Barr and Barry (4)). Hæmotherapy also gave a number of temporary improvements (50%), whereas the permanent affected only 33% of cases. Fifty *per cent.* of the 75% of improvements with salicylate treatment were of a temporary nature only, and all of those due to vitamin D were temporary in character.

DEGREE OF IMPROVEMENTS.

Table IX shows the percentages of remissions or recoveries and of lesser mental improvements amongst the various treatments. Wherever possible the permanent improvement has been recorded in the table, the temporary being omitted. Table IX shows that the control series of cases gave less remissions than salicylates, sodium nucleinate, sulfosin, manganese chloride, occupational

TABLE IX.—*Remissions and Mental Improvements.*

Treatment.	Number of cases.	Remissions.	Improvements.	Remarks.
Control (S. & W.) . . .	186	20·4	—	—
„ (Reed) . . .	100	18	—	—
Salicylate . . .	76	25	—	—
Aseptic meningitis . . .	48	6·25	39·56	—
Sodium nucleinate . . .	32	34·4	25	—
Sulfosin . . .	3	100	—	—
Manganese chloride . . .	30	36·6	—	—
Occupational therapy . . .	20	35	65	—
Malaria . . .	21	14·3	—	—
Ringer-Locke solution . . .	35	25·7	—	—
Somnifen . . .	23	25-33	—	—
Assisted respiration . . .	12	0	25 (great) 50 (slight)	—
Lectures . . .	10	80	—	—
Vitamin C . . .	3	0	0	—
„ D . . .	12	0	0	—
Thyroid . . .	16	31·25	56·25	Hypothyroid cases. Unselected.
„ . . .	15	0	0	—
„ + pituitary . . .	7	0	0	—
T.A.B. vaccine . . .	15	0	0	—
Hæmotherapy . . .	6	33·3	50	—
Psycho-analysis . . .	5	40	40·0	—
Parathormone + calcium . . .	3	33·3	0	—

therapy, Ringer-Locke solution, somnifen, lectures, thyroid extract to sub-thyroid cases, hæmotherapy, psycho-analysis and parathormone with calcium.

TECHNIQUE AND REMARKS ON METHODS.

Salicylate treatment.—Margulies (45) gave salicylates in the following forms to different patients: (a) 20% solution of sodium salicylate, 100 c.c. intravenously twice a day for 5 days or more; (b) strontisal (strontium salicylate), 40 c.c. intravenously, 5% solution with four 5 grm. tablets orally; (c) atophanyl in smaller doses than of sodium salicylate. The three methods appeared equally efficacious.

Of 67 female and 9 male patients, 23·9% female and 33·3% male were discharged. Temporary improvements, such as loss of stupor and the calming of excited cases, occurred in 50%. Repetition of the treatment gave no improved results.

Aseptic meningitis.—The technique of this method as used by Carroll, Barr, Barry and Matzke (10) consisted of removing 25 c.c. of cerebro-spinal fluid from the lumbar region and injecting 20 c.c. of sterile normal horse-serum. The temperature rises perhaps to 103° F., and returns to normal within four days. No deaths took place. The cases treated were largely of a severe nature, 21 of the patients being either markedly destructive, "assaultive" or filthy.

Sodium nucleinate.—In 1913 Donath (15) reported on 14 cases treated, and stated that 57·1% improved and 28·5% recovered, Lundval (39) treated 18 cases with a mixture of sodium nucleinate, arsenious acid and ketol. He obtained 6 (33·3%) apparent recoveries.

Sulfosin.—Schroeder (68) injects this preparation deeply into the muscles on the outer side of the thigh, preferably between the upper and middle thirds. The quantity used is calculated from the result of previous injections, a rise of temperature of 104° F. or more being desirable. Ten injections are given in each series, the doses being administered twice a week. Two weeks after the termination of the first series a second is commenced. Two or three series are usually sufficient. Of 3 cases whose treatment was completed, all had returned to their previous work, "one with perfectly normal mentality." Marcuse and Kallman (44) treated 40 cases and obtained improvement in 40%, while Salinger obtained 25% of improvements in 16 cases.

Manganese chloride.—Walbum (1926 (78)) found that metallic salts increased the antibodies in the blood, and that in animals manganese cured or prevented diseases due to staphylococci, and to paratyphoid, Shiga-Kruse, diphtheria and tetanus bacilli. He suggested that cases of schizophrenia should be treated with metallic salts, and particularly with manganese chloride. English (19) reported on 181 cases. The results of treatment are shown in Table X :

The effect of the duration of the disease before treatment is shown in Table VIII for the mental condition, and in Table XI for the physical condition. In some cases of treatment with manganese chloride (English) (19) the improvement did not occur until 6 or 8 weeks after the treatment.

The technique used by English consisted of injecting intravenously from 1 c.c. to 8 c.c. of a 1 in 400 solution of manganese chloride twice a week for 10 weeks. A second course of similar treatment was given after 2 months to 25 of the cases. Reed (59) administered 30 intravenous injections of from 2 c.c. to 8 c.c. of a .02 molar solution of manganese chloride over a period of 15 weeks,

TABLE X.—*Manganese Chloride Treatment (English).*

Sex.	Type.	Number treated.	Improvements per cent.	
			Physical.	Mental.
F.	Catatonic . .	53 .	49.05	35.8
F.	Hebephrenic . .	5 .	40.0	20.0
F.	Paranoid . .	13 .	46.1	38.4
M.	Catatonic . .	52 .	69.2	39.6
M.	Hebephrenic . .	36 .	52.7	33.3
M.	Paranoid . .	22 .	59.0	31.3

followed by a month's course of .3 grm. of manganese chloride by mouth twice a day. He treated 15 males and 15 females with an average duration of disease of 30 years.

Occupational therapy.—Main (40) treated by occupational therapy 20 catatonic cases with history of the disease of from 2 to 20 months. All the cases improved at the work, consisting of fret-

TABLE XI.—*Duration of Disease before Treatment with Manganese Chloride (English).*

Number.	Type.	Duration in years.	Number per cent. showing—	
			Increase of weight.	Physical improvement.
22 .	C. .	1-3 .	68.2 .	90.9
9 .	H. .	1-3 .	66.6 .	77.8
7 .	P. .	1-3 .	35.0 .	70.0
38 .	C. .	11-42 .	31.6 .	49.9
17 .	H. .	10-26 .	35.3 .	35.3
13 .	P. .	10-49 .	46.2 .	53.8

work, basket-work, drawing, weaving and brush-making. Many cases became cleaner, quieter and less hallucinated. Seven (35%) were discharged.

Malaria.—Wizel and Markuszewicz (81) treated 27 cases. Of these, 19 were chronic, and included hebephrenic, catatonic and paranoid types. No satisfactory results were obtained in the chronic cases, but remissions persisting for several months were obtained in the intermittent types. Successful results were obtained in the 4 acute cases.

Yakubovsky (82) advises therapeutic malaria for early cases only, although one case, with a history of $4\frac{1}{2}$ years' duration, was able to leave the hospital. This writer obtained remissions in 30%.

Templeton (76) treated 20 male cases. Most of the patients improved mentally and, in some, a return to an apparent normal took place. In one catatonic case, a former bank clerk, accuracy and speed in calculation returned towards the end of the fever. A few remained free from attacks of excitement for 3 months, and several others with exhibitionism and filthy habits remained well-behaved for the same period.

Ringer-Locke solution.—In 1915 Morowoka (46) treated 18 cases and obtained 16·7% recoveries by the subcutaneous injection of 1,000 c.c. of the solution. This was made up of sodium chloride 9 parts, potassium chloride ·42 parts, calcium chloride ·24 parts, sodium bicarbonate ·1 part, glucose (Merck) ·1 part, distilled water to 1,000. The solution was sterilized under high pressure to avoid decomposition of the bicarbonate. It was used at 38° or 39° C., and the injections were given in different parts once or twice a week. In acute cases a few injections only were necessary, but the treatment was continued up to two years in some cases.

In 1917 Morowoka treated a second series (of 17 cases) and obtained recoveries in 35·3%. Sato and Morita (66) treated 14 catatonic cases and obtained 35·7% improvements, but there was no improvement in 2 cases of hebephrenia.

Somnifen.—Kläsi (30) reports 23 female and 3 male cases given the following treatment. Morphine (gr. $\frac{1}{4}$) with hyoscine (gr. $\frac{1}{60}$) was first given; thirty minutes later two 2 c.c. ampoules of somnifen were given intravenously or into the subcutaneous fat or muscle. A sleep of from 6 to 8 hours was thus obtained, and a further half or one ampoule would continue the sleep for a similar period. Usually one ampoule morning and evening would keep the patient asleep, which was allowed for 6 or 7 days. No reaction to the treatment was obtained in the male patients, as safe doses did not produce sleep. Of 23 females, there was no improvement in 8 demented cases, but from 25–33% improved sufficiently to be sent home or to a chronic working ward.

Calcium.—Up to 30 intravenous injections of 10 c.c. of afeuil were given to 14 cases by Dodel (14). The treatment was administered every second or third day. Striking results were reported, and in 28·6% of cases there was mitigation, or prevention, of periodical confusional attacks of excitement. Berndt and

Kolle (6) gave the same treatment to 13 cases of all types. Only 15.4% improved, and 1 case relapsed 9 months later.

I treated 3 female paranoid cases with collosol calcium, with lecithin by mouth, for 4, 5 and 6 months. The duration of the disease before treatment was $6\frac{3}{2}$, 9 and $3\frac{1}{2}$ years respectively. One patient became less frequently incontinent, but otherwise showed no change. One patient, after 4 months of treatment, became quieter, whilst the third became definitely less excitable. When the treatment was stopped for 16 days this patient again became excitable, and renewal of the treatment did not lessen the excitability.

Removal of sepsis.—Of 33 cases from whom sepsis was removed, Kirby (29) found that only 18% improved. The operations performed consisted of removal of teeth, tonsils and cervicæ. The treatment of severe constipation was also carried out.

Assisted respiration.—Peters (54) treated 12 females by means of artificial respiration, using Silvester's method, for 15 minutes daily. The duration of the disease before treatment varied from 6 months to over 9 years. Four cases showed great improvement, 3 of these maintaining their improvement up to the time of writing, nearly 6 months after treatment. Six cases showed slight improvement, which was maintained.

Lectures.—Lectures given to mute and stuporose patients may seem to be of little value, but Lazell (33) reports that patients on recovery months after the lectures informed him that certain sentences in the lectures had helped them to re-adjust their mental outlook. The lectures consisted of an elementary course in psychology, with a general description of the manner of adapting oneself to the surroundings. Lazell states that the advantage of lectures are that a large number of patients may be encouraged at one time, and that the patients discuss the subject-matter amongst themselves, and so impress it upon their minds.

Lazell stated that he obtained good results in a large number of cases, but gives his results for one small group of 10 cases only. Of these, 80% were discharged as social recoveries.

Vitamin D.—In 1927 10 female and 2 male cases were treated with vitamin D, the substances used being radiostol, radiostol with liver extract, irradiated milk, and ultra-violet irradiation.

(a) *Radiostol.*—Two female paranoid cases were treated with 10 drops three times a day for 2 months. In one patient, with a history of $3\frac{1}{2}$ years, no change occurred. In the other, in whom the duration of the disease was $3\frac{1}{2}$ years, a definite change took place.

She became more noisy and impulsive, and refused to work. Noisiness and impulsive behaviour occurred whilst under treatment; upon the cessation of the treatment, she returned to her previous condition of being noisy once every few days only, and of working occasionally.

(b) *Radiostol* (10 drops three times a day) with liver extract representing $\frac{1}{2}$ lb. of liver once a day.—This treatment was given for 2 months to one female paranoidal case with a history of 9 years, and to one female catatonic case with a history of $5\frac{7}{8}$ years' duration. The paranoidal case showed no change. The catatonic, who was previously mute, became brighter and answered when addressed, after one month's treatment. Attention to all her needs was still required. The brighter outlook persisted after the termination of the treatment.

(c) *Irradiated milk*.—One half-pint of milk was placed in a flat dish and exposed for 15 minutes at a distance of 2 ft. to a four-arc ultra-violet lamp fitted with iron-cored electrodes. The milk was stirred throughout the exposure.

At the time when these experiments were carried out, in 1927, no definite knowledge of the best length of exposure to produce vitamin D from ergosterol existed, and the period of 15 minutes was selected, as the appearance and taste of the milk was scarcely altered by the irradiation. However, in the following year Bills, Honeywell and Cox (7) published their work on the irradiation of ergosterol, showing that the antirachitic properties of irradiated ergosterol were produced in greatest amount after $22\frac{1}{2}$ minutes' irradiation. An average of 100 being taken for cod-liver oil, the workers found that a potency of 150,000 was obtained by $7\frac{1}{2}$ minutes' irradiation of ergosterol, of 225,000 by 15 minutes, of 250,000 by $22\frac{1}{2}$ minutes, of 200,000 by 30 minutes, of 50,000 by 2 hours, and of almost *nil* by 3 hours' irradiation. Thus the exposure of 15 minutes given to the milk in this experiment would have produced nearly the maximum antirachitic power. All cases were given one half-pint of irradiated milk daily.

In one catatonic female and 2 paranoidal female cases (durations $4\frac{1}{4}$, $5\frac{7}{8}$ and $7\frac{1}{2}$ years respectively) treated for 2 months no change took place. There was also no change in a female paranoidal case (duration $3\frac{1}{4}$ years) treated for 4 months. On the other hand, a female catatonic patient with a duration of 6 years, who was also treated for 4 months, became brighter, began to work and always answered when addressed. Towards the end of the treatment she ceased working and gradually reverted to her

former condition. The sixth case, a paranoid female, with a duration of disease of $8\frac{1}{2}$ years, was excitable and impulsive, smashed crockery nearly every day and did no work. Two months after the commencement of the treatment she began to work, and during the following month she did not smash at all. During the fourth month of the treatment she became excitable for a few days and gradually became more and more impulsive.

The temporary changes occurring in the above patients might have been due to some constituent other than the vitamin D in the milk. Vitamin A is destroyed by irradiation (Aitken (1)), but other substances are not necessarily altered. Two female paranoid and one female catatonic case were, as controls, each given one half-pint of non-irradiated milk daily. No change occurred.

(d) *Ultra-violet irradiation.*—Two male patients, one hebephrenic, the other paranoid, were treated by exposure to a four-arc ultra-violet lamp with iron-cored electrodes. Care was taken to avoid pigmentation of any degree. Improvement occurred in both patients, in that they became brighter and took more interest in their personal appearances. This improvement, like that of the cases receiving vitamin D orally, was only temporary, and, although the treatment was continued, both patients gradually returned to their former condition.

The administration of vitamin D was thus accompanied by changes in 6 out of 12 cases. 4 of the 6 improved for a short period only, and one became more active only during the administration of the vitamin. The temporary character of the improvement, despite the continuation of the treatment, is of interest in connection with an observation of Sir H. Gouvain (21), who noted that repeated exposure of children to ultra-violet irradiation over prolonged periods seemed to result in progressive diminution of response, whilst intermittent exposure resulted in stimulation. Moreover, Steenbock (72) and also Drummond (16) found that in animals which gave a growth response to vitamin D (irradiated ergosterol), a retardation followed by a cessation of growth set in after about four weeks. An increase in the amount of irradiated ergosterol only produced a resumption of growth if vitamin A was also administered.

As the cases in this series which showed a temporary improvement were treated for more than four weeks, a failure of the improvement to continue is not surprising. In 1927, when these patients were treated, Steenbock and Drummond had not published their work, so that vitamin A was not administered.

Thyroid administration.—Walker (79) treated 15 cases, of which 3 were catatonics, with thyroid extract. None of these cases showed evidence of thyroid deficiency and none improved. Hoskins and Sleeper (26) treated 16 cases of schizophrenia, all suffering from thyroid deficiency, and obtained improvement in 88%. Five (31.25%) were discharged to their homes. These authors state that no improvement can be expected unless the cases are selected.

Typhoid-paratyphoid vaccine.—Berkley (5) treated 2 female and 6 male cases with from 1-15 c.c. of vaccine intravenously on alternate days for 16 days. An average rise of temperature to 102.4° F. was obtained. No improvement took place. Raphael and Gregg (58) treated 7 male cases with durations of disease of from 1 to 22 years. The series consisted of 1 paranoid, 4 hebephrenic, 1 simplex and 1 catatonic. Five hundred million bacilli were injected intravenously, and the dose gradually increased to 1,000,000,000. A first course consisted of 6 doses at intervals of from 2 to 5 days, and a second of 4 doses at the same intervals. No mental improvement occurred.

Salvarsan.—The effect of this in patients with a syphilitic history has already been dealt with.

Hæmotherapy.—Pascal and Davesne (53) gave each patient 6 intramuscular injections of whole blood taken from cases of insanity during remissions after hæmotherapy or shock from turpentine and sodium nucleinate. These injections were given on alternate days, and consisted usually of from 5-10 c.c. as the first dose and from 15-20 c.c. as subsequent doses. Six cases were treated, of which 3 were acute forms of hebephrenia or catatonia. Two recovered and 3 improved temporarily.

Psycho-analysis.—Although much has been written on the analytical treatment of schizophrenia, there are, unfortunately, few figures published. The single cases reported as having been benefited by this technique may have been those who would have improved with no treatment. Brill (9a) states that analysis gives good results, and gives examples of individual cases, stating that his experience extends over many years. He gives no figures of the number of cases treated either successfully or unsuccessfully. Clearly, if failures, as well as successes, are not stated in the description of any treatment, the value of that treatment is open to doubt.

Coriat (13) describes 5 cases treated analytically. The duration of the condition varied from 3 to 16 years. In a case of

introversion there was slight improvement, in 2 negativistic cases recovery took place, in a third negativistic patient improvement occurred, whilst in the fifth patient improvement was taking place at the time of writing.

Ovarian transplantation.—Sippel (69) found no improvement followed this treatment in 1 patient, but 3 improved markedly. One case improved so rapidly that the author considered that suggestion might have produced the beneficial result.

Parathormone with calcium.—Bowman (9) suggests that the marked improvement occurring in one of 3 catatonic cases that he treated with calcium lactate orally and parathormone was probably a coincidence, as the other two patients did not improve under the treatment. One of the two failures improved 6 months after the cessation of the treatment, and was discharged on trial in the seventh month.

Thyroid with pituitary administration.—Smith and Hill (70) administered orally for 2 months thyroid and whole pituitary extract to 7 cases. No mental improvement took place, although improvement in the circulation and gains in weight were recorded. Each patient showed a low blood-sugar curve before treatment, but a higher one, more nearly approaching the normal, after.

Vitamin C.—To 1 paranoid and 2 hebephrenic female cases vitamin C in fresh lemon-juice was given once a day for 2 months. No change occurred in the condition of the patients.

EXPLANATION OF TREATMENTS.

The methods described above may be divided into (a) psychological and (b) physical, although either type of treatment may benefit both spheres, the psychological and physical improvements occurring contemporaneously.

(a) *Psychological.*—The *rationale* of psycho-analysis is too well known to be described here. Occupational therapy also comes under this heading.

(b) *Physical.*—The physical methods of treatment described above may be grouped as follows:—

1. Pyrexial or shock methods: including malaria, aseptic meningitis, sodium nucleinate, sodium nucleinate with arsenious acid and ketol, sulfosin, typhoid-paratyphoid vaccine, and hæmotherapy.

2. Vitamins :

(a) C.

(b) D—in the form of ultra-violet ray irradiation, radiostol, radiostol with liver extract, and irradiated milk.

(c) Connected with vitamin D—

Calcium, calcium with lecithin, and calcium with parathormone.

3. Antisepsis : including operative treatment, irrigation of colon, ultra-violet ray radiation, manganese chloride, Ringer-Locke solution, and malaria.

4. Endocrine treatment : including ovarian transplantation, thyroid extract, thyroid with pituitary extract, and parathormone with calcium.

5. Sedative treatment : including somnifen.

6. Specific treatment : including thyroid extract and salvarsan.

7. Salicylates.

8. Respiratory treatments : including assisted respiration.

The list shows that several treatments may be placed in more than one category.

1. *Pyrexial or shock methods*.—In 1927 (64) the suggestion was made that the benefit due to malarial therapy was related to the increase of the large mononuclear cells. Eddison (17) and others have widened this suggestion to include the entire reticulo-endothelial system. One of the functions of this system is the liberation of the large mononuclear cells. The rise in temperature has many times been suggested as the beneficial agent. Clare (11), in 1925, put forward the idea that an immunizing reaction to the stroma of the erythrocytes destroyed in fever is the cause of the benefit, while Mueller (1925) (51) believed the benefit was due to a polymorphonucleosis.

Kauffman (28) suggested that the increased metabolism produces the improvement. This increased metabolism increases the quantity of carbon dioxide in the blood. Although this carbon dioxide is rapidly buffered and excreted, there must be an abnormally high carbon dioxide tension in the tissues, for the quantity in these structures is about 2-4% more than that in the venous blood (Starling (71)). The acidotic tendency (Golla (23)) of acute

infections may be the important element in the improvement of schizophrenic cases after febrile attacks.

2. *Vitamins*.—As no improvement was obtained with vitamin C, this substance need not be discussed further.

Activation of ergosterol by means of ultra-violet rays produces vitamin D, and it is immaterial whether the ergosterol is in the skin or the food, as, for instance, milk. Radiostol is a preparation of ergosterol that has been irradiated.

The benefit accruing to schizophrenic cases on administration of vitamin D may be related to the reversal of the hæmoclastic crisis by this substance. In a series of 50 cases of schizophrenia of both sexes and of all types, Robertson (61) found the hæmoclastic crisis present in 94%. Thomas (77) found that the hæmoclastic crisis was permanently reversed—that is, converted to normal—in a case of schizophrenia by the administration of 2 mgrm. ($\frac{1}{33}$ gr.) of radiostol.

Leenhardt and Chaptal (36) observed that irradiation with ultra-violet rays increased the alkaline reserve, and this may be also related to the benefit following vitamin D therapy.

Calcium treatment need not be considered, as the treatment gave no better results than were obtained with no treatment.

3. *Antisepsis*.—The methods included in this group are those which attack either the bacterial flora or their toxins.

Operative treatment and irrigation of the colon attack the organisms directly.

Walbum (78) reports that metallic salts as, for instance, manganese, produce antibodies, and Hoff and Silberstein (24) found that antibodies to staphylococci, *Bacillus coli* and streptococci were produced by malaria. Pfannensteil (55) states that small doses of vitamin D increase the bactericidal power of the blood, and Colebrook, Eidenow and Hill (12) noted the same occurrence after irradiation with ultra-violet rays. Eidenow (18) reported that irradiation of rabbits raised the resistance to virulent streptococci, although over-radiation reduces the bactericidal power of the blood.

Morowoka (46) believes that the results obtained with Ringer-Locke solution are due to the fluid being an ideal medium for washing and nourishing tissues. Ikeda (27) suggests that the solution dilutes and washes away the exogenous toxins and the endogenous waste products, thus allowing the general nourishment of the system to proceed.

4. *Endocrine*.—Since the late Sir F. Mott's (48-50) findings of

degeneration of the endocrine glands in schizophrenia, attempts have been made to supply the missing substances. With the exception of the ovarian transplantation, no preparation has afforded benefit except in cases obviously deficient in a particular hormone, despite the observation of Robertson (61) that the hæmoclastic crisis was reversed by the administration of thyroid extract (gr. xxx each day for 3 days). Recent work by Lewin (37) throws doubt upon a direct relationship between the changes in the endocrines and schizophrenia.

5. *Sedatives*.—Possibly the effect of prolonged rest is to give time for the irritable nerve-tissue to return to a more nearly normal state and, in addition, a habit of restlessness may be broken.

6. *Specific treatment*.—Thyroid extract improved sub-thyroid patients, and salvarsan syphilitic patients.

7. *Salicylates*.—The action of these bodies shows itself in two ways. The protein metabolism is increased and thus more carbon dioxide is formed and, in addition, salicylic acid is formed. This possesses germicidal qualities (Hale White (80)).

8. *Respiratory treatments*.—Assisted respiration, first carried out by Peters (54), aims at increasing the pulmonary ventilation, reducing the high alveolar carbon dioxide and thus diminishing the high acid load on the red corpuscles.

On the other hand, an apparently contrary treatment has been used by many workers. Loevenhart, Lorenz and Waters (38) administered from 15 to 40% carbon dioxide in oxygen to catatonic cases, and obtained conditions approaching mental normality persisting for from 5 to 25 minutes. Leake, Guedel and Botsford (34) obtained similar results using 30% or more carbon dioxide in oxygen for periods up to 2 minutes in duration. In addition to the mental clarity, the systolic blood-pressure was raised, the pulse stimulated and the rate and depth of the respirations increased. These authors suggested that ammonium chloride or thyroid extract should be used to alter the acid-base balance of the blood. Laské and Rubin (32) gave ammonium chloride (10 grm. daily for 10 days) to one case until gastric symptoms appeared. The mutism persisted, but there was slightly less rigidity and resistiveness. The pH was recorded as 6.0 before and 6.8 after treatment. These two authors state that of 9 catatonic cases given carbon dioxide and oxygen 4 remained mute. Leake, Wood, Botsford and Guedel (35) stated that periods of from 3 to 20 minutes' duration of intelligent responsiveness occurred in 13 out of 14 catatonic cases treated with 20% or more carbon dioxide in oxygen. The rise of blood-pressure

was not related to the mental response, and no evidence was obtained that repeated administration prolonged the favourable responses. The inhalations were stopped at the first sign of convulsions or the onset of anæsthesia.

The improvement obtained by Peters (54) by increasing the expiration of carbon dioxide seems strangely in contrast with that obtained by the above workers who increased the inspiration of carbon dioxide, but the discrepancy is merely apparent. Armstrong (2) states that in the schizophrenic the increased respiration will decrease the acid load on the corpuscles. The treatment of blood with carbon dioxide produces the same effect by increasing the bicarbonate of the plasma and the corpuscles (Evans (20)). In the first method the acidic ions are decreased, in the second the alkaline are increased, so that the effect on the acid-base ratio is the same in each case. At present it is impossible to say whether the increased respiratory rate and the hyperpnœa removes only the excess of carbon dioxide inspired, or whether they remove this and also the excessive acidic tendency existing before the treatment.

Co-ordination of methods.—With so great a diversity of treatments for which some measure of success is claimed, is it possible that some common factor is present, or that the authors of the various articles are reporting their results incorrectly? Surely the likelihood of all the authors misrepresenting their results is small.

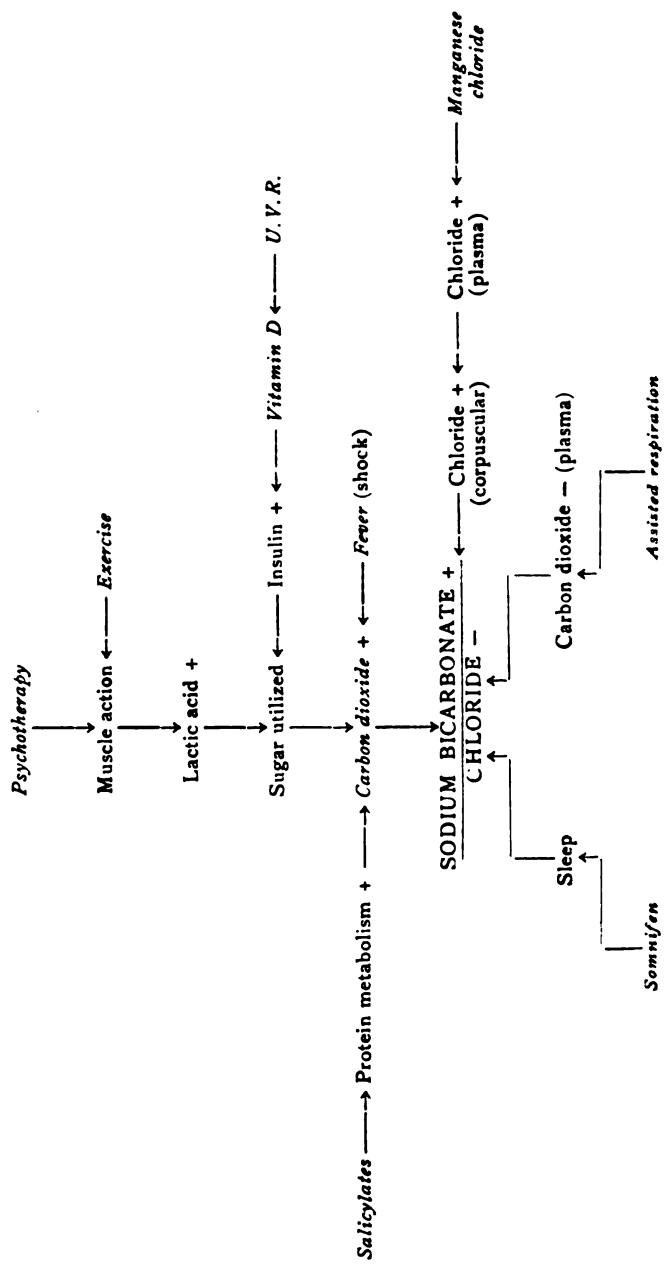
On the other hand, a factor common to the methods of treatment can be found, and Diagram I demonstrates this principle. The scheme is entirely hypothetical and tentative, but it serves as a possible explanation of the improvements reported following different therapeutic methods.

The common factor suggested is an alteration in the ratio of corpuscular bicarbonate to corpuscular chloride. Certain treatments would increase the alkaline bicarbonate, others would diminish the acid chloride, so that the ratio would be altered in either case.

The importance of the acid-base ratio in schizophrenia has been fully demonstrated by Golla (23) and his co-workers, Armstrong (2), Mann (41), Marsh (43, 47) and Robertson (62), and any treatment that would affect this ratio favourably should benefit the patient.

The lower part of Diagram I demonstrates how two apparently opposing treatments may, in reality, each produce a lowering of the acid chloride. Sedatives, such as somnifen, produce sleep, but Armstrong (2) found that during sleep in 6 cases of catatonia the corpuscular acid chloride is decreased. Peters (54) treated patients,

DIAGRAM I.—*Suggested Hypothesis for Mode of Action of Treatments.*
 [Words in italics represent treatments. Ratio of sodium bicarbonate to chlorides is *intra-corporal*.]



first by making them expire freely by means of artificial respiration, and afterwards by exercise. The artificial respiration lowers the carbon dioxide tension in the plasma; but the chloride content of the corpuscles increases when blood is treated with carbon dioxide (Evans (20)), so presumably a diminution of the corpuscular chloride must occur when the plasma carbon dioxide decreases. The second part of Peters's method causes muscle action, which increases the lactic acid in the blood, shown in the upper part of Diagram I.

An increase in the alkaline bicarbonate is the main factor of the treatments described in the upper part of the diagram. Psychotherapy, such as used in schizophrenia, may be brought into the scheme on account of increased muscle action. This increased muscle action is due to attention. Clearly, in listening to a lecture, unconscious muscle action takes place for, in attention, the whole body may be in action. Again, the concentration required to perform occupational therapy brings about an increased tension of the muscles. Increased contraction of the muscles during psycho-analytical treatment is more difficult to understand. Although the patient is lying down and external stimuli are reduced as much as possible, the essence of the treatment consists in the patient concentrating upon his memories. As concentration upon a lecture shows a marked attentive attitude with increased muscle tension, it is difficult to deny the possibility that a slighter form of mental concentration may cause a slighter increase of muscle tension.

Further support for this view that an increase of the carbon dioxide in the blood may play some, although probably a very small, part in the improvement resulting from psychotherapy, is obtained from the relationship between the relative amounts of carbon dioxide believed to be formed by the various methods, and the duration of the treatments necessary to produce improvements (Table XII).

TABLE XII.—*Relationship between Estimated Carbon Dioxide in Blood and Duration of Treatment.*

Method.	Blood carbon-dioxide at each treatment.	Duration of treatment.
Psycho-analysis	Very small	6 months, 1 year or more.
Lectures	Small	2 months.
Respiration with exercise	Moderate	Few days to 3 weeks.
Carbon dioxide inspiration	Great	Few minutes.

Resting muscle produces a small amount of lactic acid (Evans (20)), so that, however slight the increased muscle tension may be, any

increase will raise the quantity of lactic acid formed. This increase of lactic acid necessitates a further supply of sugar, which is oxidized to carbon dioxide (Pryde (57)), and so the bicarbonate is increased in amount.

Although the bicarbonate may be abnormally increased in the blood from the muscular system, this blood must pass through the lungs before it reaches the brain, so that it might be thought that the ordinary expirations would re-adjust the acid-base ratio, and thus the blood reaching the brain would be normal, and the mental condition would be unaffected. This, however, does not occur.

Mild degrees of exercise lead to a "steady state" in which the oxygen usage is sufficient to keep up with the production of lactic acid, thus suggesting that at each expiration all the lactic acid in the blood in the lungs is excreted as carbon dioxide. However, at the termination of the "steady state" there is a small oxygen debt. If there were none the oxygen usage should fall immediately. It does not do so, but it falls slowly as the remaining lactic acid is oxidized (Evans (20)). Therefore the blood is not fully aerated in slight exercise at the end of expiration, and so this blood with the additional bicarbonate in it would reach the brain. An additional, indirect observation is that at the end of a period of concentration one feels bodily and mentally tired. If the waste products were disposed of concurrently with their formation, one would feel as fresh at the end of a period of mental concentration as at the commencement.

Although treatment with vitamin D has been found to reverse the hæmoclastic crisis (Thomas (77)), the action of ultra-violet radiation in increasing the alkaline reserve is probably of greater value (Leenhardt and Chaptal (36)). Rothman (63), Pincussen (56), Bloch and Faber (8) found that the blood-sugar falls following ultra-violet ray treatment, and Laqueur and Wiener (31) found a similar result following irradiation of the mucous membranes of the mouth and vagina. As Bloch and Faber found no increase of sugar in the urine and no evidence of its deposition in the tissues, they concluded that the pancreas is stimulated to produce more insulin. Insulin, however, promotes the utilization of glucose, accompanied by a rise in blood alkali (Banting, Best and Collip (3)), so the increase of alkali agrees with the findings of a fall of blood-sugar.

Pyrexial methods of treatment, or "shock" methods, produce a rise of carbon dioxide tension, and, in fact, ordinary pyrexia

possesses "acidotic" tendencies (Golla (23)). Thus the carbon dioxide is increased and so the bicarbonate in the corpuscles is increased.

Can the various forms of antiseptic treatment affect the acid-base ratio? As removal of sepsis by operative measures caused no mental improvement, it is unlikely that the antibodies produced or increased by malaria, ultra-violet ray radiation and manganese can have much effect. The chloride fraction of the manganese chloride treatment could, however, affect the acid-base ratio by a process similar to that which occurs when carbon dioxide enters the blood. When this occurs a stage is reached at which the plasma contains Na and Cl ions, whereas the corpuscles contain K, HCO_3 , H and Hb ions. The anions pass through the corpuscular membrane until equilibrium is established—that is, the HCO_3 leaves the corpuscle and Cl enters it. The chloride content of the plasma is thus diminished and that of the corpuscles increased (Evans (20)). Now, when a chloride enters the blood-stream, as with injection of manganese chloride, in order to establish equilibrium much of it must enter the corpuscles. The process is thus probably similar whether the chloride enters the corpuscles on account of the blood having an excess of carbon dioxide in it or on account of an excess of chloride in the plasma.

In a similar manner the improvements recorded following the injection of large quantities of Ringer-Locke solution over prolonged periods may be due to the chloride in the solution, for it contains a total of chlorides of 9.66 parts per 1,000.

Salicylates, when in the blood-stream, are in the form of sodium salicylate. When salicylates are taken, the uric acid, nitrogen and sulphur in the urine are increased (White (80)). This increase of these substances is due to an increase of protein metabolism brought about by the salicylate. Uric acid is formed from nucleic acid, so that the marked increase of this in the urine shows that a marked destruction of cells occurs. Now the carbon of protein, when oxidized in the body, produces carbon dioxide (Starling (71)), hence, yet again, another treatment of schizophrenia can be explained in terms of acid-base ratio.

Treatment by endocrines has already been discussed sufficiently. Success claimed for this method is dependent upon a deficient function of the endocrine organs. This deficiency may not necessarily be related to the condition of schizophrenia, but to concomitant conditions, as, for instance, tuberculosis (Lewin (37)).

SUMMARY.

Twenty-three treatments of schizophrenia are described and their relative values discussed, three series of untreated cases being used as controls. The treatments have been divided into groups, and a factor common to all producing improvements has been suggested. This factor is the ratio of the corpuscular bicarbonate to the corpuscular chloride, some treatments increasing the bicarbonate, some diminishing the chloride.

Finally, the hope is expressed that this comparison of methods of treatment will stimulate those who possess the opportunity to adopt those methods which appear to be of value, so that the successful treatments may pass from the realm of hypothesis and experiment to that of theory and fact.

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SULFOSIN THERAPY IN SCHIZOPHRENIA.

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SULFOSIN was first introduced by Schroeder (1) in the treatment of general paralysis and other syphilitic infections of the nervous system, and later its use was extended to the treatment of schizophrenia. He stated that the results were encouraging, and that this method of treatment was worthy of an extended trial. Loberg (2) treated 100 schizophrenic patients with sulfosin, and of these 49 had remissions in varying degrees. In a later report (3) he stated he had treated 135 patients, of whom 62 improved but only 12 had permanent remissions. Marcuse and Kallmann (4) treated 46 patients, 16 of whom were improved; Salinger (5) treated 16 patients, of whom 2 had remissions and 14 were unchanged.

In this series 20 patients were treated, and the technique was that employed and described by Schroeder. Two of these (Cases 7 and 9) recovered completely, and have been employed in responsible posts since their discharge.

One patient (Case 15) recovered sufficiently to go home and resume light work, although still childish and fatuous.

One patient (Case 20) had a partial remission lasting 4 weeks, but has since relapsed and is attending hospital.

One patient (Case 5) became much worse; whereas before treatment he had ideas of reference with hallucinations, after treatment he became excited, impulsive, full of mannerisms and stereotypics and talked unintelligible jargon.

Loberg states that those patients with a bad hereditary history do not do so well, but it will be seen that in all four patients in whom some improvement took place there was a definite hereditary taint.

SUMMARY OF CASES.

CASE 1.—Male, æt. 23, married.

Family history negative.

Previous history.—Infancy and childhood normal. Always moody and reserved, solitary and of a seclusive type. Masturbation admitted. Four years ago, mild attack of depression (details not known), which lasted three months.

Present illness began in October, 1930. Became depressed, quarrelsome, and said people were against him. Admitted to Maudsley Hospital in January, 1931. Was then abstracted, smiled fatuously, wandered aimlessly and said thoughts came into his head from outside. Remained unchanged until May, and was given course of sulfosin. Highest temperature 103° F. In August remained abstracted, fatuous and restless, and expressed bizarre delusions that people read his thoughts, that thoughts were put into his head, and that a bone in his throat was misplaced and made a noise which annoyed people.

CASE 2.—Male, æt. 25, married.

Family history negative.

Previous history.—Delicate baby. Reserved, quiet, no friends, and rarely went out. Always worried *re* masturbation and nocturnal emissions.

Present illness began at Christmas, 1929. Became depressed, agitated and self-reproachful—made suicidal attempt. Seen at several hospitals, and admitted to Maudsley in September, 1930. Was then abstracted, restless and voluble. Talked in a fragmentary manner; said the lines on his palms were closing together and that his thoughts were being read. Became stuporose, resistive, impulsive and violent, and was given a course of sulfosin in February, 1931. Highest temperature 104° F. Showed no change, and is at present in West Park Mental Hospital.

CASE 3.—Male, æt. 19, single.

Family history.—Paternal uncle alcoholic; paternal aunt suffered from attacks of depression.

Previous history.—Infancy and childhood normal. Always serious, sulky and solitary.

Present illness began in March, 1931. Became full of exalted ideas: said he was to be a great artist. Left home and wandered aimlessly. Admitted to Maudsley Hospital in June, 1931. Was then dramatic, grimaced and struck attitudes. Saw visions; said he was influenced. Was fatuous and smiled to himself. Given course of sulfosin in July. Highest temperature 102.6° F. Remains unchanged, and is abstracted, fatuous, smiles to himself and says he has a raw patch in his brain which makes him vague.

CASE 4.—Female, æt. 31, single.

Family history.—Whole family nervous.

Previous history.—Somnambulism as child, also afraid of dark. Started drinking five years ago, and has drunk to excess since. Always moody, solitary, jealous and suspicious. Many homo- and hetero-sexual experiences.

Present illness began in October, 1930. Became excited, restless and hallucinated. Admitted to Maudsley in October, and was restless and hallucinated; said she was drugged and influenced by electricity. Remained the same until March, 1931, and was given course of sulfosin. Highest temperature 102.2° F. In June, 1931, was still noisy, resistive, impulsive and violent, and was discharged and later admitted to a mental hospital.

CASE 5.—Male, æt. 35, married.

Family history.—Maternal aunt suffered from depression.

Previous history.—Sensitive as a child. Had concussion in 1917—result of accident. Moody, sensitive, suspicious and had few friends. Married life unhappy.

Present illness began in October, 1930. Suddenly said Bolsheviks were after him and his house was being watched. On admission, was suspicious, restless and thought people were plotting against him, and wireless referred to him. Remained unchanged, and was given course of sulfosin in December, 1930. Highest temperature 102.4° F. Became impulsive and violent, grimaced, used neologisms and talked unintelligible jargon. Discharged and admitted to mental hospital in March, 1931.

CASE 6.—Female, æt. 23, single.

Family history negative.

Previous history.—Very few details obtainable. Moody, sensitive and solitary.

Present illness began six weeks before admission. Became depressed and violent by turn. Stripped herself. Admitted in July, 1930, and was negativistic, hostile, laughed to herself and grimaced. Resistive, *flexibilitas cerea* present; remained unchanged, and in June, 1931, was given course of sulfosin. Highest temperature 103.8° F. Remains stuporose and almost inaccessible.

CASE 7.—Male, æt. 26, single.

Family history.—One sister schizophrenic.

Previous history.—Concussion age 7. Attack of depression, 1928; worried about work; recovered in six months. Reserved and quiet. Used to bite his nails. Homosexual episodes admitted.

Present illness began September, 1930. Became excited, said everyone was to be killed and refused food. On admission was resistive, childish, manneristic, grimaced and had to be tube-fed. Cataleptic and incontinent. Remained unchanged until December, 1930, and was given course of sulfosin. Highest temperature 102°8' F. Gradually improved, and was discharged recovered with partial insight in April, 1931, and still remains well.

CASE 8.—Male, æt. 21, single.

Family history negative.

Previous history.—Convulsions when teething. Somewhat quiet and reserved, had few friends.

Present illness began March, 1930. Became apathetic; heard noises like cats. On admission was stuporose, showed emotional incongruity and had auditory hallucinations. Remained stuporose until January, 1931, when he was given sulfosin. Highest temperature 104° F. After treatment showed no change except impulsiveness, and was discharged, and later admitted to Bexley Mental Hospital.

CASE 9.—Female, æt. 23, single.

Family history.—Mother nervous and given to worrying.

Previous history.—Infancy and childhood normal. Nightmares at times. Sensitive, moody and quiet.

Present illness began in July, 1930. Became restless, violent and noisy, and said she was to be married. Was admitted in August, 1930, and was resistive, excited, sullen and hostile; grimaced and said people read her thoughts. Showed no change, and was given course of sulfosin in January, 1931. Highest temperature 103°4' F. Improved considerably, and was discharged recovered in April, 1931, with good insight. Remains well.

CASE 10.—Male, æt. 19, single.

Family history.—One maternal aunt had breakdown in early life and never recovered. Another maternal aunt had tuberculous spine, and another pulmonary tuberculosis. Father and mother were cousins.

Previous history.—Rheumatism aged 2. Delirious and excited for three months after tonsillectomy aged 9. Bad "mixer," unpopular, sensitive, no friends, detached from realities of life.

Present illness began about May, 1929. Strange in manner; became more untidy and seclusive, grimaced and developed mannerisms. On admission was restless, impulsive and erotic, grimaced and was incontinent. Said he was influenced by telephone. Remained unchanged until March, 1931, and was given sulfosin. Highest temperature 103°2' F. Showed no change, and was discharged in June, 1931, and later admitted to mental hospital.

CASE 11.—Male, æt. 24, single.

Family history.—Mother has suffered from several attacks of depression.

Previous history.—Two epileptic fits, one aged 7 and one aged 22. Always quiet, religiously inclined; odd in dress and had few friends.

Present illness began in August, 1930. Became restless, saw visions of birds and flowers, and laughed to himself. On admission was excited, restless, violent and impulsive, and grimaced. Remained unchanged until March, 1931, given sulfosin. Highest temperature 101°4' F. Is still restless, abstracted and impulsive, and expresses bizarre delusions that he has uræmia, etc.

CASE 12.—Female, æt. 28, married.

Family history negative.

Previous history.—Always moody; had violent temper, highly strung and worrying. Drank to excess at times.

Present illness began in February, 1930. Became agitated and restless; made two suicidal attempts. On admission, was depressed, agitated and resistive. Became stuporose, talked in fragmentary manner; said she was influenced by wireless; grimaced and showed verbigeration. Remained unchanged until May, 1931. Given sulfosin. Highest temperature 104° F. Still remains restless, excited, abusive and deluded.

CASE 13.—Female, æt. 32, single.

Family history negative.

Previous history.—Had attack of "hysteria" five years ago. Recovered after one year. Always seclusive and reserved, and had few friends.

Present illness began in February, 1930. Refused to go to work; became restless. Said she was a German and was bearing children every day. On admission was depressed, abstracted and saw visions. Remained unchanged until May, 1931. Given sulfosin. Highest temperature 101.2° F. Still remains abstracted and slow, laughs to herself and says someone has an unknown power over her.

CASE 14.—Male, æt. 17, single.

Family history.—Paternal aunt excitable.

Previous history.—Tantrums at two years of age. No friends, bad "mixer," solitary and reserved.

Present illness began at 16. Became quieter; would not go out, and thought people far off could see what he was doing. On admission was abstracted, laughed to himself, said he was drugged and gassed, and had hallucinations of sight and smell. Remained unchanged and was given sulfosin in December, 1930. Highest temperature 104° F. Showed no change, except that he became stuporose and impulsive, and was discharged in May, 1931.

CASE 15.—Male, æt. 24, single.

Family history.—Maternal grandfather senile.

Previous history.—Attack of "nervousness" at 18 when working for examination. Reserved, quiet, studious and solitary and had few friends. Always odd.

Present illness began in October, 1930. Became more moody and quiet. Became restless, and went to Scotland Yard and said he must go to a home. On admission, was restless, abstracted and showed mannerisms; thought people hypnotized him and read his thoughts. Given sulfosin in June, 1931. Highest temperature 103° F. Remained fatuous and childish, but was able to go home and do light work.

CASE 16.—Male, æt. 17, single.

Family history.—One brother suffering from schizophrenia in mental hospital; one brother backward and dull.

Previous history.—In St. George's Hospital at 10 suffering from shock—result of gas explosion. Backward at school. Reserved, quiet, moody and dull.

Present illness began in May, 1931. Said people were against him; smiled fatuously and rifled workmen's pockets. On admission was suspicious and abstracted, hears people calling him "King Carol" and smiles to himself. Given sulfosin. Highest temperature 103.6° F. Remains unchanged.

CASE 17.—Male, æt. 30, single.

Family history negative.

Previous history.—Attack of depression, 1921—lasted three months. Became deaf at 14; broke nose and had operation also for tonsillectomy. Reserved, shy, and had no friends.

Present illness began February, 1931. Became neglectful and aimless, and would not go to work. On admission was abstracted and stuporose. Given sulfosin in May, 1931. Highest temperature 103.4° F. Now stuporose and abstracted.

CASE 18.—Male, æt. 18, single.

Family history negative.

Previous history.—Nervous as a child. Backward at school. Reserved, solitary, no friends; violent temper and obstinate.

Present illness began in March, 1931. Became restless, suspicious and abusive. On admission said he was hypnotized and windows were drawn up by electrical devices. Impulsive and restless. Hallucinated. Remained unchanged, and was given sulfosin in May, 1931. Highest temperature 101.8° F. Remains stuporose, impulsive and violent, and smiles to himself.

CASE 19.—Male, æt. 25, single.

Family history.—Father suffers from asthma. Paternal aunt died in mental hospital. One paternal uncle alcoholic and one died of tuberculosis.

Previous history.—Attack of depression seven years ago; recovered after one month. Brooding, introspective, solitary and had few friends. Used to bite nails and grind teeth.

Present illness began in June, 1931. Became restless, erotic and depressed by turns. Undressed in public. On admission, was restless, abstracted; said his penis

was shrinking and people influenced him. Remained unchanged and was given sulfosin. Highest temperature 103° F. Still restless, abstracted and deluded.

CASE 20.—Male, *æt.* 21, single.

Family history.—Father morose and nervous. Mother and paternal cousin suffered from depression. Paternal aunt had puerperal depression.

Previous history.—Enuresis until 12. Quiet, reserved, no friends and a bad "mixer."

Present illness began in September, 1930. Thought men at work talked about him and was depressed and restless. On admission was abstracted and evasive; said thoughts were put into his head. Fatuously cheerful. Remained unchanged and was given sulfosin in January, 1931. Highest temperature 103.8° F. Gradually became less abstracted and more in touch, but was still dull and reserved, and was discharged in July, 1931. Insight lacking. Broke down again in August, 1931, and is attending hospital.

RESULTS.

Only cases of doubtful prognosis were selected, as it was considered that by treating this type of case in the early stages the value of sulfosin could be more reasonably estimated. Cases with an undoubtedly good prognosis were purposely omitted. The results of treatment were as follows:

Recovered	.	.	.	2
Much improved	.	.	.	1
Short remission	.	.	.	1
Not improved	.	.	.	15
Much worse	.	.	.	1

TABLE I (modified after Loberg).

Case.	Sex.	Heredity.	Age.	Duration of illness.	Maximum temperature.	Result.
1	M.	o	23	7 months	103°	..
2	M.	o	25	1 year 2 months	104°	..
3	M.	+	19	4 months	102.6°	..
4	F.	+	31	1 year 5 months	102.2°	..
5	M.	+	35	2 months	102.4°	..
6	F.	o	23	1 year	103.8°	..
7	M.	+	26	3 months	102.8°	Recovered.
8	M.	o	21	10 "	104°	..
9	F.	+	23	5 "	103.4°	Recovered.
10	M.	+	19	1 year 10 months	103.2°	..
11	M.	+	24	7 months	101.4°	..
12	F.	o	28	1 year 3 months	104°	..
13	F.	o	32	" "	101.2°	..
14	M.	+	17	1 year 6 months	104°	..
15	M.	+	24	8 months	103°	Partial remission.
16	M.	+	17	3 "	103.6°	..
17	M.	o	30	3 "	103.4°	..
18	M.	o	18	2 "	101.8°	..
19	M.	+	25	3 "	103°	..
20	M.	+	21	4 "	103.8°	Partial remission lasting 4 weeks.

During the pyrexial stage of the illness no change was noted in the mental state of the patients, except that a few became more restless, excited and resistive. This exacerbation passed off when the temperature subsided.

EFFECT ON TEMPERATURE.

Regarding the rises of temperature, Schroeder states that temperatures of 104° and 105° F. were common, but in this present series they were decidedly uncommon.

Stuporose patients showed the greatest degree of pyrexial reaction, and in all these patients temperatures varying from 103° to 104° F. were recorded. In 7 patients even with the maximum doses of sulfosin the highest temperature recorded was 102·8° F., but Schroeder in a personal communication (6) states that good results may be obtained in schizophrenia even with the lower temperatures. Loberg states that patients showing a greater rise of temperature tend to improve more than those who only show moderate degrees of pyrexia, but it will be seen that patient No. 7, who recovered completely, only showed a rise to 102·8° F. with a maximum dose of sulfosin, and those patients who showed a rise to 104° F. did not improve at all.

In 11 of the cases it was found that a higher temperature was obtained with a moderate dose of sulfosin (5 c.c.) than with the subsequent larger doses (10 c.c.). This suggests that the patients developed a tolerance to the sulfosin after the first three or four injections. Thus patient 9 showed a maximum temperature of 103·4° F. with 5 c.c. sulfosin, whereas with 10 c.c. the maximum temperature was 102·2° F., and this was typical of the 11 cases. It was also found that in those cases where 10 c.c. produced a higher temperature than previously recorded with the smaller doses, subsequent doses of 10 c.c. tended to produce lower maximum temperatures. In Case 8 the first injection of 10 c.c. produced a temperature of 104° F., and with subsequent injections the highest temperature was 102° F. This occurred in 12 of the cases.

The temperature usually began to rise ten to twelve hours after the injection, but in some cases within six hours and in others not till fourteen hours. The maximum temperature was usually reached in twenty hours, and with the higher doses of sulfosin the temperature was elevated for from forty to fifty hours. There was very often a secondary rise, as high as or higher than the primary rise, after a

BLOOD-SUGAR CURVES.

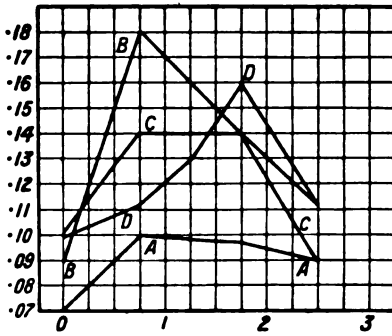


FIG. 1.—Case 1.

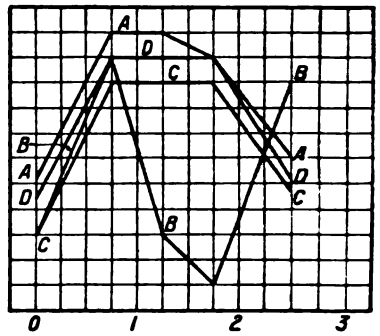


FIG. 2.—Case 13.

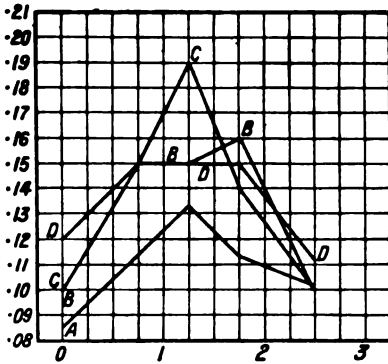


FIG. 3.—Case 18.

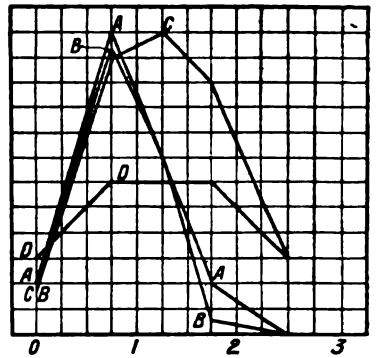


FIG. 4.—Case 15.

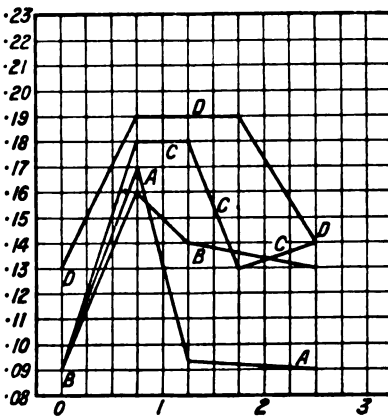


FIG. 5.—Case 12.

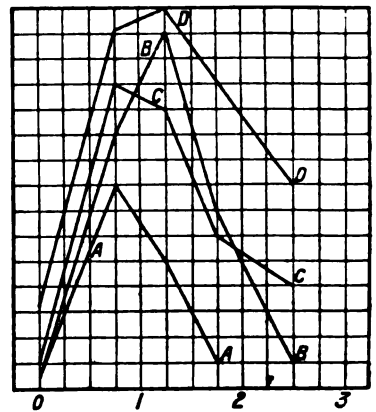


FIG. 6.—Case 17.

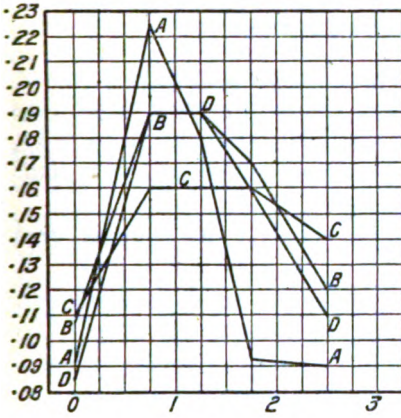


FIG. 7.—Case 19.

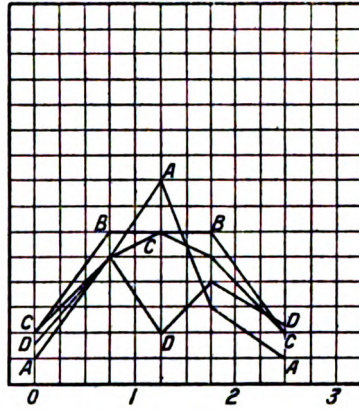


FIG. 8.—Case 11.

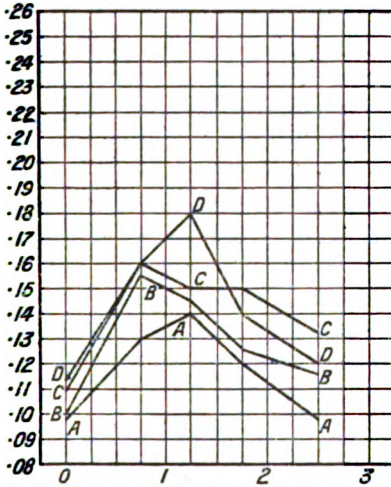


FIG. 9.—Case 6.

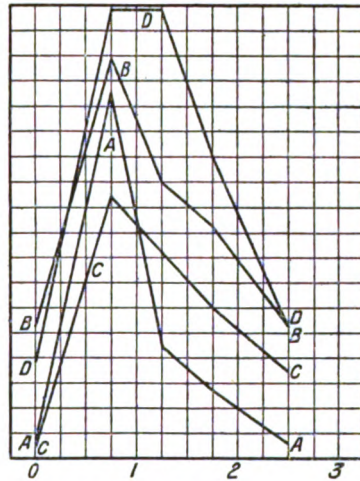


FIG. 10.—Case 3.

In the above figures:—

- A represents blood-sugar curve before treatment.
- B " " " " after 1 c.c. sulfosin.
- C " " " " " 5 c.c. sulfosin.
- D " " " " " 10 c.c. sulfosin.

Vertical figures = blood-sugar %.

Horizontal figures = time in hours.

fall to normal. The pulse-rate rose coincidentally with the temperature; except in two cases it did not rise above 120. In these two cases (Cases 8 and 17) it rose to 140 but returned to normal with the fall in temperature.

EFFECT ON BLOOD-COUNTS.

Blood-counts were taken at frequent intervals during the course of treatment, and in all cases a marked rise in the white count was found. The leucocytosis was always polymorphonuclear in type, and counts ranging from 20,000 to 60,000 were obtained. A typical count was as follows :

Polymorphs, 82.7% ; lymphocytes, 12.5% ; eosinophiles and hyalines, 4.8%.

One patient (Case 20) a month after the last injection of sulfosin showed a white count of 13,500, but a week later it had dropped to 9,000. Red counts showed a tendency to a mild secondary anæmia with a colour index of just under 1. The blood-picture, however, soon returned to normal on the cessation of the injections.

OTHER SYMPTOMS.

All the patients treated complained of pain at the site of injection, much more severe than that reported by Schroeder. It was of a dull aching type, and in a few cases was so severe as to make the patient cry out. The muscles round the site of injection became indurated, and remained so, and stiffness and a limping gait as a result also persisted for some time. Massage and exercises alleviated this.

All the patients complained of nausea and loss of appetite during the pyrexial stage, and in 9 actual vomiting occurred, and they were unable to retain any food except peptonized milk.

Rigors did not occur in any of the patients, but in many of them sweating was profuse.

The nausea, loss of appetite, sweating and pyrexia produced marked loss of weight in all cases, varying from 4 to 13 lb. Weight was quickly regained, however, after the injections had been discontinued.

Loberg noticed that appetites increased, bed-sores healed and the patients' physical state improved remarkably after a course of sulfosin ; all the patients in this series tended to eat ravenously for a time, and showed marked improvement in their physical state.

EFFECT ON BLOOD-SUGAR.

In 10 of the patients treated the effect on the blood-sugar was observed. Four different readings were taken, *viz.*, before treatment,

and with a small dose, a moderate dose, and the maximum dose of sulfosin.

Campanacci and Balducci (7) report a fall of blood-sugar after injections of sulphur, but Foncin and Sandor (8) state that no fall occurred in their patients, and that any hypoglycæmia was due to colloidal shock rather than to any specific action of the sulphur; they brought forward proof of this in the fact that any decrease in the blood-sugar was always accompanied by a coincident fall in the leucocyte count. They found decreases tended to occur in vagotonics who are particularly susceptible to any form of shock, whereas those tending to sympatheticotonia showed normal or increased blood-sugar.

TABLE II.

Patient.	Maximum rise.	Fasting level.	Tendency to delay in return to normal.
1	Great increase	Slight rise	+
3	Slight increase	"	+
6	"	"	+
11	Slight decrease	No change	0
12	"	Slight rise	+
13	Slight decrease	Slight fall	+
15	Moderate decrease	No change	+
17	Great increase	"	+
18	Slight increase	Slight rise	+
19	Moderate decrease	No change	+

It will be seen from Table II that in 5 patients there was a slight rise in the fasting level after sulfosin, in 4 there was no change, and in 1 it was slightly lowered.

In 9 of the patients the fasting levels were within normal limits ($\cdot 08$ - $\cdot 12$); in patient 1 it was $\cdot 07$. Where these levels were affected by sulfosin they still remained within normal limits except in patients 1 and 3, where they rose to $\cdot 132$ in both cases.

Three patients showed high maximum rises from $\cdot 21$ to $\cdot 225$ before treatment (see Table III and blood-sugar curves), but two of these were lowered to $\cdot 195$ and $\cdot 19$ respectively after sulfosin injections. Two patients showed increased maximum rises after sulfosin to $\cdot 26$ and $\cdot 23$. Five patients were observed to have subnormal maximal levels before sulfosin, four of which were raised after the injection and one lowered.

TABLE III.

Patient.	Maximum rise before treatment.	Maximum rise after treatment.
1	·10	·18
3	·225	·26
6	·14	·18
11	·16	·13
15	·21	·195
17	·16	·23
18	·13	·19
19	·225	·19

TABLE IV.

Patient.	Maximum rise before treatment.	Maximum rise after 1 c.c. sulfosin.	Maximum rise after 5 c.c. sulfosin.	Maximum rise after 10 c.c. sulfosin.
1	·1	·18	·14	·16
3	·225	·239	·185	·26
6	·14	·15	·16	·18
11	·16	·14	·14	·13
12	·171	·16	·18	·19
13	·18	·17	·16	·17
15	·21	·195	·2	·14
17	·161	·225	·2	·23
18	·132	·16	·19	·15
19	·225	·19	·16	·19

From Table IV it will be seen that in 4 patients the tendency was for the maximum to be lowered, and in 6 to be raised. Among the latter, with increasing doses of sulfosin, the maximum rise was progressively diminished in 4 cases, and in 2 it was raised.

The tendency with increasing doses was a steady increase in the delay of the return to normal, and this was definitely present in 9 of the patients treated.

From the above figures it will be seen that in this series sulfosin tended to increase the blood-sugar level and to delay its return to normal.

CONCLUSIONS.

(1) Twenty cases of schizophrenia were treated with sulfosin, 2 of whom recovered, 1 was much improved, 1 had a short remission, 1 became much worse, and 15 showed no change.

(2) Heredity and sex appeared to have little bearing on the result of the treatment of patients in this series.

(3) The treatment appeared to be perfectly safe and without any serious risks.

(4) During the pyrexial period unpleasant symptoms in the form of pain, sickness, loss of appetite and headache were common, but after the injections had been discontinued definite improvement in the physical state occurred.

(5) Some degree of tolerance appeared to be produced, as shown by the diminished pyrexial reactions with successive doses of sulfosin.

(6) Blood-sugar levels on the whole appeared to be raised, with a tendency to delay in the return to normal of the blood-sugar.

I wish to express my thanks to Dr. Mapother for permission to make use of the clinical material, to Dr. Golla for help and suggestions in carrying out the work, and to Dr. Mann, Mr. Partner and their assistants in the laboratory for blood-counts, blood-sugar estimations, and for help in preparing the charts.

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THE PRE-PSYCHOTIC SCHIZOID: A CHARACTER STUDY.

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This paper is an attempt to study the family and personal history of a schizoid individual, J. M—, who developed schizophrenia (dementia paranoides) at the age of 22.

The family history is incomplete, but enough has been obtained to show that the stock is psychopathic, though there is no known psychotic member.

J. M—'s father is an industrious and successful business man, with little imagination, his vision not ranging beyond his work, his garden, tennis and his annual holiday *en famille* by the sea. He is firmly convinced that what is good enough for himself should be good enough for his son. Totally unable to grasp the significance of the series of domestic misfortunes that have overtaken his family, he has retreated from the situation, burying himself more deeply in his business.

The paternal grandfather is described as an eccentric individual, a pedagogue, scholar and somewhat of a musician. His appearance was mephistophelian, his outlook misanthropic and cynical. Allowances were made for him by his relatives, it being supposed that the loss of an eye, the result of some escapade of childhood, was responsible for his soured view of life. Fairly typical of the man is a remark, on making one of his grandchildren a present, to the effect that one can always buy children's love. The old man corresponded freely with his grandson, guided him in his reading, and undoubtedly had a large influence in moulding his character and tastes.

The paternal uncle is a quite peculiar man, who, despite a brilliant scholastic career, chose to give up everything for farming. He more or less isolated himself from his relatives and persons of his own social status; women he would never allow in the house. In latter days all signs of culture had been lost. His dining-room, in which he would feed in his shirt-sleeves, is hung with the

more disreputable of the Hogarth prints. His speech is coarse, his accent and general appearance akin to that of his yokels.

J. M—'s mother, at her best a charming and entertaining woman, is emotional and unstable. Uncontrolled outbursts of temper, with a habit of making cutting remarks, have resulted in her making temporary or permanent enemies of the majority of her acquaintances. A pronounced hypochondriac, she is for ever worrying about her own health or that of her children, whom she alternately fusses over or has dramatic and sensational scenes with. After one of these emotional crises she will take to her bed for days together, complaining of headache or other obscure subjective ailment. Her doctor having been called in, she will, at his next visit, most ably refute his diagnosis or method of treatment with quotations from the *Household Physician*. In her own way a good mother, she is passionately fond of her children and is very ambitious for them. Her habit of comparing these exceptionally beautiful and gifted children with the offspring of less fortunate parents, to the latter's disadvantage, may also have been partly responsible for her lack of friends. True to her character, this sorely tried woman even now, after so many trials, is unable to forego her delight in cheap dramatization; the modern Niobe tells how, each morning, she waters her rose garden with her tears.

J. M—'s sister, a pale, sickly girl, is subject to severe headaches, as a result of which she frequently has to curtail her activities. Typically the extrovert, she is talented, clever, a born organizer and artistic. At the university she has taken up high art, is president of the dramatic club and an active member of other societies. Following her brother's mental breakdown, she developed a psychoneurosis, from which she was cured after being removed from her home and treated for many months by psycho-analysis.

The only other member of the family to be described is a boy cousin, a most precocious youth, famous at an early age for his astounding remarks and cocksure manner. At the age of eleven he was top of his preparatory school. He, also, is emotionally unbalanced, having little control over his temper. On one occasion, as a small boy, he was found swinging his little sister, and having got her well on the go, was pleasantly amusing himself sticking a pin into the powerless child as she came towards him. More recently the family went to much trouble to arrange for this lad to go into a business with excellent prospects. The boy gave no one any indication that the idea was repugnant to him, and an interview with the manager was obtained. At this interview his relations

were staggered to learn that he had offhandedly told the manager that he had not the slightest intention of taking the post.

Such is the family ; it includes many other interesting and some brilliant people, amongst them a famous surgeon. There is, however, evidence of emotional instability and eccentricity, while on the paternal side there is a marked schizoid colouring.

To complete the background, it should be mentioned that J. M— is the eldest of a family of three. Their home is on the outskirts of a large manufacturing town ; of red brick and flimsy appearance, surrounded by trees and a large flower garden, it has the holiday appearance of a summer villa. Its easy comfort, tasteful decoration and lack of anything substantial or really good within would appear to symbolize the fine-weather life of this unfortunate family.

Coming now to the personal history, it would be best to commence with the appearance and physique of J. M—. As a child fragile and small, with angelic features, gold curly hair, bright blue eyes, clear transparent skin and pink and white complexion, he was presumably of the hypopituitary, hyperthymic type.

Puberty was stressful, and a marked change occurred. He remained extremely short for his age, and never put on much height subsequently ; he would be about 5 ft. 4 in. But from being fragile, he now became stocky, sturdy and muscular. His features coarsened and his skin became sallow and thick. For a prolonged period around puberty he was subject to severe outbreaks of acne. Another peculiarity is a striking degree of oxycephalus, and he would often remark that his head was such a queer shape he could get no hat to fit it. There is no history of physical illness, beyond the usual childish complaints. Near the commencement of the mental illness he had his appendix removed.

Before attempting character analysis it will be as well to give a history of his activities. As a small boy at the preparatory school he was popular, took a keen interest in games and was well up to the average, though not markedly above it, at school work.

At the public school he was less popular, remaining, however, very keen on games and on the school life in general. At this time he had few friends, and was already introverted, unsociable, and considered to be a little unusual. He did fairly well at school work. At the university he made a few staunch friends, but even by these was considered queer, for they never knew how he would take things. He remained an enthusiastic games man, and was captain of his college at tennis, and a county hockey player. He was certainly very much in love with the university life. The

war may have worried him to some extent, for he was nearly due to go out to the front at the time of the Armistice, and had served in a cadet battalion during his first half-year at the university. He never showed any of his feelings on this matter, save to generalize on the war's beastliness. Some indication of his attitude may be gained by his special interest and admiration for Robert Hugh Benson's novel *The Coward*, which he read at this time. On leaving the university he went into his father's business. The work was repugnant to him; he hated provincial life, which he would continually compare unfavourably with the idealized time at the university. His first breakdown, which lasted only a few weeks, occurred just before he went up for his finals. About nine months after leaving the university the ultimate mental breakdown took place.

Returning to his childhood for more detailed information, inventiveness in the sphere of games, which were sometimes of a most elaborate nature, was specially noted. Soldiers were never played with in the usual static manner to be followed by an orgy of destruction. He would arrange sports for them on a vast scale, with complicated and exhaustively written programmes of events, the chance of each soldier being dependent on the throw of the dice. Much the same extraneous interest was brought in at French cricket, by means of which county matches were played off, all the names of the county players, which he knew by heart, being first put down on the score-sheet. It was also part of the game that the method of batting and bowling and the salient characteristics of the players should be impersonated by the children. The number of games of this type was legion. It may be guessed from the above that J. M— was a dominant figure in the nursery. He appears also to have been something of a bully, but not by brute force. As quite a small boy he terrified a younger child by touching him with a bottle containing coloured paper, which he assured the latter had the power of turning him into a dragon.

From an early age a keen reader, he delighted in the usual run of boys' books of adventure, history and legend, and, like the majority of children, he was in the habit of identifying himself with the heroes of his story-books. But in his play it was the dramatization and action of the tale that he stressed, taking little pleasure, at that age, in the more static and exhibitional "dressing up."

His interest in sex developed early, and fantasies on this theme became a frequent topic of conversation. These day-dreams were,

as a rule, on the romantic plane, but sometimes showed a sadistic element, film heroines being often the nucleus of such fantasies. When quite a small boy he became enamoured of a girl in the early twenties, imagined her in the situation of nursery governess to his sisters, and the various means of tormenting her which might bring him to her notice. Growing older, school games became of paramount importance, his other outdoor interests being walking and cycling. Nursery amusements were, however, held to a rather advanced age, and only given up with reluctance.

Until the age of fourteen he was popular and mixed freely at parties and other social gatherings. He was, it would appear, a fairly good child; certainly his mother adored him. As he grew up, however, an increasing will to have his own way resulted in frequent scenes between him and his mother.

The further description applies to J. M— as he appeared to his friends and relations in his later teens and early twenties. In appearance he is now small and stocky, his complexion is sallow, and his features regular, though a little coarsened. He dresses well, perhaps extravagantly, and has a taste for bright-coloured socks, ties, blazers and so on. He wears his clothes well and looks rather a dandy; latterly a piquant contrast would be added by the fact that he had neglected to shave. His expression is not uninteresting, but gradually becomes stereotyped. In the presence of strangers he wears a fixed expression, compressing his mouth and turning up the corners of the lips; this sardonic grin seldom leaves his face, save when his interest is diverted from himself and the impression he is making upon his associates. With strangers his manner is distant, abrupt, sometimes even rude; he speaks very little. On the contrary, with a friend, and in congenial surroundings, he holds the conversation and is at times most amusing. He tells a story well, seldom misses the grotesque or the ludicrous, and the turn of the tale is, as often as not, against himself. He does not, however, make friends readily, those few that he has being youths of his own age.

Chance acquaintances usually take an instinctive dislike to him, and this feeling is as often as not reciprocated. With older men this is especially noticeable; they consider him bumptious, a prig, downright rude or an outsider. This can be partly explained by his detached, sullen and rather superior manner, his sardonic expression and abrupt non-committal replies to casual conversation. Further reasons will appear as his character is more completely unfolded, but it may be mentioned here that he never had very

good control of his emotions when amused. An eccentric individual, a ludicrous situation will set him off into uncontrollable peals of boyish chuckling, very different from the mirthless laugh he reserves for other people's jokes.

Another factor mitigating against his popularity is his moodiness: his friends can never be sure how he will take things, and it is impossible to know what will upset or irritate him. His annoyance usually shows itself as glumness, and a refusal to speak for prolonged periods. On one occasion, while out walking, a friend commits the sacrilege of throwing a cigarette end on an especially admired village cross. The whole afternoon is spoilt for J. M—, who walks sullenly home, refusing to make any conversation. Latterly he was liable to be extremely disagreeable, on some trifle or other, to perfect strangers, met socially.

Like many enthusiastic and really serious games men, he is a phenomenally bad loser, and will only play at those games at which he can excel. At tennis, either when playing badly himself or when coupled with an indifferent exponent, he will lose his temper, bang the balls out of court, refuse to try, or make offensive remarks to his partner.

Lack of enthusiasm could never be charged up against him. When he really wishes to do a thing, whether it be a game, a walking tour or an argument, into it he puts all his energy and enthusiasm. Walking tours of a prodigious daily mileage, planned weeks beforehand, are somehow kept up to schedule by the exhausted pedestrians. Tennis tournaments of far too many games are pushed into the afternoon. On a ten-day river expedition, owing to the exceptional drought, the stream is found to be too shallow for the skiff when some four miles from the pre-arranged destination. Nevertheless the sweltering and blaspheming crew are induced to tow the boat the last few miles rather than fail in their enterprise.

Such is his appearance and behaviour, and it may well be asked at this stage what there is to induce anyone to have a more intimate contact with this sullen, selfish, moody, ill-tempered boy, with his superior expression and bad manners. It may be suggested that it is not surprising that people dislike him; on the contrary it is astounding that he has any friends at all. A more intimate study of his inner life and sentiment may do something towards explaining this.

In reviewing his sentiments it is best to commence with literature, for he is an omnivorous reader. Books are his favourite topic of

conversation, and throws much light on his interests and personality. His method of reading is author by author. If the writer takes his fancy, a good edition of his works is bought, digested and placed, complete with biography and critical studies. The British Eighteenth Century writers take priority of place in his library; Fielding, Smollett, Sterne, Boswell, Swift and the poets are there, with Fielding taking first place. The only Thackeray on his shelves is *The English Humorists*, for he has little use for the Early or Mid-Victorians. *Tom Jones* is, in his opinion, the greatest book in English literature, and Sophia the most delightful heroine. He enjoys Fielding's robust humour, his comic characters, and above all his picture of eighteenth century England. To J. M.— the eighteenth century is the golden age, and it is his contention that this country has degenerated sadly since. Samuel Butler is also a special favourite, and to quote the *Book of the Machines* is his, J. M.—'s, favourite method of ridiculing this manufacturing age. Again, it is the admixture of shrewd psychological insight and rich racy humour that account for his affection for such writers as Cervantes, Apuleius, Rabelais, Chaucer and Peacock. While holding his affection for the eighteenth century, he gradually came more and more under the influence of the modern subjective and psychological novelists. Of the English writers, Compton Mackenzie and Hardy take an important position. Outside the psychological interest of the characters of both authors, with whom he tends to identify himself, he certainly finds a background of English country life and, in the former, of university life, very much to his liking. From Hardy he possibly also borrows his pessimistic outlook. Among foreign writers, Ibsen is a favourite, while of Turgenev, whom he was reading just prior to his breakdown, he writes as follows: "Now the great Russian writer Turgenev is the novelist for the time. True, it is a trifle hard to comprehend the Slav mind and soul, otherwise it is human nature seen and painted with amazing insight. Queer, amusing characters, moreover he can be very ghastly—'Phantoms' in *Dream Tales* is bad for the imagination, very bad." Of the French authors, Balzac held him for a time, while it is not uninteresting to note that he has a special regard for Daudet's *Le Petit Chose*.

Art means a good deal to him, and he has a number of album reproductions of the masters, but Hogarth and Dürer are preferred. He himself has some talent for drawing—a hobby at which he spends a fair amount of time, his special *forte* being rustic caricature. Fond of music, he is frequently at concerts in London and applies

himself industriously to the piano-player, working through the classics obtained from the lending library. As may be expected, he has a high opinion of Gay's Opera, and to a friend belittling the work he writes: "Sir, 'The Beggar's Opera' is an opera and a comic one. The music of its kind perfect. Surely good home brewed is better than inferior sweet port?"

His sentiments and feelings around the subject of games are of interest as an example of his ambivalence. An enthusiastic participant, he is also a keen follower of sport, his conversation and letters consistently turning on the subject. His attitude towards it nevertheless is disdainful, and he excuses himself for devoting so much time to anything so trivial on the plea that there is nothing better to do. The gods of to-day, he cynically remarks, are the lions of the soccer world and Georges Carpentier.

Walking and cycling are to be reckoned among his favourite pastimes. The country around his home is of exceptional beauty, and he is well acquainted with the manor houses, churches, villages and inns. Either alone or with a friend he will tramp for days exploring this downland country. Here is the England of the eighteenth century, practically unchanged, its peace and beauty in utter contrast to the noise and bustle of his home town. Of a summer evening he is often to be found seated outside some roadside tavern, always immaculately dressed, a short briar in his mouth, a glass of beer beside him and buried in some volume of history or else a novel, sublimely conscious of himself and his surroundings.

His outlook is pessimistic, his humour cynical, his laugh mirthless and sardonic. He has been brought up on and is imbued with a philosophy now outworn and more or less reversed. He believes that only Nature is beautiful, and that man is a blot on the landscape. He is convinced that humanity is steadily deteriorating, and that it is its business to destroy this beautiful country with unsightly towns, factories and mining districts. He is in full sympathy with the peasants, whom he sees in harmony with Nature, and has only scorn for the city dweller. It is his opinion that it would be better to be a cow at home in these surroundings than a pompous plutocrat driving over in his Rolls-Royce to see the view; failing to note that it is the scorned city dweller, not the cow or the rustic, who shows æsthetic satisfaction.

An outstanding characteristic observed from a very early age is his habit of romancing. He tells a story well, and when in the humour is a great talker, but his friends can never be sure where

truth ends and fantasy begins. Though much of his conversation turns upon women, it does not appear that he was ever in intimate relationship with any of the sex. His attitude towards them is definitely that of the romantic. At the onset of his illness vague references to a girl at the university were woven into his delusions.

Finally there is the sentiment which McDougall has termed the sentiment of self-regard. Here, again, there is evidence of ambivalence, and an inability to harmonize his own evaluation of himself with that which the world doles out to him. There is an overwhelming egoism which is over-compensated by a devastating self-depreciation. His megalomania is shown by his patronizing attitude towards the world at large. Humanity, we are told, is deteriorating, its occupations are trivial, it is uncultured, unread, and lacking in æsthetic taste. In evidence of compensatory self-depreciation, he especially takes a grim satisfaction in making jokes on those things about himself which he is powerless to alter. His attitude towards the shape of his head has already been mentioned. His small stature also comes in for a good deal of sarcasm.

There are a number of ways in which men can react to this physical defect, largely depending on its degree and the treatment they have received during childhood. There are, for instance, the ridiculously small men. As children they are laughed at by their friends; they are too small to fight back and prove their right to be treated as normal human beings; any attempt at fighting only increases their ludicrous position. They must evaluate themselves at the value society has given them. In later life such people will never let you forget that they are a joke, and always expect to be treated as such. They may be intelligent, interesting people, but in company they feel it their duty to play their part, the rôle being burlesque. Another type is the small, delicate and frail individual who, unable to fight his own battles, tends to adopt a feminine conciliatory and depreciatory pose. Finally there is the small man so often described by Adler, who compensates for his inferiority by excessive pugnacity and aggression. J. M— could hold his own as a boy, and there is no evidence that it was ever attempted to treat him as a joke. His own sense of self-importance, however, made it necessary that any defect in himself should only be considered absurd. He tells how his father once said, "Eat more porridge, boy; you know you are bloody undersized." Here the shaft is doubly aimed, firstly putting his stature in a foolish light, and secondly scoffing at his father's suggestion of a remedy. Again, at a dance he takes a subtle delight in dancing with very big women.

The onset of the psychosis is interesting. The actual destruction of the ego (break-up of the personality) is abrupt, complete and dramatic, resulting in immediate certification. On the other hand, the delusional systems and hallucinatory experiences had been in process of formation over a prolonged period. Much of his conversation, thought at the time to be a good story, well embroidered, was realized afterwards to be delusional. As an example, he told the tale of a girl he had met at the university, how his friends had ridiculed him about her, tried to make out that she was a prostitute, and even made subtle allusions to the affair in a college journal. He further told how the matter had come up before the tutor, who had tried to reason with him about it. Complaints that he was always being troubled by the smell of gas in his room at night, and that he would have to get out of bed to see if the tap was off had been present for a considerable while. A change towards sullenness and irritability were noted; this as we have seen, had been developing since puberty.*

After leaving the university he was certainly very depressed and uninterested in his work, though having hopes of being able to turn to literature as a profession. In his letters at this time, depression of spirits and ill-health are a constant topic. The following are some examples: "However, troubles multiply miraculously and I am indeed a wretched fellow, more especially on the days when I can't philosophize over a good meal in peace and am depressed by ill-health. However, I can still discover a buffoon or two to make sport of and some good stuff to read." Again, "I have found much to amuse and interest me, but at the same time I have been suffering from lassitude and poor health generally. Anyhow I have had my slice out of life, drinking half-pints in pubs and watching the wonderful sunsets we have just had." And lastly, "I am with the aid of the weather frozen stiff with deadly boredom, but have thawed a bit on some lovely walks—the trees being a superb colour."

His parents had noticed that he would sit for prolonged periods in front of the fire, a book before him, apparently reading, but with a far-away stare in his eyes. A day or two prior to the breakdown he told a friend that he had played all the Beethoven Sonatas and read all Balzac's novels and that there was nothing left. Late one night, his family were astounded to find him examining all the locks

* This is in agreement with the findings of J. Kasanin and Louise Veo, who found pre-psychotic personality abnormalities from the time of puberty onwards in a series of eight children who developed psychoses (schizophrenia) four to eight years after the investigation.

of the doors and securing the windows. The family doctor, being called in, was greeted by J. M— as a hero and warmly shaken by the hand for his bold sally through the enemy's lines. He, J. M—, was the king, the doctor was told, and his enemies were besieging the house and also trying to poison him. He then entered more into the details of his position as king, his chief difficulty being his small stature, which, he thought, could be obviated to some degree by his riding at the head of his troops, but then of course he was no equestrian.

Destruction of the personality and dementia have progressed rapidly since.

Such is the history, and it is necessary now to try and assess the ætiological factors. General medicine teaches the rule of one cause and one disease; modern psychiatry takes the view of mixed psychoses and multiple causal factors.

What a galaxy of ætiological factors can be brought forward as determinants of his breakdown!

To begin with, it is clear from the history that the dice have been weighted against him from even before birth. Heredity, cannot be ignored in this case. Several members of his family show definitely what we have learnt to regard as the schizoid personality. Besides this, one, if not two, members show a failure of the normal drive at the onset of maturity after a promising adolescence. This is a schizophrenic reaction in its mildest form. Over and above the schizoid manifestations on the paternal side, J. M—'s mother is an unstable and emotional woman.

In this case, as in many others, it is practically impossible to evaluate the relative importance of heredity and unhealthy home circumstances. The unsympathetic and unimaginative father, the over-demonstrative mother, with her phases of passionate affection, sudden tantrums and hypochondriacal retreats, hardly make for a healthy home life.

In J. M— himself there are mild physical stigmata, small stature and oxycephalus, which, according to Kraepelin, are to be taken as evidence of degeneration. His physique places him among Kretschmer's dyplastics—a type especially prone to schizophrenic reactions.

From the psychological point of view, his personality type marks him down for dementia præcox, if put under undue strain. Jung would probably describe him as an intellectual introvert; Kretschmer would class him among his schizoids. It will be in place here to discuss this matter in some detail. Kretschmer characterizes

the schizoid temperament as lying between the extremes of excitability and dullness, going on to point out that the schizoids are not over-sensitive *or* cold, but over-sensitive *and* cold at the same time. He tells us that these "over-sensitive schizoids feel all the hard strong colours and tones of everyday life, which to the average man and to the cycloid are welcome and indispensably stimulating elements of existence, as shrill, ugly and unlovable, even to the extent of being psychically painful. Their autism is a painful cramping of the self into itself. They seek as far as possible to avoid and deaden all stimulation from the outside; they close the shutters of their houses in order to lead a dream life, fantastic, poor in deeds and rich in thoughts (Hölderlin) in the soft muffled gloom of the interior." They are described as asocial or only sociable within a small circle. "The unsociability of schizoids has the most varied gradations; it is seldom mere unfeeling dullness; it usually has a clear admixture of displeasure, of active turning away of a defensive or more offensive character." The author goes on to say that he finds frequently "quiet lovers of books and nature among the timid, dreamily tender schizoids." "Elegance and neglect," we are told, "both very striking and exaggerated, exist fragmentarily side by side in the same individual."

Kretschmer also emphasizes that "schizothymes cannot feel any sympathy for cyclothymic temperaments. It strikes the sensitive schizothyme as unfeeling, vulgar and coarse when the cyclothyme with a humorous or indulgent smile, or even laughing out loud, contemplates and 'fingers' situations which move the schizothyme to sublime pathos or enthusiastic elegiacs on account of their melting tenderness or monstrous vulgarity." As an example, the writer quotes the view of Schiller, the healthy schizothyme, on Shakespeare considered to be a mixed type. Schiller says in his *Essays on Æsthetics*, "When I first got to know Shakespeare I was carried away by his coldness, his unfeelingness, which allowed him to joke in the midst of the deepest tragedy." These deductions of Kretschmer seem a little difficult to reconcile with what he has told us elsewhere about the schizoid temperament. The psychic *tempo* of the schizothyme, we are given to understand, is abrupt and jagged, ambivalent feelings towards emotionally charged subjects is the rule, and his vision, if penetrating, is narrow. It is this ambivalent feeling and consequent delight in bizarre contrasts that, in the present writer's opinion, suggests that Shakespeare's juxtaposition of grim tragedy and broad humour indicates a schizothymic type of thinking, rather than the smooth

affective rhythm of the cycloid. As an example of the schizoid's ataxic emotionalism, Miller mentions Baudelaire, whose "love life oscillated between a frantic passion for a negro woman in the days when he dyed his beard green, and an ideal attachment to the beautiful Madame Sabatier, such as only a schizothyme could experience." It would appear that, within his restricted field of interests, the schizoid requires satisfaction from highly coloured contrasts. This may be explained as being due partly to a relatively poor hold on reality, and a need for almost morbid stimulation in order to retain his interest; partly on his ambivalence, his peculiar admixture of sentimentalism and irony, his inability to fix a value on concrete or abstract objects, and his power of laughing and crying over the same thing almost at the same time.

In the case of J. M— this ambivalence is especially well marked in the sentiment of self-regard. It has been also noted how his constellation of ideas around eighteenth century England was able to tolerate the strange mixture of broad humour, romanticism and irony. But outside these systems it is different, for while roaring with laughter at the obscenities of Swift, he is revolted by Daudet's *Sappho* and the more lascivious humour of Maupassant.

It seems that those sensitive schizothymes, possessing a sense of humour, capable of laughing at themselves and questioning the validity of their idealism, are in graver danger of an early breakdown than the humourless type. The latter sternly exclude anything detrimental to their closed systems. They are pig-headed, obstinate zealots, never doubting for a moment the rightness of their opinions. In these there may be megalomania, but there is no ambivalence within the sentiment of self-regard. Mental breakdowns occur, if at all, later in life, the ego remains intact, little affective dementia occurs and the fixity of their delusions is especially noted. In the former type, on the contrary, ambivalence is the most prominent feature, their mirthless humour and sardonic laugh being an expression of their inability to believe in themselves. Psychosis occurs early, and results in complete disintegration owing to the instability of the ego-sentiment.

Coming now to specific mental stresses and their possible ætiological significance, first in point of time there is the psychological effect of J. M—'s small stature; this is bound to have given rise to conflict and ideas of inferiority, and it is known how in his delusions he attempted to compensate for it. The presence of a fear complex arising out of the Great War is not improbable, and is to some extent borne out by the martial nature of his delusions.

There does not seem any doubt that his objection to going into his father's office was an exciting factor, for during his university career he had built up an idealistic view of life, which he found impossible to reconcile with the prosaic office life of a provincial town.

In the writer's opinion, J. M—'s mental breakdown is best understood when looked at from McDougall's point of view. This psychologist regards schizophrenia as "the expression of a lack of that essential integration of the whole system of mental functions which is the product of character formation; in the achievement and maintenance of which integration the building up of a hierarchy of sentiments under the dominance of the sentiment of self-regard is the essential feature. In the schizoprene, this process of integration goes wrong; the sentiment of self-regard is incapable of playing its proper rôle of dominating the whole system; hence the various parts of the system function in relative independence and are apt to come perpetually into conflict with one another."

In J. M—'s case there is a continual conflict between the real and the "might have been," between the ego and the ego-ideal, for he is quite unable to reconcile the self he is with the self he would like to be and to appear to others. He is small and insignificant; in imagination he sees himself a king. At a time of war he finds himself timid and fearful; in fantasy he rides at the head of the army. His work is dull, ugly and monotonous; he seeks relief in the idealization of another age. He has artistic tastes and leanings, but finds himself without any adequate power of expression, or at least such as would free him from his environment and heighten his self-regard. He is an idealist and a dreamer where women are concerned, but in consequence of his timidity and cold aloof manner he has little success with them. Frustrated in all his contacts with reality, beaten back upon himself, he becomes increasingly introverted and finds his only satisfaction in fantasy. It would appear that continued introversion and unrestrained fantasy formation are bound in time to lead to regression; reality has less and less value for such an individual, and is no longer able to exert any discretion upon the flight of imagination.

The case can also be regarded from the psycho-analytical point of view and the libido theory, which in no essential point contradicts McDougall's theory. The mechanism, as summarized by Dr. Rickman, is as follows: The specific cause is libido fixation at the early oral stage, and as a result of an increase in the demands of love, life, work or illness, the libido, withdrawn from the outer world,

is absorbed into the ego. This causes an inflation of the ego value (megalomania). According to Störch, consciousness of the boundaries between the self and the object being lost, ego is no longer separated from non-ego, and there is a tendency to identify the self with outside personalities of a fitting quality. Further, the schizophrenic over-estimates the scope of his thoughts and wishes (Freud's omnipotence of thought), and, as a result of this loss of discrimination between wishing and willing, magical thinking occurs. Schilder agrees that there is regression to the early oral stage, but points out that there may be restitution later, with some other fixation point (oral sadistic, anal erotic and homosexual). He also emphasizes the fact that regression to a given level is never complete, and that psychic material cannot be totally destroyed.

Since there is no record of J. M.—'s regression following the acute psychotic state, no conclusions can be drawn as to the level of libido fixation in his case. It may, however, be noted that while prior to puberty he appears to have been in perfectly normal *rappor*t with the environment, afterwards there was a progressive withdrawal of libido from the outer world. That this withdrawn libido is centred upon the ego is made evident by his increasing narcissism and habit of fantasy thinking. Object-love, however, is not given up without a struggle, and the ultimate withdrawal (the acute psychosis with megalomania and hallucinatory gratification) appears almost of the nature of a conscious decision.

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Medico-Legal Notes.

REX v. CHARLES ELDRIDGE.

This Australian case was tried at Melbourne on July 28 and 29, 1931, before Mr. Justice McArthur. We are indebted to Dr. James Booth, of Melbourne, for his courtesy in sending the newspaper reports.

The accused, æt. 26, was an hotel steward. He was charged with the murder of Matthias Handley, and the attempted murder of Hugh Charles Gulliver, by shooting them with an automatic pistol. The facts were not disputed. The accused admitted both crimes when arrested, and also stated that he had intended to shoot Mr. Manchester, a solicitor. As regards motive, Handley was Eldridge's step-father. Eldridge stated that he shot Handley because the latter had thrashed him when he was a "kiddie," and that he desired to kill Gulliver and Manchester because they had robbed him, in business dealings, of money to which he was entitled.

The defence was that of insanity. Eldridge's mother stated that Handley had been unkind to both her and her son. Eldridge had been peculiar in his manner, and had complained of "hammering noises" in his head. At one time he slept for four nights under the house. He would avoid speaking to people. His dealings with Gulliver had preyed on his mind.

Dr. G. R. Plante said that he had treated Eldridge from November, 1925, until January, 1926. He considered Eldridge to have been mentally deranged; but he admitted, in cross-examination, that he would not have certified him as insane.

Dr. C. G. Godfrey, Government medical officer, was called as rebutting evidence by the prosecution. The witness had had a number of interviews with Eldridge at the gaol. Eldridge had no defect of memory, his thoughts and ideas seemed clear, and he had no delusions. Dr. Godfrey considered that Eldridge knew the nature and quality of his acts, and that those acts were wrong. Eldridge had stated that he had an injury to his head in 1925. Assuming this to be true, the injury would have some effect upon his mental balance; he would have diminished control of his temper

and his impulses. Dr. Godfrey considered that Eldridge was definitely mentally impaired at the time the crimes were committed; he would be disposed to brood over a grievance, until he became so obsessed with it that it would not be possible for him to exercise reasoned judgment in his subsequent actions. Eldridge had said that he knew his act was against the law, and against religion, but that he thought he had moral justification for ridding the world of men whom he regarded as a danger to society.

The judge appears to have summed up on the lines of a strict interpretation of the McNaghten rules. He rejected the theory of "uncontrollable impulse" as a legal defence. The jury, however, found Eldridge not guilty, on the ground of insanity (this appears to be the Australian, and the more logical alternative for our verdict of "Guilty but Insane"). The usual order for detention was made.

The case is just another illustration of the difficulties which arise, and which must arise, under the present rules for determining the question of "criminal irresponsibility." On a literal reading of the McNaghten rules, the jury's verdict might be regarded as unduly lenient. On the other hand, Dr. Godfrey's evidence would seem to bring the case well within the alteration in the law which was recommended by the Atkin Committee in 1923. The case also falls within the definition of irresponsibility laid down by the late Mr. Justice Stephen in his *History of the Criminal Law of England*, vol. ii.

Part II.—Reviews.

Civilization and its Discontents. By SIGMUND FREUD. Authorized translation by JOAN RIVIERE. The International Psycho-Analytical Library, No. 17. London: The Hogarth Press and the Institute of Psycho-Analysis, 1930. Medium 8vo. Pp. 144. Price 8s. 6d. net.

Psychology, mainly in its psycho-analytic aspects, has increasingly attempted to shed light on problems which not long ago would have been considered quite beyond its domain. We have here such a delightful exposition of the Freudian standpoint on the subject under review, that no matter how much a reader may find it difficult or impossible to accept the author's views, he will inevitably be attracted and stimulated by the lucid charm of their presentation within these pages.

The ultimate source of religious sentiment in mankind, the sensation of "eternity," the feeling of something limitless, something "oceanic" is dissected. Genetically the relation of the ego to the external world is reviewed, and though it is acknowledged that the "oceanic" feeling exists in many people, its origin is seen really to be due to the childish feeling of helplessness and need of a father's protection. The dangers of the external world activate these feelings, which take the shape of religious consolations. "The ordinary man cannot imagine this Providence in any other form but that of an exalted father, for only such a one could understand the needs of the sons of men, or be softened by their prayers and placated by the signs of their remorse." This infantile attitude, so incongruous with reality, persists in adult life largely because of the inevitable pain and disappointment of the outer world. In many ways man endeavours to obtain some happiness, or at any rate escape unhappiness. Such paths may lie in the powerful diversion of interest in work, intoxicating substances, the sublimation of art, phantasy life, the annihilation of the instincts as practised by the Yogi or the hermit, or in the substitutive gratifications of neurotic illness. Where the efforts to obtain happiness come to naught, psychosis may result as a despairing attempt at revolt. By decrying the value of life, and by distorting the real world as in delusion, religion imposes a state of mental infantilism, and thus succeeds in saving many from neurosis.

Human suffering is derived from the superior force of Nature and the disposition of our bodies to decay. These are inevitable. The inadequacy of our methods of regulating human relations in the

family, the community and the state is a source of unhappiness, and this leads Freud to examine the problem whether and how civilization and culture are to blame for a great part of our misery.

The chapters on the origin and evolution of culture contain highly interesting psycho-analytical view-points. Primitive love and the family are discussed. It is seen that as development proceeds, love opposes the interests of culture, and culture menaces love with grievous restrictions; this is expressed in a conflict between the family and the larger community to which the individual belongs. Discord, too, is caused by woman, who represents the interests of the family and sexual life. "Since man has not an unlimited amount of mental energy at his disposal, he must accomplish his tasks by distributing his libido to the best advantage. What he employs for cultural purposes he withdraws to a great extent from woman and his sexual life; his constant association with men, and his dependence on his relations with them, ever estrange him from his duties as husband and father. Woman thus finds herself forced into the background by the claims of culture, and she adopts an inimical attitude towards it." Freud thinks, too, that as a result of the oppression of culture, the importance of sexuality as a source of pleasurable sensations, *i.e.*, as a means of fulfilling the purpose of life, has perceptibly decreased.

There must be disturbing influences in culture which give rise to its antagonism to sexuality. Clues are found in the so-called ethical standards of civilized society, such as "Thou shalt love thy neighbour as thyself" and "Love thine enemies." The powerful measure of desire for aggression in mankind, as part of their instinctual endowment, has to be reckoned with, and civilized society is perpetually menaced with disintegration through this primary hostility. Thus the evolution of culture comes finally to mean the struggle between Eros and Death, between the instincts of life and the instinct of destruction, as it works itself out in the human species. "And it is this battle of the Titans that our nurses and governesses try to compose with their lullaby-song of Heaven!" It is asked what means civilization uses to hold in check the aggressiveness that opposes it. Freud states it is through the introjection of the aggressive tendencies which are taken over by the super-ego or conscience; the resulting sense of guilt manifests itself as the need for punishment. "Civilization, therefore, obtains the mastery over the dangerous love of aggression in individuals by enfeebling and disarming it, and setting up an institution within their minds to keep watch over it." The sense of guilt is regarded as the most important problem in the evolution of culture, and the price of progress in civilization is paid in forfeiting happiness through the heightening of this sense.

The task of culture is that of uniting human beings into a larger unity with libidinal attachments to each other. Individual development is a product of the interplay of egoistic and altruistic trends, and it would seem as if humanity could be most successfully united into one great whole if there were no need to trouble about individual happiness. The struggle between individual and society is not derived from the antagonism of the primal instincts, Eros and

Death, which are probably irreconcilable; it is a dissension in the camp of the libido itself, and it does eventually admit of a solution in the individual, as, it is hoped, it will do also in the future of civilization. The ethical standards of the cultural ego do not trouble enough about the mental constitution of human beings. It is presumed that a man's ego is psychologically capable of anything that is required of it. "What an overwhelming obstacle to civilization aggression must be if the defence against it can cause as much misery as aggression itself!" The fateful question to Freud is "whether and to what extent the cultural process will succeed in mastering the derangements of communal life caused by the human instincts of aggression and self-destruction."

Altogether this is a monograph which should be read and studied by all.

C. STANFORD READ.

Recent Advances in the Study of the Psychoneuroses. By MILLAIS CULPIN, M.D., F.R.C.S. London: J. & A. Churchill. Pp. viii + 348. Demy 8vo. Price 12s. 6d.

The book opens with a historical introduction, and then proceeds to psychopathology *viâ* the psychoneuroses of war. Subsequent chapters deal with the Present Position of Psycho-analysis, the Relation of Physiological and Psychological Processes, Nomenclature and Diagnosis, Occupational Neuroses, and Psychoneuroses in Industry. Four chapters are written by independent authors, and deal respectively with Individual Psychology (Dr. A. R. Redfern), Analytical Psychology (Dr. James Young), the Psychopathology of Childhood (Dr. E. Miller), and Psychotherapeutic Clinics (Dr. J. R. Rees).

The book is well written, interesting and pleasantly presented. Especially good are the chapters on war neuroses and industrial psychology—two aspects of the subject in which the author's extensive experience stands him in good stead. Well chosen clinical material, succinctly described and profusely scattered throughout the book, gives vividness to what might otherwise have proved a mere collection of dull theories. We are glad to see emphasis laid on the relations between mental and bodily processes, though it seems a pity that the constitutional method of approach (as exemplified, say, by Kretschmer) was not accorded definite recognition. The chapter on Adler is clear and adequate, as is that on child psychology. The inclusion of the chapter on Psychotherapeutic Clinics is of special significance and usefulness, now that the systematic treatment of the milder forms of mental disorder is likely to receive a new impetus as a result of the recent Mental Treatment Act.

The merits of the book are many. There are, however, one or two defects worth mentioning. The main one is in connection with the theoretical background, which is described in a manner that is not only eclectic, but indefinite. The most important chapter in this

respect is the one on the "present position" of psycho-analysis. This account might do for a description of psycho-analysis as it was fifteen years ago, but as a presentation of "recent advances" it seems singularly inadequate. The more modern views are not described, and the newer formulations in terms of ego, super-ego and id are entirely omitted; indeed most of the theoretical exposition lacks formulation, continuity and system. As a result the reader is left with an impression of vagueness and diffuseness.

Further, many psycho-analytical terms are employed without preliminary definition. For example, on p. 70 reference is made to the "anal-erotic trend" and to the "super-ego," but neither of these has previously been defined. A further, more explanatory reference to the super-ego occurs, it is true, on p. 150, but even then it only occupies a line or two. The account of it given by Dr. Miller in his chapter is a little more explicit, but no very clear distinction is drawn between super-ego and "conscience." A similar comment might be made upon the phrase "pregenital stage of libido development" occurring on p. 96. It might of course be argued that this book is intended to deal with "Recent Advances," and not with basic and established theories; but we think that there is still so little understanding of psycho-analysis outside very specialized circles that people who are likely to read this book are entitled to expect a definite statement of the main body of psycho-analytical doctrines.

Some of the more special and less generally accepted views are not always sufficiently separated from the general theory. Thus it is stated on p. 67 that the great importance of the "birth trauma" is part of the psycho-analytical tenets. But if the term "psycho-analysis" be properly reserved—as it should be—for the views of the Freudian school, then it should be pointed out that the birth trauma is principally emphasized by Rank, and is not universally accepted by orthodox Freudians. It seems a pity, too, that no mention should be made of Ferenczi's "active therapy." The author is, at times, rather dogmatic on matters that are still, to say the least of it, controversial, as when he draws a parallel between Jung's types and clinical forms of mental disorder.

The chapter on Jung's psychology is not very satisfying. Largely owing to the critical attitude adopted by Dr. Young, it is difficult to get any very clear-cut impression of the subject. It is, of course, a difficult matter to describe Jung's theories at all, but to combine a *précis* with a criticism of them in the space of 30 pages is well-nigh impossible. The psychology of types is poorly described, and an inadequate impression is given of the introvert. The reader is apt to get the impression that introversion is merely another name for self-absorption or egocentricity, and the fact is not sufficiently brought out that the mental processes of the introvert are largely conditioned by a subjective factor that is inherited, symbolic and derived from the collective unconscious.

Notwithstanding these criticisms, the book is a worthy member the excellent series to which it belongs; it should be in the hands of all general practitioners interested in mental work, and should

do much to further a more modern outlook upon the problem of the neuroses and psychoneuroses.

J. ERNEST NICOLE.

Modern Psychotherapy. By EMANUEL MILLER. London: Jonathan Cape, Ltd., 1930. The Modern Treatment Series. Crown 8vo. Pp. 131. 5s. net.

The general practitioner will find in this book an excellent presentation of this much-disputed subject; it is remarkable how wide a field the author has managed to cover, and how much information is compressed into so small a volume.

Psychotherapy is defined as any form of healing which has as its object treatment by mental influence, and, with this definition in mind, the author points out that much of the technique employed in administering physical treatment can be included as psychotherapy. He argues, however, that such methods are often used unconsciously by the medical practitioner, who would be in a stronger position to help his patients if he were "systematically conscious of the deliberate psychological additions to his ordinary medical armamentarium."

A point emphasized in this book is that physicians possess very different capacities for applying one or another variety of psychotherapy and for treating patients of different psychological types. This difficulty is often ignored in books on the subject, and is apt on occasion to be forgotten by practising psychotherapists themselves.

The author proceeds to a clear description of the various methods at present in use. The analytic methods of Freud, Jung and Adler are described, and an account is also given of hypnosis, hypno-analysis, suggestion, auto-suggestion and re-education. In these chapters impartiality is admirably maintained, although the criticism of Adlerian theories does not perhaps sufficiently allow for recent changes of thought in this psychological school.

In a chapter on the "Applications of Psychotherapy," the author gives a brief account of the various conditions in which such treatment can be usefully employed. The psycho-neuroses are classified and described, treatment in the psychoses is mentioned, and drug-addiction and alcoholism are considered. In attempting scientific precision and detailed descriptions of the different syndromes, the point of view of the general practitioner seems in this chapter to have been lost; no broad general descriptions are given by which the doctor would be helped in deciding which of his patients are most suitable for recommendation to a specialized psychotherapist.

A chapter on "Early Treatment and Prevention" is, however, included, and a most useful section is concerned with psychotherapy in organic disease—a subject which has only recently begun to attract the attention it deserves.

The book should prove very useful to all who seek up-to-date knowledge of a rapidly growing department of medicine.

MARY C. LUFF.

1. *Social Control of the Mentally Deficient*. By STANLEY POWELL DAVIES, Ph.D. London: Constable. Demy 8vo. Pp. 389. Price 13s. net.
- † 2. *The Mental Defective*. By RICHARD J. A. BERRY, M.D., and R. G. GORDON, M.D. London: Kegan Paul. Demy 8vo. Pp. 196. Price 8s. 6d. net.
3. *The Diagnosis of Mental Deficiency*. By HENRY HERD, M.B. London: Hodder & Stoughton. Demy 8vo. Pp. x + 272. Price 12s. 6d. net.

These books form an interesting series. Each deals extensively with the topic of the recognition and care of the mentally defective, but the angles of approach vary with the experience of the authors, so that to a considerable extent they are complementary the one to the other. All agree that the problem is largely, if not entirely, one of social inefficiency.

Dr. Davies studies the matter from the angle of the sociologist; he discusses the defective individual in his social setting, and inquires whether, and if so, how, he could be assimilated into a complex social group. He traces the steps which have been taken by the nations of the western world to achieve this end, and the various stages of public opinion on the matter, and concludes with a summary and criticism of the most modern schemes for the social control of the mentally subnormal.

Drs. Berry and Gordon deal with the question largely from the anatomical and physiological angle of cerebral under-development, with its resulting physiological and psychological limitations of function. This leads up to a discussion of necessary policy based on the obvious social inefficiencies of the affected individuals.

Dr. Herd, as is natural for one who is a school medical officer and a certifying officer under the Mental Deficiency Acts, has set himself the essentially practical problem of describing the most modern methods for the recognition of mentally subnormal individuals. His introductory chapters on the mental development of the normal child lead up to methods of investigation, while he also concludes by a discussion of future needs.

Social Control of the Mentally Deficient has been written essentially for the general public, but this will render it none the less attractive to the medical reader, whether he be a specialist or otherwise. It is thoroughly documented and contains an exhaustive bibliography. Indeed, it deserves a place on the shelves of every certifying officer or superintendent of an institution for defectives on this ground alone. Actually it is an expansion of a small volume, *Social Control of the Feeble-minded*, published by the American National Committee for Mental Hygiene, which had long proved its usefulness—since greatly enhanced by recent additions. Dr. Davies points out that while there is no generally accepted definition of the term "febleness of mind," there is agreement that the concept contains three inter-related elements; a marked limitation of intelligence, frequently associated with other

shortcomings of personality, due to lack of normal development rather than to mental disease or deterioration, and manifesting itself in social and economic incompetence. The lower grades, the imbecile and the idiot, are and have always been recognized by the populace at large, but difficulties of identification arise in the case of the higher grades. The Binet scale of tests seemed to afford a ready means of detection, so that the American Association for the Feeble-minded were led to describe morons as those having a mental age of from 8 to 12 years. The Army tests carried out when the U.S.A. entered the war showed that 47.3 of the native-born white draft had mental ages under 13, and that 17.6% had mental ages under 11; which would lead to the deduction that either 50 millions or 19 millions, according to the degree of retardation taken as the limit, should be called feeble-minded—an obviously absurd conclusion. The norm had been placed too high, and many of the deductions drawn from investigations of the inmates of rescue homes, prisons, etc., to the effect that mental defect was the great cause of failure, are reduced to a statement that they have about or perhaps just a little less than the average intelligence of the population. It is necessary, then, to extend inquiries into other fields—history, practical knowledge, economic efficiency, moral reactions, etc., intelligence tests being only a part of the investigation. Dr. Goddard is quoted for a new definition of the moron—“that large group of people whom we recognize as of dull intelligence, who never live sumptuously, or manage themselves or their affairs with a *high degree of prudence*, but who, nevertheless, do manage themselves, and if carefully and wisely trained, are not a burden on the community.” Such persons are clearly not feeble-minded in the legal sense of the English Act, but their existence justifies the establishment of special schools, though it may be taken that the author would agree with the suggestion of the Wood Committee that such educable children should not be formally termed “mentally defective,” but placed without any distinctive label in ungraded schools or classes, as is done in America.

Dr. Davies traces the history of efforts at alleviation from classical times, when defectives received very varied treatment, being regarded as “*les petits enfants du bon Dieu*” by St. Vincent de Paul on the one hand, or as “filled with Satan” by Luther and Calvin on the other. The real advance begins with the educative work of Itard and Séguin. Out of this grew training institutions and special schools. When with compulsory education the size of the problem of educational failure became evident great alarm was aroused, and a state of eugenic panic arose, with demands for widespread segregation. Part of this alarm, however, was due to the unduly high mental level ascribed to the average citizen. Some data suggested that the rate of reproduction of defectives was such that in a brief period they must become the predominant element in the community; later investigations showed that the rate of increase, even among those who mated, differed but little from that in the community in which they lived, while there were good grounds for concluding that in fact the mating rate of defectives was far lower

than that of the normals. However, under the influence of this period of panic, laws for sterilization were passed in certain States. The extent to which these have functioned is fully discussed, and it seems that they have been used more for the insane than for the ament. On the whole, Dr. Davies sums up against the use of such laws. He shows that while segregation is of great value, it has proved possible to train defectives in institutions, and gradually to return many of them to the world through a system of hostels and village colonies. Especially is this the case in the higher grades, who are, perhaps, relatively inefficient only. Indeed the views have so far changed that Dr. Goddard now says that morons are being turned out no longer feeble-minded according to the traditional definition. "In the community they will marry and have children, and why not? When nine-tenths of the mentally ten-year-old people are marrying, why should the other tenth be denied? It may still be objected that moron parents are likely to have imbecile children; there is not much evidence that this is the case. The danger is probably negligible; at least it is not likely to occur any oftener than it does in the general population." This statement shows an almost complete *volte-face* in the last twenty years.

A modern scheme for dealing with the mentally subnormal or defective involves four major considerations :

(1) The specialized education and industrial training from the earliest age of all intellectually subnormal children, so that they may be fitted as far as possible for community life.

(2) Special training of the more difficult cases in institutions.

(3) Organized community supervision.

(4) Permanent segregation of the feeble-minded, including defective delinquents, in whom it is not possible to develop the social qualifications necessary for the demands of life in the outside world.

Such a programme would prevent the procreation of the definitely feeble-minded, who cannot be socialized, but would not attempt this for those of moron level who can manage their own affairs in a reasonably adequate way.

Considerable sections of the work of Drs. Berry and Gordon are devoted to a study of the evolution and development of the brain and the making of the mind. It is clear that anatomical subnormality weighs heavily with them as a factor in causation and in diagnosis. The degree of mental normality attained by an individual is in strict accord with the state of development and the number of brain-cells possessed. They therefore devote considerable attention to the cubic capacity of the head, though, of course, not neglecting to point out the need for physiological and psychological investigation. Some two-thirds of the defectives show a lack of vitality, and all fail in mentality if tested over a sufficiently wide range of activities. Unquestionably, in a large proportion of low-grade cases the small size of the head is very evident, but when it comes to attempting to state a level below which mental defect should be suspected, if not, indeed, forthwith diagnosed, a difficulty similar to that encountered in the use of

graduated tests for mental ages is encountered. They would regard those persons whose estimated capacity falls below the 10% line of the series of measurements of presumably normal individuals as being potentially abnormal, but was the control series adequately representative? Would it not be found by much wider investigation that the number of those with small heads is greater than has been suspected? The authors do not say, and it must not be assumed from this criticism that they make cranial capacity the central feature of a diagnostic scheme, as it is evident that they consider a wide range of performances in the light of the individual history. The absence of a section dealing specifically with diagnosis has tended to throw the anatomical factors into perhaps higher relief than was intended.

The social results of deficiency, and the problem of causation receive full treatment, but their conclusions as to the relative proportions of primary and secondary amentia are difficult to compare with those of other investigators, since they have limited the term "secondary amentia" to an arrest of brain growth produced at or after birth, thus excluding all cases in which the failure of development is due to intra-uterine pathological processes. Such processes are, it may be submitted, among the most prolific causes of amentia, and of an amentia which may not prove heritable.

In their discussion of the need for a policy in the control of the feeble-minded, the authors naturally draw attention to the need for economy, and the dangers which arise from the border-line cases, more or less corresponding to the moron type of American terminology, for whom study under school conditions is essential. Many of these, as is pointed out elsewhere, can carry out the simpler processes required in community life. With a view to the elimination of defectives from society, they recommend that at the age at which children pass from the junior to the senior departments of elementary schools each should be examined from the standpoint of his powers of fending for himself in after life. Those who surmount the test should go to the senior school; on the others no more public money should be spent than that which is necessary for their maintenance in a model colony. No perfect model colony exists at present, but two receive mention as approximating to the required standard. It is, therefore, a little surprising to find the authors stating that it is suicidal in time of economic stress for the country to spend £93 per annum on the inefficient child and only £12 per annum on the efficient child. The disparity is to be lamented indeed, but the comparison given is between day-school education and care and maintenance in a colony, just as the authors advise. The £93 is approximately the fee paid to the colonies which are mentioned, and in the case of at least one of these the appeals of the managers for further aid indicate that the sum does not pay the full cost. If the cost of the colony can be reduced it will be all to the good, but such action will not permit of the employment of skilled investigating staffs. A truer comparison would be to put the £12 against the £25 to £40 spent on the day education in special schools of those capable of some trade training, who do

in practice return a dividend to the authority by securing and keeping employment, and thus avoid being permanently chargeable to public assistance.

With regard to the building of colonies for defectives, the authors recommend simple open-air unheated wards comparable to those in sanatoria, such as it is pointed out have been very successful at Besford Court. It must be recollected, however, that at that institution there are very few, if any, low-grade cases, and that the dietary and the arrangements for preparing and serving food are unsurpassed. In other words, the heat is quite rightly supplied from within. Whether the same *régime* could be carried out for low-grade defectives with the lowered vitality so well stressed by Drs. Berry and Gordon is by no means so certain. At least, it may be urged, more attention would be needed to the problems of nutrition. Borderline cases, especially children, should be in separate institutions to receive physiological training and testing. It may be admitted that this is very desirable but expensive, so that in the days about to come more stress will be placed on diagnosis in the community, while the children are in ordinary school or special classes.

In this task the methods of procedure set out in detail by Dr. Herd are all-essential. He emphasizes the importance of testing, both separately and in combination, the manifestations of mental function which can be grouped under the captions "temperament," "intelligence" and "conation." So much stress has, in the past, been placed first of all on intelligence, especially as shown by tests, and on the instincts and sentiments, that it is refreshing to find notice given to problems of will-power and of the continuity of attention. Early attention is spontaneous; voluntary attention involves an acquired control of the will, which it is the duty of education to bring into play. This involves the arousing of interest, and unquestionably much apparent mental deficiency is due to a failure in the "system of desire." If there be no power of concentrated attention, even for a short period, there can be no attainments; if there be no instinct of sustained curiosity there can be no sentiment for knowledge. "For the education of a good will it is necessary to create interest in right sentiments."

The reader will find in *The Diagnosis of Mental Deficiency* a critical *résumé* of most of the established tests and descriptions of behaviour in the widest sense, together with a succinct account of the best methods of dealing with a defective young person once he has been ascertained. Hence this book forms a keystone to the arch of information provided in the other works.

F. C. SHRUBSALL.

The Mongol in Our Midst. By F. G. CROOKSHANK, M.D. Third edition. London: Kegan Paul, Trench, Trübner & Co., 1931. Crown 8vo. Pp. 539. Illustrated. Price 21s.

This study of the three faces of mankind excited considerable interest on its first appearance, and its value is greatly enhanced by

the extensive anthropological and clinical references added in this third edition, and particularly by the lengthy series of data on cases of mongolism collected by Dr. Brushfield during his long experience at the Fountain Mental Hospital.

It is usually maintained that ontogeny repeats phylogeny, the individual recapitulating in his lifetime, though in a masked and abbreviated form, the history of the race. It may be that a study of the mentally defective, or arrested and incompletely developed humanity, would throw light on certain links in the chain of evolution.

In the 1860's Langdon-Down classified idiots and imbeciles according to the ethnic characters of their outward appearances, one of his classes being termed the "mongol." While his general classification has been forgotten, the description of the mongol has been generally accepted and recognized. The resemblance is, of course, not to the finer and more developed members of the Mongol race, but to the wilder inhabitants of the northern deserts and steppes—a point sometimes overlooked, but which was stressed by Langdon-Down in his alternative name "Kalmuck" for the class. It extends not only to facial features, but to bodily proportions, markings and postures. For example, a mongolian imbecile will naturally sit on the floor in a cross-legged attitude with the soles of the feet turned up, the typical position of the image of the Buddha in contemplation.

Dr. Crookshank points out that there is really a gradation in the persons presenting these traits:

(1) Feeble infants, obviously devoid of the intelligence normal for their age, who do not long survive. These he terms "infirmary mongols."

(2) Children brought to hospital by about the age of four because they are not getting on. These are backward mentally as well as physically and are mongoloid in their make-up. Many die, but some improve physically, and are recognized ultimately as imbecile.

(3) The asylum type as described by Langdon-Down, of whom many die by puberty, but some survive, in which case the "mongol" traits gradually become masked.

(4) School mongols—those of the hospital class who do not lose as much ground as might have been expected.

(5) Others who present some of the traits only, but are usually ineffective, and in later life degenerate into paunchiness or appear definitely myxœdematous.

(6) A few show normal intelligence or even more, but in some features, expressions and postures recall the yellow race, and may be regarded as Mongols expatriate.

Dr. Crookshank would class all these together. He suggests that mongolian imbecility is found only among the white races, that it only appears when there are some—though maybe fewer—mongol traits in both parents, and regards the Mongol traits, whether in those of defective or normal mentality as evidence, of past racial ancestry. He draws attention to the family tree of man drawn up by Robert Chambers in 1844 in his book, *Vestiges of the Natural History of Creation*, in which he places the negro as the lowest and

the Eurasian as the highest in the scale of humanity, the racial Mongol coming in between. Chambers said, "The leading characters of the various races of mankind are simply representations of particular stages in the development of the highest or Caucasian type. . . . The Mongolian is an arrested infant newly born," and so forth. Crookshank shows that Chambers pointed out that parents too nearly selected tended to produce offspring of the Mongolian type—that is, persons who in maturity are still a kind of children. This was a very advanced statement for an observer nearly ninety years ago. Crookshank's point, that when mongolism is marked it is usual for traits to be found on both sides of the family, has been confirmed. Mongolism then might arise either as a reversion towards a former ancestor—a true Mongol—or because mongoloid persons were ancestors of us all. As to the former, there is reason to believe that Britain in prehistoric days was invaded both from the N.E. and the S.W. by peoples who possessed Mongolian racial traits.

The question whether the Mongol could be regarded as a more primitive form than the Caucasian is less determined. If the negro and the white are more specialized, then the Mongol may be on the direct main trunk of the human stems and the other, side branches doomed to perish—a fascinating question in the light of social developments in the East to-day. Dr. Crookshank has marshalled the evidence attractively.

However, this is not all. Dr. Crookshank's points present evidence to suggest a polyphyletic origin for man. Most of those who have drawn man's family tree derive him from a common ancestor with the apes who may have lived in early pliocene times. A few would make the period later, early pleistocene, some earlier in the miocene, but nearly all regard man as arising on a single stem. Crookshank, however, agrees with the German anatomist Klaatsch that perhaps the stem split so as to produce, not one branch leading to man and another to the apes, but branches leading to ancestors common to particular varieties of apes and man. He finds that Mongols (racial and idiots alike) have affinities to the orang, negroes to the gorilla, and certain (if not all) white races to the chimpanzee, and thinks that one stem of the ancestral tree produced Mongols and orangs, another branching to give on the one hand the gorilla and negro, on the other the chimpanzee and Caucasian. The characteristic mental arrest of the white as shown in markings and posture is *dementia præcox*. He follows this thesis in great detail with a wealth of illustration. The parallelism is striking if the facts are as narrated. It must be admitted that his hypothesis seems to secure few supporters, but the checking of his data will attract the general reader for a period, and is worthy of consideration by anatomists and psychiatrists. It would at least sort out their ideas. It is to be feared, however, that the most favourable verdict will be "*si non è vero è ben trovato*." F. C. SHRUBSALL.

Influenza Dell'Educazione Sugli Anomali Originarii [*Influence of Education on Inherited Abnormalities*]. By JACOB AISENSCITAT. Naples: F. Giannini & Sons, 1930. Crown 8vo. Pp. 521.

The author classifies departures from the normal under three heads: (1) abnormalities of sentiment, (2) abnormalities of intelligence, and (3) abnormalities due to defect of sense-organs.

He gives a detailed description of the various forms of mental deficiency and delinquency, well illustrated by individual cases. The book is, however, chiefly concerned with delinquency, which the author regards as hereditary, using the term in a wider sense than is customary in this country. He considers that heredity plays two parts—first by the transmission of characters through the germ-plasm, and later through the example set by the parents and their surrogates. It is the latter aspect of heredity that is chiefly considered. The author would suggest that all forms of delinquency, apart from those due to organic defect, are atavistic in origin, and arise through some parental character not being transmitted, its place being filled through regression to an earlier and lower ancestral trait.

A long chapter is devoted to theories of heredity, due space being afforded to the Mendelian laws.

Emphasis is laid upon the impressionability of young children, their reaction to example and the important part played by suggestion and imitation.

Discussion of family life in the three classes of society, and its future in each, is followed by an interesting summary of the educative methods employed by various nations.

One of the main theses of the book is the hereditary transmission of acquired characters, but the illustrations to the arguments remind us that delinquency in a person born of delinquent forebears does not necessarily imply that it is inherited. The thoughts, associations and conditions which determine the choice of the form of delinquency are not duly considered, and the assumption that a person reacts unfavourably to a deleterious environment because he is predisposed by heredity to do so is not convincing.

This excellent monograph would have been even more valuable if the author had given more reasons for regarding as hereditary traits those which most of us would regard as acquired.

H. W. EDDISON.

The Conquest of Happiness. By BERTRAND RUSSELL, F.R.S. London: George Allen & Unwin, Ltd., 1930. Crown 8vo. Pp. 252. Price 7s. 6d. net.

Mr. Russell informs us that this book is intended for those who are unhappy in spite of the fact that they possess good health and a sufficient income to secure food and shelter. This, of course, raises a preliminary question as to what constitutes a sufficient income. Great wealth certainly does not imply happiness; and Mr. Russell points out that many wealthy people suffer from acute

boredom—a condition which is quite incompatible with happiness. It is likely that few people really desire great wealth, realizing that it is practically impossible for them to attain it. But our experience indicates that the majority believe that they would be perfectly happy if they possessed the income of the man immediately above them in economic status.

The book is divided into two parts. The first part deals with the common causes of unhappiness. Such matters as competition, boredom, fatigue, envy, the sense of sin and the fear of public opinion are taken up in turn. We would mention with special approbation the chapter on "Persecution Mania," which contains most excellent advice on a very common cause of discontent. In the second part Mr. Russell considers the causes of happiness—a condition which he believes to be still possible, in spite of the fact that he regards the majority of people as unhappy. He describes the manner in which zest, family and other affection, work, and impersonal interests may be rendered potent causes of the most real happiness. The author's well-known theories on liberty, love and parenthood are referred to, but are not unduly obtruded.

Everyone, whatever may be his state of relative happiness or unhappiness, will be the better for reading this book, which is written with all the author's cynical humour, coupled with real common sense. Mr. Russell acknowledges his debt to Spinoza; and the description of the happy man bears a close resemblance to that of the "free man," given in the fourth part of the *Ethics*. The title of the book is well chosen. Happiness never falls into our lap; it has to be achieved. The road to such achievement is hard, but it can be found. "All excellent things are as difficult as they are rare."

M. HAMBLIN SMITH.

The Primitive Mind and Modern Civilization. By C. R. ALDRICH.
London: Kegan Paul & Co., Ltd., 1931. Demy 8vo. Pp. xvii + 249. Price 12s. 6d. net.

Gregariousness is the main instinct of mankind. The rise of man to his position of supremacy in the animal kingdom is directly due to his power of co-operation with his fellows, and his innate psychical necessity to do so. Such is the thesis of this book, and the author develops it in the light of the Zurich school of analytical psychology, and thus explains the rise of cultural phenomena. In his view, the most important influences which affect human relationships lie in that racial unconscious which underlies the personal unconscious in every individual. He assumes what is, of course, denied by some authorities—that there is no difference in kind between the civilized psychic structure and processes, and those of savage and primitive man. Civilization is a very recent phenomenon, and Mr. Aldrich maintains that the psychical development of the human race is lived through, by each individual, in infancy and childhood. Scientific thinking is still more recent. Mankind has but just turned from art and myth to the consideration of the "concrete

realities" of Nature; and psychic illness often removes the values which have grown up during the last three centuries, and the ancient myth-making, mystic interest is shown to be not only alive, but flourishing vigorously.

The influence of the totem idea, with its many modern examples, is discussed. The manner in which fear consolidates the group is described—fear, that is, of some mystic peril, fear arising from the unconscious. This leads to a chapter on "Ritual Sharing of Desirable Things," and so to a discussion of "Primitive Socialism." Various topics relating to religion are raised. The suggestion is made that sexual exhibitionism is a primitive religious manifestation, and is indicative of a desire to be worshipped. The relation between *mana* and taboo is considered; and, finally, the subjects of confession and rebirth are taken up. The author's conclusion is that there are three stages in the progression of the race: first, an unconscious biomorality, in which the members of a social group co-operate instinctively; second, a period of savagery, in which the rise of egotistic tendencies requires that the group shall force its members to conform to a norm of conventional morality; and third, a stage, to which only individuals have as yet attained, in which the members of the group consciously co-operate for the common good. The psychic life-history of the man who reaches full individuality passes through these three phases.

Dr. Jung and Prof. Malinowski contribute forewords. The whole book is written from the standpoint of the Zurich school, the teaching of which is ably expounded. The author's conclusions will not be acceptable to orthodox Freudians. Apart from highly controversial matters, certain very disputable statements are made. For example, the fact that the children of neurotic parents "almost always become neurotic" is given as a proof that neuroses are "infectious." Quite insufficient attention would seem to have been given to the direct influence of the neurotic parents upon the growing mind of their child.

M. HAMBLIN SMITH.

Sin and Sex. By ROBERT BRIFFAULT. London: George Allen & Unwin, Ltd., 1931. Pp. 228. Price 7s. 6d. net.

The moral tradition of western civilization derives from Christianity, and hence from Judaism. There is much that is purely traditional in our present system of morality, although good social effects may accrue from the observance of traditional rules. Sex is not, in men and women, a purely physiological matter; it is inextricably bound up with psychological elements. Sexophobia is responsible for many evils, and for much unnecessary suffering. Our existing marriage laws contain much that is antiquated and highly objectionable. The modern emancipation of women from patriarchal morality will have results far wider-reaching than that of obtaining the right to vote or the freedom to enter the professions. Many instances of recent literary censorship are ridiculous and annoying. Such are some of the author's main conclusions; and

even where they are not obvious, it is probable that many of our readers will, in substance, agree with them.

But Mr. Briffault's manner of presenting these conclusions leaves much to be desired, and we doubt whether his book will serve to promote the reforms which he and others regard as highly desirable. He strikes out vigorously, but in a manner which renders his personal complexes almost painfully evident. "Victorian anthropologists" (of whom Prof. Westermarck is a frequently quoted example), Dean Inge, "Noah's-ark biology," "Adam-and-Eve marriage," are the subjects of his violent castigation. We suppose it is of no use to remind Mr. Briffault that his opponents are not all as stupid and obscurantist as he would have us suppose. There is still something to be said for the traditional folk-ways. It may be that mankind is about to leave those paths; it is possible that increased happiness will result from such departure. But we should prefer to have calmer and more considered guidance over the unmapped territory which we shall have to traverse than is provided in this book, which is typical of not a few recent publications on this topic.

M. HAMBLIN SMITH.

The Family. By Dr. MÜLLER-LYER. London: George Allen & Unwin, Ltd., 1931. Demy 8vo. Pp. 406. Price 16s. net.

This book is one of a series of works on sociology, written by the well-known Munich anthropologist. The German edition was published in 1911. An English translation, excellently done by Miss F. W. Steila Browne, is now provided.

Any study of the family will naturally start with a consideration of the primary question whether the human sex-system was originally monogamous or varietist (a better term, in this connection, than polygamous). As is well known, this question has been much debated, and has important bearings at the present time. Dr. Müller-Lyer considers the evidence on either side, and decides against original monogamy. He also holds that human beings are instinctively exogamous.

Dr. Müller-Lyer takes a bird's-eye view of time, and divides human social development into three main epochs: the tribal or kinship age, the familial age, and the personal age, there being, of course, much overlapping between the three.

In the tribal age we may recognize four distinct phases. Firstly, there was a phase, lasting until the discovery of fire, in which the human manifestations were wholly animal in character; this phase has no existing representatives. Secondly, we have an early tribal phase, represented to-day by certain very backward races, in which there is some development of the clan. Thirdly, there is the full tribal phase, on the lowest rung of the ladder of social stability; agriculture is practised, and the clan reaches the zenith of its powers. Fourthly, in the late tribal phase, the clan disintegrates, the bonds of kinship weaken and finally disappear, and an immense change occurs, leading into the familial epoch. This change is brought

about by material wealth, which disintegrates the clan, because the essential feature of that form of social nexus is the equality of all its members.

In the family epoch, also, we may distinguish certain definite stages. The State has begun its existence in the shape of a ruler, or a ruling class. At the same time the family rises, and unfolds as the economic unit. On this view, we observe that "the foundations of social order," far from being unalterable and eternal, have already sustained great changes. Marriage by purchase has generally replaced marriage by capture. The wife has become an economic asset, and so a commodity; it is the age of polygamy.

The familial age develops. The State becomes a national or multinational empire. The family reaches its apex of power. Women's position is, on the whole, unfavourable; all political and economic power lies in male hands; but marriage tends to become monogamous.

But nothing stands still, and social development is no exception to this rule. In the late family phase the institution which fostered it crumbles. The disintegrating agent is the concentration of the means of production into a small number of hands—in other words, the rise of capitalism. The warrior State becomes a labour State. Domestic labour is replaced by factory production. More and more of the rights and privileges of the family are taken over by the community. Marriage becomes dissoluble. The position of women is markedly improved. We get a definite division of the population into the proletariat, the middle, and the plutocratic classes, the last named being composed of those who live upon inherited wealth. The situation contains the factors which promote its decay. On Dr. Müller-Lyer's view, the present late family phase is passing into what he terms an early individual or personal phase. And the problem which we have to face is whether we have attained sufficient knowledge and foresight to guide us into higher types of activity and organization, or whether the liquidation of our present social order will terminate in complete disintegration, passing into barbarism, from which a social organization will have, once more, to be slowly and painfully rebuilt.

For it must not be supposed that the author's view is one of an uninterrupted historical development. There have always been ebbs and flows. The passing of the Roman Empire constituted one marked ebb. Dr. Müller-Lyer believes that there is much in the present condition of society which closely resembles that existing just prior to the fall of the Roman Empire. His book was written before the recent war; but every unprejudiced observer must recognize that many of his predictions have been, or are now being, fulfilled. On the whole, it may be said that his view of history bears a decided resemblance to that of Karl Marx.

The book should provoke thought, and is a challenge to certain conventional views. It is not necessarily pessimistic, and it is a worthy contribution to the study of social development. Taken as a whole, it is closely reasoned. Occasionally there is evidence of looseness of thought. For example a system of "free marriage"

is described as existing in Sweden, and we are told that women who live in this type of union have the same rights as in the marriage sanctioned by the State. If it is accurate to speak of "rights" in this connection, then it is plain that the marriage is not entirely "free." We may also venture a doubt as to whether the communal households which are predicted as a future social arrangement would be quite as pleasant to live in, or as easy to manage, as Dr. Müller-Lyer would seem to suggest. M. HAMBLIN SMITH.

Family Council Law in Europe. The Eugenics Society. Royal 8vo. Pp. 91. Price 3s. 6d.

Family Councils form an old-established method of guarding minors and weak-willed persons, orphans, illegitimate children, feeble-minded persons, dipsomaniacs, spendthrifts and persistent litigants of paranoid tendencies.

France and Italy still make active use of the system, and although the laws are divergent, the principle is maintained that both paternal and maternal relatives take part, and a Justice presides. Traces of such councils remain in Belgium, Spain, Japan and South America; they have fallen into disuse in Germany and some of the southern United States, while in Denmark, Norway and Sweden they have been superseded by State responsibility. It is evident that they are dying institutions and will never take root in England.

The present volume is a report compiled by Mrs. K. E. Trounson, assisted by various technical experts, and was made possible by an anonymous grant to the Eugenics Society. Chapters are devoted to the practice in the various countries, including England and Scotland, which seems superfluous. The work has been most thoroughly and conscientiously done, and the writing is so concise as to comprise almost a catalogue; full references are given throughout, and the little volume should be of considerable assistance to students of international law. W. F. MENZIES.

Birth Control, Abortion and Sterilization. By Dr. J. H. LEUNBACH, Copenhagen. English Text by the Author, revised by NORMAN HAIRE, ChM., M.B. London: Kegan Paul, Trench, Trübner & Co. Crown 8vo. Pp. 78. Price 2s. 6d.

This small book is a reprint of two lectures delivered before the International Congress of the World League for Sexual Reform, of which Dr. Leunbach is General Secretary, at Copenhagen in July, 1928, and London in September, 1929, respectively. The first, "Birth Control: Its Importance, Purpose and Technique," occupies 55 pages; the second, "Abortion and Sterilization in Denmark," is of less general interest.

The author first reviews and answers the usual arguments of the opponents of birth control—civilized peoples must not be outnumbered by uncivilized; large tracts of the earth must be

developed; interference is a sin and contrary to the will of God (the Churches' view); workers must be numerous in order that wages may be kept low (alleged to be the capitalists' view). This animus against religion and present society reappears at intervals, and the author argues that under a socialistic scheme all would be well, all the world would be instructed in birth control, reproduction would be voluntary and reasoned.

Next, he sets forth and amplifies the ten points in the Sexual Reform League's programme: improving woman's position in society; liberation of marriage from the tyranny of Church and State; control of conception; eugenics; protection of the unmarried mother and illegitimate child; sterilization of the unfit; prevention of prostitution and venereal disease; abnormal sex impulses; legalized free love; systematic sex education. The third section, "Technique of Control," contains nothing new, but the advertising quacks are caustically dealt with.

Our chief criticism of the author's optimism is that biological and psychological precedent shows it to be unfounded. He does not admit that in the ideal socialistic, free-love State, with marriage abolished, biochemically perfected "antispermin" hormones available to all, and sex knowledge complete, no births would take place, and the population would dwindle, not to one-half or one-quarter, but exactly to nothing at all. He professes not to wish to imperil the dominance of the white races, yet advocates the ludicrous task of teaching scientific control methods to the most primitive types of humanity, a task compared with which the abolition of caste in India or devil-worship in native Africa were child's play; so it must follow that a literal return to the Dark Ages would be inevitable. One can envisage the frantic efforts of a Communistic dictator, Socialism being by then a back number, to endow human stud farms and state nurseries by the offer of huge premiums, without sacrificing his principle of equal rewards for all; his only alternative would be wholesale executions—an imperfect means of achieving his objective.

The second lecture deals mostly with the prevalence of abortion in Denmark, and draws a sordid picture of the venality of the "capitalist" doctor who has his price, provided his patient is rich enough. Our author "presumes" that the same holds in France, U.S.A. and England. Such a suggestion about England is, as all the profession knows, preposterously untrue. At the end of the lecture sterilization is shortly dealt with, but no plan appears of how the theoretically unfit in a population are to be dealt with. A useful hint is given of the inadvisability of advocating a voluntary bill. The Danish Parliament passed such an Act, but inserted a clause imposing heavy penalties on any medical man who performed a sterilizing operation, whether to save life or otherwise, without the sanction of the Minister of Justice. Verily our old Inquisitions *de lunatico inquirendo* were in comparison cheap affairs. The author feelingly describes this clause as "obvious lunacy."

W. F. MENZIES.

A Bibliography of Sex Rites and Customs. By ROGER GOODLAND.
London: Routledge & Sons, Ltd., 1931. Demy 4to. Pp. 752.
Price £3 3s.

This bibliography is a treasure-house of information and references on sex rites and customs, and will fill a long-existing want of all those who are in one way or another interested in these subjects. Anthropologists, ethnologists, ethologists, folklorists, sociologists, psychotherapists and other students will find many of their tasks in their search for references made easy.

In the first part of the volume, authors' names are arranged alphabetically. The name is followed by the date of birth, etc. Then the titles of his relevant works, with date and place of publication and publisher's name, are given, with short statements as to the subjects treated. No criticism is offered. It cannot, of course, be expected that even this stupendous work should be absolutely complete, but there were only a very few omissions among the great number of references we checked; the work, moreover, appears to be quite up to date. The bibliography is followed by a most valuable subject-index, which gives the names of the authors in each subject. Thus, for instance, under "Circumcision" over 70 names appear, and under "Sterility" no less than 621 names are given. The references to "symbolism" should be welcome to psycho-analysts. A subject which we miss in the index is the "*Jus primæ noctis*," though possibly many of the writers whose names appear under "marriage rites and customs" may have discussed this subject also. The subject-index occupies over thirty pages.

A. WOHLGEMUTH.

Fundamentals of Objective Psychology. By JOHN DASHIELL.
London: George Allen & Unwin, n.d. Large crown 8vo.
Pp. xviii + 588. Price 16s.

If it is pointed out to the student that "objective psychology" is a contradiction in terms, and that psychology is essentially the science of psychic phenomena, the perusal of this book may be recommended to him with safety, for it is essential that the budding psychologist should be well versed in all the border sciences. Besides, the treatment of the subject in this book is not on strictly behaviouristic lines, and the title "*Fundamentals of Applied Psychology*" would perhaps have been more appropriate.

There are eighteen chapters. The first deals with the general nature of psychology as conceived by the author, emphasis being laid upon the interest in understanding human nature and the desire to get control. Anything of psychological interest about man is to be treated as a physical phenomenon in the broader sense of the term, as a natural occurrence in which material bodies effect energy changes. A little later (p. 13) we are told, "Psychology is to be considered as one of the biological sciences. Its distinction from other biological fields rests largely upon the emphasis that it places on man (or animal) *in his interaction with environmental*

conditions." But such emphasis may also be placed on the interaction of plants with environmental conditions. Their behaviour ought, therefore, likewise to be included in the field of psychology ! Chapter 2 deals with the general character of behaviour. Experiments with *Amœba*, *Paramecium*, *Stentor*, turtles and rats are given here as illustrations. Chapter 3, "The Analysis of Behaviour," deals with reflex arcs and reaction-time experiments. Chapter 4, "The Effectors," is purely physiological, Chapter 5, "The Receptors," likewise, the former dealing with muscles and glands, and the latter with sense-organs. The central nervous system is described in an elementary manner in Chapter 6, "The Connecting System." Chapter 7, "Reflexes and Integration of Action Units," gives the essentials of Sherrington's and Pavlov's work. The title of Chapter 8 is "Native Reaction Patterns." Drive and mechanism are shortly discussed, but instinct is dismissed in a foot-note as a "word." Gregarious activity and sex-differences are said not to be native pattern reactions, since they differ in different societies. In the following chapter, 9, the term *drive* gets a narrower meaning ; it is defined as "the original source of energy that activates the human organism," and once the organism is set going the lines or directions along which it proceeds form the problem of *motives*. From the objective point of view *hunger* does not connote an experience, but is merely "vigorous rhythmic contractions of the walls of the empty stomach." A *sentiment* is a system of emotional tendencies, and the "complexes" of the psychoanalyst are really sentiments that operate pathologically. Some practical problems of motivation, such as army morale, are discussed in a way with which the academic psychologist will have no fault to find. A case of phobia is quoted which was cured by the chance discovery of the cause without the assistance of a psychopathologist. Chapter 10 is entitled "Postural Responses." Besides kinetic or phasic forms of reaction, we are told we should also recognize postural or tonic forms. Moods and emotional behaviour are counted among the latter. The author admits the difficulty of adequately defining "intelligence," "Intelligent Behaviour" being the subject of the following chapter. The various tests and scales are described ; vocational guidance and heredity are touched upon.

Sixty pages are devoted to an interesting chapter on "Learning." After discussing biological fundamentals and basic phenomena, the acquiring, retaining, recalling, recognizing and improvement of memory are dealt with, mostly on orthodox lines, and the experimental methods generally used are described. On p. 346, where the author endeavours to explain inhibition and facilitation, he gets rather involved by talking about a stimulus becoming conditioned to a reaction, and the elementary student will hardly be able to follow him. In the explanation of paramnesia the author follows the now prevalent view that the experience is due to a partial, but not recognized, identity with some former experience, the "feeling of acquaintance" spreading over the whole new experience. The next chapter deals with "Perceiving." The acquirement of "meaning" is made quite clear to the beginner, but as a technical

term "meaning" appears to be studiously avoided; "habit response" is resorted to as the behaviouristic equivalent. (Fig. 84, to which reference is made on p. 387, is wrongly placed opposite p. 448 after Fig. 94.) The *Gestalt* psychology is approved of, and "an organism is said to be perceiving when it is adjusting not simply to the stimuli immediately and actually playing upon it but also to larger wholes, to objects and situations, of which the actual stimuli are only a part or a sign—thus preparing itself for appropriate overt response to those objects and situations."

"Social Behaviour" and "Language Habits" are dealt with on orthodox behaviouristic lines in the next two chapters. When describing inward or silent speech, the author tells us that because it is inaudible, "we need not jump to the conclusion that some new non-physical process of some new non-material entity is at work. Calling it a 'psychic process,' or a 'working of the mind,' only adds to our problems; it explains nothing. As natural scientists our quest is a search for mechanisms and events that can be described in terms of natural science—physical and objective things and processes." It seems incomprehensible that the behaviourist cannot grasp the fact that the science of behaviour is but a subsidiary part of psychology, that the psychic functions cognition, affection, conation, of which behaviour is but an occasional and partial outward manifestation, are the essential subjects of psychological study. Behaviourism, or objective psychology, is like the play of *Hamlet* with the character of the Prince of Denmark left out. "Knowledge is a hierarchy of generalized reaction-habits." That we should find under these circumstances a chapter on "Thinking" seems astonishing, but there it is—Chapter 17. Here we read, "The apparent inert attitude of philosophic reasoning, and the persistent activity of the paramecium repeatedly backing off from the drop of acid to turn itself a little to one side and renew its forward trials, are but the highest and lowest varieties of the struggle of living creatures to surmount their particular obstacles. They are both trial and error types of response."

Having studied man's behaviour analytically up to now, the last chapter of the book is devoted to man as a whole—to his personality. "A man's personality is his system of reactions and reaction-possibilities *in toto* as reviewed by fellow-members of society. It is the sum total of behaviour-trends manifested in his social adjustments." Methods for obtaining information by various tests are shortly indicated, and the statistical methods outlined.

The book is well printed. In parts it is too elementary and its exposition on too popular lines for students, whilst it is far too technical for the lay reader. The references to experimental work, with the exception of the classical German work, are mostly American. Recent English works are but rarely referred to. American slang may not please English readers, and there are several mis-spellings of foreign words.

A. WOHLGEMUTH.

Number—The Language of Science. By TOBIAS DANTZIG. London: George Allen & Unwin, Ltd., 1930. Large crown 8vo. Pp. 260. Price 10s.

To give a "popular" introduction to the science of number, presenting it without recourse to technicalities, and breathing into the *raison d'être* of zero, symbols, infinity, rationals, irrationals, transcendentals, quaternions, etc., the atmosphere of the centuries that set and solved the problems entailed, is an achievement which must gratify both author and reader. Dantzig has succeeded in presenting the history and problems of number with only occasional lapses into technical language, and any reader of this review who once upon a time experienced wonder upon the discovery that straight lines, circles, parabolas and ellipses can be expressed algebraically, will find the book both interesting and instructive. Undoubtedly, mathematics is only too frequently divorced from its cultural and historical meaning—a defect that this book can do much to remedy.

The book begins with chapters on systems of numeration, the ideas behind arithmetical computation, number-lore, symbols, and the concept of infinity. A chapter entitled "The Unutterable" develops from the incommensurability of the diagonal of a square ($\sqrt{2}$) to the necessity for extending the number concept, and so to mention of radicals and transcendentals, etc. The idea of the infinitesimal is treated in a chapter ("This Flowing World"), the clearness in development of which belies the emotional caption. Chapters follow in which the series, continuum concept, and the domain of complex numbers are described. Finally ("The Two Realities") the place of mathematics in the broad scheme of philosophy is considered in the usual way. Throughout, the historical approach illuminates the topics dealt with, and, except for an occasional obsequious bow to "popularity," the whole is unimpeachable.

W. STEPHENSON.

The Treatment of Behaviour Disorders Following Encephalitis: An Experiment in Re-education. By EARL D. BOND, M.D., and KENNETH E. APPEL, M.D. London: George Allen & Unwin, 1931. Pp. 163.

This book concerns an experiment in the study and treatment of 62 children, whose behaviour disorders were the direct result of encephalitis, or resembled the effects of that disease. Gathered from homes and institutions where treatment in an adult environment had signally failed, these 62 children became members of a group under the observation and care of the Department for Mental and Nervous Diseases at the Pennsylvania Hospital. In this Department the personality of each child was intensively studied; and attempts were made to develop in the children more wholesome attitudes to their illness and their environment, and to turn their apache tendencies into useful, constructive behaviour. Nothing novel in the way of treatment is described.

A long-distance plan is advisable in the upbringing of any child, but it is particularly in the case of 'problem' children that this becomes an absolute essential; and in this experiment this factor has been strongly stressed and kept in view by all *personnel* dealing with the children. While this experiment is undoubtedly most praiseworthy, it is extremely doubtful if it can be considered a practical solution to the problem with which it deals, owing to the large expense involved. Certainly in this country no local authority is likely to consider seriously "a graded school and playgrounds under psychiatric supervision, with a *personnel* including specially trained teachers, nurses, occupational therapists and social workers" attached to "a hospital for mental diseases with a special building for children in its own grounds."

The book well merits the careful study of all those concerned with children presenting conduct disorders. P. K. McCOWAN.

Alcohol and the Other Germ Poisons. By G. P. FRETTS. The Hague: Martinus Nijhoff, 1931. Med. 8vo. Pp. 179. Price, cloth, 7.50 gld.

In this small volume Fretts sets out a vast array of information of a clinical and statistical nature about alcohol and its effect on the germ-plasm, both human and animal. His conclusions are what one would expect—that much more information of a reliable nature is required. So much information is obviously prepared by biased individuals that its statistical value is *nil*. At the same time we are, as the author wisely stresses, very short of statistics on healthy persons to compare with those on alcoholics.

From the experimental point of view the author produces sound evidence that injury to the germ is brought about by alcohol. At the same time he points out that the knowledge derived from the influence of alcohol on man and the experiments on animals has not taught us anything about the heredity of acquired characteristics.

Although there is such a collection of material from all available sources, one is disappointed that the author has no statistical evidence to convince us, one way or the other. There is an excellent bibliography. G. W. T. H. FLEMING.

Les Délirants. By R. MALLET. Paris: Gaston Doin et Cie, 1930. 8vo. Pp. 106. Price 12 fcs.

For a long time it has been usual to discuss the ætiology of delusions chiefly from the psychological point of view. It is, of course, a well-established fact that the delusions which occur in acute delirious states are of toxic origin. But in such cases the delusions are fleeting in character and are accompanied by more or less clouding of consciousness, whereas in chronic systematized

delusional and chronic hallucinatory psychoses there may be no intellectual impairment. In this book Dr. Mallet outlines a theory which tends to show that a delusion, whether it be transitory or permanent, is a mental reaction to an organic process.

Up to a certain point there is, as the author contends, a resemblance between obsessions and delusions. Thus, in both there is an irreducible idea, endowed with a strong emotional tone, which forms the starting-point of a whole system of associative activity (automatism), the latter being in direct conflict with volition. Here, however, the resemblance ceases. In the case of obsessions the critical and controlling faculties are not lost: the patient is aware of his morbid state. His will, powerless against the automatic phenomena, is, nevertheless, sufficient to enable him to preserve a normal demeanour. On the other hand, in delusional cases the idea has become accepted by the patient. It is no longer criticized. Moreover, the ability to control his conduct become modified, so that he acts according to the dictates of his delusion.

An hallucination is but a stage further in the evolution of a delusion. The irreducible element in this case is treated by the patient as something foreign to his ego, and is projected on to other persons. The personality is split up into two parts: on the one side is a progressive systematization of ideas with a corresponding deviation of the controlling faculties; on the other side there is a certain residuum of control, which enables the patient to preserve a normal bearing towards everything which does not concern his delusions.

The author upholds the views of de Clérambault, who made a special study of the physical factor in the causation of chronic hallucinatory psychosis. De Clérambault believed that the symptoms of that disease were the delayed sequelæ of infection, intoxication or traumatism. The prolonged latent period between the infection and the development of the psychosis would, he says, account for the insidious onset and the progressive systematization of the delusions. The toxins, according to De Clérambault, exercise a selective action on the projection fibres and nerve-tracts rather than on the cell-bodies. This, he considers, would explain the peculiar foreign or "ready-made" character of various phenomena of automatic action and speech, as well as the inexpressible strangeness of certain hallucinations, because the normal stages of perception are absent in their case.

It must be admitted that in chronic delusional cases the onset of the mental symptoms is just as subtle and insidious as in the chronic hallucinatory types; and, moreover, the irreducible element is endowed with the same automatic activity. The author, therefore, affirms that it is reasonable to suppose that the same ætiological factors are at work in both cases. His conclusions may be thus summarized: The automatic phenomena which constitute the foundation of obsessions, delusions and hallucinations become liberated as a result of the effects of some toxic process possessing a selective action on the association nerve-fibres. In

those cases which develop slowly this liberation leads eventually to dissociation.

Dr. Mallet believes that toxæmias and infections affecting the ancestors may account for the appearance of obsessions in the descendants. In such cases, he says, everyday worries are sufficient to precipitate the condition.

Dr. Mallet's little book will be found an interesting contribution to the study of delusional states. NORMAN R. PHILLIPS.

Mental Aspects of Stammering. By C. S. BLUEMEL. London: Baillière, Tindall & Cox, 1930. Crown 8vo. Pp. x + 152. Price 11s. 6d.

Bluemel elaborates a method of treating stammering, in the light of a theory first presented by him in 1913. This theory is to the effect that stammering is not so much an impediment of speech as an impediment of thought: that it is the direct result of a "transient auditory amnesia," of a direct break in the continuity of consciousness, something like the sudden "blank-out" in a film when the light-source fails momentarily.

To speak fluently one must have a clear mental image, and this has an auditory component and a "motor" component: there is an image of the sound of the word, and an image of the feeling of the word at the lips, tongue and throat. Bluemel contends that stammering results where the sound image is lost while the feeling image is retained; that it is due to a failure of the sound image, and therefore to a "transient auditory amnesia." The author makes no attempt to explain why we should get this "transient auditory amnesia." He does point out, however, that "underlying this disturbance of thought is of course a neurotic temperament." He admits that emotional shock and fright do disturb the continuity of consciousness, and incidentally the mental mechanisms of speech. He lists a number of situations that increase or decrease the tendency to stammer, all of which are situations that obviously increase or decrease anxiety; and in discussing therapy he lays stress on the fact that "when the stammerer keeps his emotion tranquil he has less difficulty in keeping his visual and verbal thought in order." Here Bluemel seems to beg the entire question. It seems reasonable to assume, as psychiatrists generally do, that the disturbance is primarily an emotional one; and whether the secondary effects include a "transient auditory amnesia" as Bluemel suggests, or "weak powers of visualization" as Swift suggests, is surely a matter of secondary importance. There is no real evidence for or against one or the other, and from the therapeutic view-point neither conception is really helpful.

The section on therapy devotes special chapters to the treatment of kindergarten children, middle-grade children and high-school students or adults; there are also chapters for the parent, and for the adult who is attempting to cure himself.

A method of mental drill based on castanet signals is suggested ; one might suppose that they would tend to make a stammerer even more self-conscious and therefore more likely to stammer. Other methods utilized are : speaking in unison, silent speech, *i.e.*, articulation without voice or whisper, slow speech, in which the vowels are elongated, and relaxation. Bluemel rightly points out that relaxation can only be a minor and never a major principle of speech correction. It is an auxiliary in the treatment of anxiety symptoms whose use is largely limited to adults, since it is not in a child's nature to relax.

This book can be recommended as a lucid exposition of Bluemel's rather naïve theory. Many of the suggestions on treatment will be helpful whatever views one holds on stammering.

HENRY HARRIS.

Art and Sex. By M. J. NICOLSON. London : The Mitre Press. Pp. 97.

This book claims to present a psychological view of art, and begins by suggesting that " Art may be conceived as an attempt to express an idea of an object, at the same time conveying a definite response thereto."

The book seems to have little contact with any sort of reality, and is built " right up in the air." Where it is not obvious it is incomprehensible—for the most part the latter.

HENRY HARRIS.

Diagnosis and Treatment of Venereal Diseases. By DAVID LEES, D.S.O., F.R.C.S., etc. Edinburgh : E. & S. Livingstone. 1931. Crown 8vo. Pp. xx + 634. Illus. Price 15s. net.

To one who has " sat at the feet of Gamaliel " it is a pleasure to review this book, and it is an even greater pleasure to find that it is a reflection of Mr. Lees' vivid and human lectures.

The book is divided into two main parts, one devoted to syphilis and the other to gonorrhœa ; but neither condition is accepted alone unless the other has been negated in each case, and this is a most important condition in any treatment undertaken. In both sections a full description of diagnosis, both differential and particular, is given, and for this alone the book is of extraordinary value to mental hospital medical men. It is provocative of thought, and suggests to one that in many a case a *second* Wassermann might be taken with a view to checking a diagnosis.

Diagnosis is fully and authoritatively considered, and perhaps the fullest portion of the book is to be found in the section on treatment ; technique is described step by step, and complications are shown ; actually there is a complete system of diagnosis, treatment and test of cure, and there is no chance of being taken unawares if the book is followed.

The section on syphilis of the cardio-vascular system is most

interesting, and though short is fully informative, whilst that on the infection of the nervous system is particularly complete. The note on the incidence in the Royal Infirmary clinics gives the interesting figures of 54% tabes dorsalis and 15% general paralysis of the insane in male cases with symptoms of disorder of the nervous system. It is also interesting to see that Mr. Lee definitely accepts the much-debated term "tabo-paresis," and puts down its incidence as 8.7%. There is a very close examination of the indications for lumbar puncture, and a description of the method of local anæsthesia, and of the use of pituitrin as a prevention of lumbar-puncture headache.

In discussing the various examinations of the cerebro-spinal fluid, Mr. Lee treads on somewhat debatable ground when he says that the acetic anhydride test depends on the presence of cholesterol, and that the test is positive in 97% of cases of G.P.I.

Although a special note is made of the fact that the cases treated by malaria are of the early (or favourable) type, 25% is given as the proportion showing complete remission, and this is the generally accepted figure, taking all cases into consideration, and corresponds very closely to that accepted by the Board of Control.

A complete course is given for the treatment of neurosyphilis. Mr. Lees has come to the conclusion that prolonged courses of tryparsamide combined with bismuth give results which compare favourably with the massive-salvarsan—spinal-drainage and the intrathecal salvarsanized serum methods, and he believes that since Pearce and Brown introduced tryparsamide a definite change for the better has come over the prognosis of syphilis of the nervous system.

The whole book is written in a simple style, and the essential points are put clearly and convincingly. There should be no difficulty in the diagnosis of venereal disease if use is made of the letter-press and of the excellent illustrations which are generously provided.

In this volume Livingstone's have brought out another companion to the "Thompson and Miles" series, and one which is as readable and as authoritative in its own sphere as is that classic on surgery.

JOHN P. STEEL.

The Recovery of Myself. By MARIAN KING. Humphrey Milford, Oxford University Press. Large crown 8vo. Pp. 148. Price 9s.

"A Patient's Experiences in a Hospital for Mental Illness" is given as the sub-title of this book of experiences in an American "sanitarium," but equally as good, and perhaps more illuminating, would be "The Autobiography of an Introvert." From first to last, or nearly last, one sees the egocentric condition of the writer's make-up. The start on the road to drug-addiction resembles the behaviour of the patient so frequently seen in an epileptic ward who has a "fit" either to avoid the consequences of abnormal behaviour or because some favour is refused.

The preface, by Adolf Meyer, describes the book as a frank and whole-hearted account of a patient's experience, and as such it may appeal to the American mind. To those who know what a British mental hospital is, some of the staff of the hospital in which Miss King was a voluntary boarder would appear to be inefficient in the care of their patients and the performance of their duties, while window-bars are still a prominent feature of the administration.

The book has many points of appeal, in spite of the fact that it deals with a class of hospital almost, if not entirely, unknown in this country. It helps one to understand what patients must undergo when very careful classification is not possible. The writer acknowledges that her awakening to the enormity of drug-addiction was hastened by her contact with others less introspective, less egocentric and less self-controlled than she was. In other words, she realized that if she continued in her addiction, she would probably become as insane as some of her companions.

Of all Miss King's conclusions, two that will meet with general agreement are her pleas for the rigid control of drugs such as veronal, and for the recognition of the social service performed by mental hospitals.

One is left with the impression, after reading this book, that the laws and practice of medicine in the British Isles, are not so effete as we are prone to believe.

JOHN P. STEEL.

Part III.—Epitome of Current Literature.

1. Psychology and Psycho-Pathology.

Variations in the Emotional Development of Normal Adolescents. (Brit. Journ. Educ. Psychol., February, 1931.) Wheeler, O. A.

There is usually an increase of emotionality during the period of adolescence; this shows itself in (1) an increased feeling for self, tending towards psychological independence and the finding of a vocation; (2) an intensification of sex emotions, tending towards a hetero-sexual attitude and the finding of a mate; and (3) the development of social, æsthetic and religious emotions, tending towards the formulating of a point of view on society and on life in general. Proportionately more women and girls than men and boys tend to emphasize those emotions directed away from the self.

The main emotional differences between the sexes appear to have their roots in a fundamental difference in the activity of the sex impulse. In the one case the sex impulse reinforces the egoistic, in the other the social and self-sacrificing trends. The home conditions exercise more influence on the development of the emotions than any other single factor, social, educational or religious.

G. W. T. H. FLEMING.

Some Case Studies of Delinquent Girls Described as Leaders. (Brit. Journ. of Educ. Psychol., June, 1931.) Brown, S. C.

The author found, amongst a group of six girls described as leaders, that the conditions commonly present were: excellent, possibly superior physique; high level of energy output in physical activity; interest in and enjoyment of social relationship. The level of general intelligence was sufficiently variable to discount its significance as a factor. The psychologist reported a quickness of response and good initiative. In all six instances there was no father in the home. Of the mothers, two were hard-working and reliable, but complained that they were too tired in the evening to give their children proper attention. Two others were notorious in the district for their irregularities, and of the remaining two, one was a neurotic and the other a psychotic of a paranoid type. In all cases there was only spasmodic affection and loyalty on both sides of the relationship. In each case there had been a previous delinquency record on the part of elder brothers or sisters.

G. W. T. H. FLEMING.

A Study of Phobias. (Journ. of Neur. and Psychopathol., July, 1931.) Paskind, H. A.

The author found 48% of 733 cases of psychoneurosis afflicted with phobias. The phobias in these conditions are understandable

and systematized. They arise either from the misinterpretation of some physical sensation or experience, or as elaborations from other phobias, which in turn developed out of the misconstruction of physical sensations. The object of the phobia is always a logical one. The cause is usually contemporaneous with the phobia or may just precede it. Among 672 cases of manic-depressive insanity the author found phobias in 65%, and in 10% among 544 cases of dementia præcox. In these two psychotic conditions the phobias are usually illogical. Whether logical or illogical they are uneradicable by reason or explanation or by facing the fear. In the psychoneuroses the fear can usually be removed by reason or explanation and by endeavouring to make the patient face the fear.

G. W. T. H. FLEMING.

The Growth of Visual Perception in Children. (*Brit. Journ. Psychol., Monograph Supplements, No. 15, 1931.*) *Line, W.*

The author concludes that the ability to perceive form is dependent very largely on the same "g" that operates in all cognitive processes. The results support Spearman's contention that "relations furnish the woof and warp of shapes or whole qualities." Education in relations is vital to the cognition of "shape."

G. W. T. H. FLEMING.

The Influence of Adrenal Extract on Behaviour and Mental Efficiency. (*Amer. Journ. of Psychol., July, 1931.*) *Fersild, A. T., and Thomas, W. S.*

Adrenal extract was administered hypodermically by the authors to six persons for the purpose of studying its effect on (a) mental performance, (b) motor performance, (c) physiological response and (d) emotional behaviour. The results of the tests of mental and motor performance showed that adrenaline did not promote mental efficiency, whereas the motor activities were somewhat improved by the drug. Behaviour symptoms ranged from tremor to signs of restlessness and emotional irritability. The subjects reported "tingling" sensations, a feeling of "stuttering" and divergent affective experiences, such as feelings of strain, weeping spells, irascibility, fatigue and drowsiness subsequent to the experimental period.

G. W. T. H. FLEMING.

The Redintegration of Pleasant and Unpleasant Experiences. (*Amer. Journ. of Psychol., July, 1931.*) *Stagner, R.*

The author found that unpleasant feeling-tone is associated with poor retention. Unpleasant events involve the setting up of some kind of tension, and in pleasant situations there is a release from tension. A reflex which results in satisfaction has its potency raised relatively to other reflexes conditioned to the same stimulus. The inadequate response is subject to the action of retro-active inhibition, in consequence of the fact that it is followed by other responses, whereas the successful one is not. Learning thus consists in selecting the correct response and inhibiting the incorrect.

The author suggests that the more rapid forgetting of the unpleasant may be due to a principle fundamentally the same as that of retro-active inhibition.

G. W. T. H. FLEMING.

Psychoanalytische Praxis. Edited by Wilhelm Stekel. Vienna: Hirzel & Co. Vol. 1, No. 1. February, 1931.

This new journal, conducted by Stekel, aims at giving simple practical information for the use of the practitioner who wishes to give his patients psychotherapeutic help, but lacks time for studying the excessive growth of theoretical literature.

The first number contains the following articles, among others :

The Dream as Barometer of the Analytic Situation. Missriegler, A.

A number of examples are given, mainly from consecutive dreams in one case, of the utilization of dream interpretation as a day-to-day indicator of the patient's mood and capacity to tolerate the showing up of deeper conflicts. When the dream shows anxiety, any active interpretation of elements causing this is contra-indicated, but when the dream shows only a refusal to look at something, then the patient can be urged to face the situation. Like the barometer, the dream is only one of many instruments to be used, but for certain indications restricted in time and place it may give valuable help. The article gives a very clear statement of exactly how the author uses this element of technique.

The Technique of Psychoanalysis. Stekel, Wilhelm.

This is the first of a series of articles, and deals with practical points on the beginning of treatment, and the attitude to be adopted towards the hesitating patient. The physician should be careful not to commit himself to any definite assurance of cure, while asserting its possibility. He should take with a grain of salt all the patient's preliminary statements, but never betray the extent of his insight into the hidden mechanisms of the illness, since the neurotic's apparent craving to be "understood" conceals a strong resistance to really facing the truth. Stekel doubts the existence of the Freudian unconscious, regarding repressed material as subject to a mental scotomization, and capable of entering the visual field only by gradual and indirect means.

He advises a "test-week" as preliminary to undertaking treatment, during which time the analyst should be a passive listener, utilizing the patient's anxiety lest he be refused treatment to get a general view of the emotional situation, and discover whether a working transference is likely to develop.

He considers that in cases coming, not spontaneously, but under pressure from relatives or the law, there is always a very doubtful prognosis, and he warns the beginner that even the apparently eager patient has a "will to illness" as well as a "will to recover."

On the question of hypnosis and suggestion Stekel says that he elaborately denies practising these, explaining to the patient

their methods and drawbacks—but he goes on to admit that in fact he does use suggestion to some extent, and even hypnosis, especially in the terminal stages. He emphasizes that mere recognition of his own conflicts by the patient is ineffective unless such recognition is an emotional process of illumination by the analytical experience. If the original scotomization is equivalent to the Freudian repression, the primary repression, he finds also a secondary repression more difficult to remove, in which the recognized complex is still held fast in fantasy, though the patient poses as having overcome it. Patients of poor mental constitution may, at this stage, take refuge in a flight into psychosis.

Minor Analyses in a Sanatorium. Bien, E.

Following Stekel's suggestion that minor analyses, like minor surgery, may fall within the range of the general practitioner, the author attempted a limited and brief treatment of certain not very hopeful cases during their brief holiday stay in a sanatorium. In some cases a short treatment was given in each of several years.

He reports very encouraging results, but gives few details of his method. An obsessional case with hypochondriacal elements lost the latter and gained control over the obsessions after three weeks' treatment, an interesting "key" dream giving the clue to his generally "bipolar" (or ambivalent) attitude towards life. A case of agoraphobia of thirty-six years' duration became free from symptoms and was able to go about unaccompanied after the first treatment of four weeks. The method used was the "indirect" one of showing him the mechanism of cases similar to his own, so that a new orientation towards analysis and towards his illness developed. In two subsequent years further treatment achieved a complete cure, which has now lasted four and a half years.

Analysis of a Case of Dyspareunia by Means of Dream Interpretation. Stekel, Wilhelm.

The author claims that this case illustrates the advantages of his "active method," as well as the powerful influence of infantile impressions upon the sexual life. The case was unpromising, as the patient consented to analysis only for her husband's sake. A "key-dream" showed her as split in her personality, hesitating between dutiful morality and temptation, and revealed past, present and future trends. Stekel shows that underlying the neurosis was a disappointment in an ideal figure, to whom she was attached at puberty, and he believes with Kretschmer that puberty conflicts are more important for the subsequent formation of neurosis than the earlier œdipus complex. The obvious criticism is that Stekel's superficial analyses reach only this later stage, and fail to disclose the deeper infantile foundations. However this may be, the patient lost her neurosis after discussing the puberty conflict and adjusting the current emotional situation in the light of the knowledge gained in analysis.

MARY R. BARKAS.

The Types of Kretschmer. (*L'Hygiène Mentale*, June, 1931.)
Petersen, Sigurd.

This article is an attempt to correlate Kretschmer's types with pre-psychotic characters on the basis of his work on physique and character and that of Schmidt on physique and psychoses.

The author's conclusion is that there is a constant relationship between certain types of physical structure and the tendency to react along particular psychotic lines. W. McC. HARROWES.

The Bases of Temperament. (*L'Hygiène Mentale*, June, 1931.)
Allendy, R.

The physico-psychological couple has been approached in another way by this author, who has taken up, instead of physical characteristics, an investigation into the metabolic processes of the individual. He states that the correspondence between psychological characteristics and certain peculiarities of metabolism seems constant.

The article contains a considerable number of references to metabolic investigation carried out by French workers.

W. McC. HARROWES.

2. Psychiatry.

Epilepsy and Dementia Præcox. (*Il Cervello*, January, 1931.)
Senise, T.

Amongst several thousand cases both of epilepsy and of dementia præcox the author found only six cases where the two conditions co-existed.

G. W. T. H. FLEMING.

Epilepsy and Gunshot Wounds of the Head. (*Brain*, June, 1931.)
Stevenson, W. E.

Traumatic epilepsy may develop as late as ten years after severe injury to the head, but usually there has been in the interval vertigo, paroxysmal headache or other premonitory symptoms. Epilepsy following superficial wounds of the head is most often psychogenetic in origin, the fits being the result of shock, fear or other emotion reacting upon an unstable nervous system. This kind of epilepsy supervenes within a short period of the injury. Vertigo is more common in traumatic than in idiopathic epilepsy, and mental deterioration is more rapid in the former. When fits are infrequent, deterioration is more rapid and marked in severe wounds of the head than in idiopathic epilepsy with a similar incidence of fits.

G. W. T. H. FLEMING.

Hyperventilation Experiments During CO₂ and O₂ Inhalation in Patients with Convulsions. (*Fourn. of Neur. and Psychopathol.*, July, 1931.) *Fog, M., and Schmidt, M.*

The authors experimented on a group of twenty epileptics. They tried hyperventilation under such conditions that alkalosis could not arise. They found that with CO₂ inhalation it was possible to

prevent fits, whereas with simple hyperventilation or O_2 hyperventilation, they would occur. The phenomena of tetany were absent. In patients with hysteria CO_2 inhalation was accompanied without exception by a rise in blood-pressure. This may be due to a greater sensibility of the vasomotor centre towards CO_2 , or to a decreased alkali reserve, which "nervous" people and neurasthenics are stated by Laignel-Lavastine *et alii* to possess. On CO_2 inhalation there is an acidosis which is partly compensated by an increase in the alkali reserve. More oxygen is freed from the hæmoglobin, the peripheral circulation is easier and the tension of oxygen in the tissues increased. The brain of an epileptic is more sensitive to lack of oxygen than that of a normal individual. Anoxæmia appears to be becoming a more and more recognized factor in the production of epileptic seizures.

G. W. T. H. FLEMING.

The Psychogenesis of Delusional Systems. (*Journ. de Neur. et Psychiat.*, June and July, 1931.) De Greef, Etienne.

This is a long article by the Clinical Director of Psychiatry at the University of Louvain, dealing with the thought processes which go to the elaboration of a systematized delusional system. There are several case observations in which the exact words of the patient are quoted.

The author draws a parallel between the advance and filling in of the delusion and the dilapidation of the intellect. He divides this into stages. The first is when the sick person shows slight disorders of behaviour, and expresses his delusions with circumspection and doubt about their truth, fearing that he will be considered insane. In the second period the individual feels that he has quite enough evidence to prove that his delusions are facts. "He knows they are true because he knows." The third period shows alteration in the personality tending towards the grandiose, and the fourth is a period of so-called dementia, in which the delusions become incoherent or absurd, and there is a general deterioration of the individual as a whole.

In an attempt to get some standard by which to measure the mental capacity of his cases, the author was compelled to reject the Binet scale and the Healy tests. Other tests, such as those of Porteus and Ballet, were not found successful. He therefore procured a series of pictures portraying some action which the patient was required to describe, and, arising out of the way in which the movements were interpreted, he elaborated a scale. A *questionnaire* was also devised containing the query, "How old were you when you were born?" Answers such as "a minute" or "a day" are regarded by the author as being pathognomonic of mental deterioration.

The next chapter points out that the so-called dementia is not simply a dulling of intellect, but is a reversion to an older and more primitive type of thinking, namely the infantile, but that this is naturally obscured by what is left of adult behaviour patterns.

Other sections are devoted to activity and intelligence in relation to delusional equivalents in normal people, from which point the author goes on to the minor paranoiacs and to an elaboration of the mechanism of paranoia. A good deal of attention is given to the pre-psychotic period.

He concludes by making certain generalizations. He states that the formation of permanent delusions comes only *pari passu* with the destruction of the higher intellectual faculties. The delusions will tend to be systematized or not according as their evolution is slow or rapid. The conditions which create delusions will have effect more rapidly upon the handicapped individual, but that type of handicap described by the French as "*débilité mentale*" (which might roughly be translated by "psychopathy") is not enough to explain the appearance of delusions. The patient's attitude to the delusion is in the same terms as his attitude to other circumstances, and is an expression of his intellectual level.

W. McC. HARROWES.

What Becomes of the Insane after Discharge? (*Gaz. des Hôp.*, July, 1931.) Rodiet, M. A.

This article deals with the problem of after-care.

The author points out that few psychiatrists working in mental hospitals attempt to follow closely the patient who has been discharged more or less recovered. The importance of social service in better after-care is mentioned under the specific heading, "An Investigation into the Home Conditions of the Patient." It is probably true to say that in all psychoses, major and minor, which appear to be frankly dynamic, the difficulty is much more commonly discovered in the home circle than in the work life of the patient. The author points out that the social service worker discussing with the discharged patient his impressions of mental hospital life often discovers that the patient, while praising the care, treatment and staff, reproaches the administrative side of mental hospitals, which at present frequently makes it necessary for the recoverable case to be associated with what the author calls "*des malades grossiers, malpropres, obscènes et pervers.*"

The author ends up with a plea for more careful and more thorough work with discharged patients and a greater realization of the psychiatrist's obligations in this direction.

W. McC. HARROWES.

Unmotivated Murder. (*Les Échos de la Médecine*, August 1, 1931.) Giraud, Dr.

The author states that amongst murders committed by the insane there appear a certain number which seem to be clearly motivated by the delusions of the murderer. There is, however, another category of murders where no motive of any kind appears.

From the point of view of Freud, the author calls these two types crimes of the ego and of the id respectively, and he goes on to

elaborate an explanation of these impulsive acts, based on the psycho-analytic ego-mechanisms. He quotes several interesting cases, and concludes the article by invoking unconscious jealousy as the force behind apparently unmotivated murders by the insane.

W. McC. HARROWES.

3. Neurology.

Creatinine in Parkinsonianism. (*Il Cervello*, March, 1931.)
Colucci, G.

The author found in three out of six cases an increase in the elimination of creatinine in the urine. During the period covered by the research the subjects were kept on a creatine-poor diet, so that it is quite possible that the whole six cases actually showed a definite increase in the urinary creatinine. These findings agree with those of Burger, but contradict the findings of Pekelharing that the increase is greatest in the types without tremor.

G. W. T. H. FLEMING.

Observations on Vibration Sense, with Special Reference to Post-encephalitic Parkinsonianism. (*Journ. of Neur. and Psychopath.*, April, 1931.) Worster-Drought, C., and Hill, T. R.

The authors examined 25 cases of generalized Parkinsonianism by Symn's method for testing vibration sense. They found definite impairment of vibration sense and deep pressure pain; they think that the lesion is in the thalamus.

G. W. T. H. FLEMING.

Experimental Poliomyelitis. (*Arch. of Neur. and Psychiat.*, June, 1931.) Warburg, B.

The author studied the nervous systems of 15 *Macacus rhesus* monkeys with poliomyelitis. He found that the type of pathological lesion found in the acute and reparative phases corresponded roughly to the duration of the disease. Inflammatory areas persisted in the central nervous system of four animals who had made a good functional recovery.

G. W. T. H. FLEMING.

Alexia and Agraphia: A Study of Six Cases. (*L'Encéph.*, June, 1931.) Ley, A. and J.

The cases quoted are of children, the first of which was noticed during his school days to have great difficulty in learning to read. Besides this, in dictation he would miss out a word from each phrase which he was required to write. The child had apparently no other intelligence defect.

The next child, æt. 11, was unable to read and showed some dysgraphia; he had no other abnormality.

The third case, æt. 8, normal, and up to the required standard on

the Binet scale, was unable to read in spite of a marked wish to learn.

The other cases were similar.

These cases of alexia and agraphia improved as time went on, but the improvement was slow, and, because reading was always a great effort, these children did not pass through the stage common in young people of devouring all printed matter.

The author notes that his cases showed no difficulty in reading and writing figures. He suggests that there may be separate centres for these two symbols.

He describes his method of teaching these children to read by attempting as far as possible to add interest, and so overcome the distaste which the children had developed for a performance which involved difficulty and strain.

The author feels that the physiological basis of the condition is some fault of development of the appropriate cortex, or of retardation in the myelinization of the associated tracts.

W. MCC. HARROWES.

Migraine and Hypothyroidism. (*Journ. de Neur. et Psychiat.*, August, 1931.) Ley, A.

The author quotes Hertoghe as stating that migraine may have its origin in hypothyroidism, and points out that numerous other authors have suggested glandular insufficiency as a cause.

He goes on to quote a case of a woman, *æt.* 27, who had migrainous attacks characterized by hemicrania, photophobia and vomiting. These attacks lasted for a month, at the end of which she was extremely reduced and took some weeks to recover. The dramatic prodrome of migraine was not present in her case. Psycho-analysis was tried without avail, and the author on first seeing the patient was struck with her appearance, which suggested to him the "*myxædème fruste*" of the French writers. Thyroid was exhibited, and effected an immediate and complete improvement in the patient. The author mentions that the patient's condition was traced to repressed homo-sexual memories which were intolerable, and that in the recovery state she showed a re-appearance of normal hetero-sexual tendencies.

W. MCC. HARROWES.

The Question of Constitutional Types in Tabes. (*L'Hygiène Mentale*, June, 1931.) Stief, A.

The author concludes from his investigations that the constitution of tabetics does not differ essentially from those of healthy subjects.

Tabo-paretics, however, like general paralytics, are most frequently pyknic, and the author states that tabetics who display early optic atrophy are also usually pyknic.

W. MCC. HARROWES.

4. Treatment.

The Combined Action of Some Convulsant Agents in Small Doses and the Action of Bromides in Experimentally Induced Convulsions. (*Arch. of Neur. and Psychiat.*, June, 1931.) Pike, F. H., Osnato, M., and Nolkin, J.

The authors experimented with lactic acid, which is increased in the blood for periods up to three weeks after a convulsion. They found that lactic acid was too severe a convulsant to use in cats, as death usually followed. In a second group of experiments lactic acid was injected in minimal sublethal doses and followed by subconvulsant doses of absinthe. In each case typical tonic and clonic convulsions ensued without death. Lactic acid obviously enhanced the convulsant effect of absinthe, probably by increasing the permeability of the blood-vessels and perhaps of the cells themselves to water-soluble substances.

Cats fed for long periods with a sodium bromide preparation showed a decreased convulsant reaction to absinthe, but on the other hand ordinarily sublethal doses of absinthe became lethal. The administration of bromide must be prolonged.

G. W. T. H. FLEMING.

Malarial Therapy in Schizophrenia. (*Riv. di Pat. Nerv. e Ment.*, March-April, 1931.) Belloni, G. B.

The author treated nineteen cases of dementia præcox with malaria. He obtained a favourable result in six cases, two of which it was possible to consider as cured. Of the six, five were of the hebephrenic and one of the catatonic type.

G. W. T. H. FLEMING.

The Action of Bulbocapnine in Man. (*Riv. di Pat. Nerv. e Ment.*, November-December, 1930.) di Giacomo, U.

The author found that bulbocapnine given intravenously to patients had much the same action as that described by various authors as occurring in animals. At first there was a period of drowsiness, followed by a phase of psychomotor lethargy, during which in some subjects there appeared cataleptic phenomena unaccompanied by demonstrable muscular rigidity. In two individuals out of sixteen experimented on, a short confusional state with intense psychomotor excitement developed. The syndrome induced by bulbocapnine in man resembles catatonia more than it does Parkinsonianism.

G. W. T. H. FLEMING.

5. Pathology.

Non-Electrolytes: Their Distribution between the Blood and the Cerebro-Spinal Fluid. (*Arch. of Neur. and Psychiat.*, June, 1931.) Cockrill, J. R.

The author concludes that dextrose, urea, creatinine and uric acid are unequally distributed between the water of the spinal

fluid and that of the plasma in man. The concentrations in the spinal fluid are from 50–80% of those of the plasma. When plasma is dialysed *in vitro* against spinal fluid from the same subject, this unequal distribution of urea is not obtained. These results the author regards as evidence against the view that the spinal fluid is produced solely by ultra-filtration of the plasma.

G. W. T. H. FLEMING.

The Behaviour of the Alkaline Reserve of the Blood and of the Urinary pH in Epileptics in the Inter-paroxysmal Period and During the Seizure. (*Riv. di Pat. Nerv. e Ment.*, November–December, 1930.) *di Renzo, F.*

The author found, from observation of 21 patients, that the epileptic convulsion is preceded by a rise in the alkaline reserve of the blood. Immediately before the fit the alkaline reserve returns to normal and remains at this level throughout the fit. The urinary pH behaves in a similar manner. The fit appears to coincide with the sudden throwing into the blood-stream of a quantity of acid, which brings down the increase in the alkaline reserve and increases the amount of calcium ions in the blood-serum.

G. W. T. H. FLEMING.

The Velocity of Blood Sedimentation in Schizophrenia. (*Il Cervello*, May, 1931.) *Zara, E.*

The author determined the blood sedimentation by a modified Plaut method in 100 cases of schizophrenia. He found, as several investigators had done before him, that there is generally a definite increase in the rate of sedimentation. The increase is largely due to some toxic-infective factor, particularly tuberculosis, though there may be other factors at work.

G. W. T. H. FLEMING.

Blood and Urine Calcium in Dementia Præcox. (*Riv. di Pat. Nerv. e Ment.*, November–December, 1930.) *Gullotta, S.*

The author found in recent cases of dementia præcox an increase of the blood-calcium; in quiet chronic cases it varied within normal limits, in agitated chronic cases there was an increase, and in catatonic stuporose cases there was an actual decrease. The elimination of calcium in the urine followed more or less closely the behaviour of the blood-calcium. The author thinks, in common with Scuola and Zurigo, that the decrease in the calcium in catatonic stupor depends on the action of substances of amine nature on the basal ganglia. The increase of calcium in recent cases of dementia præcox is considered to be an indication of hepatic insufficiency.

G. W. T. H. FLEMING.

Korsakov's Syndrome: Its Histopathology. (*Brain*, June, 1931.) *Carmichael, E. A., and Stern, R. O.*

The authors examined pathologically 5 cases of alcoholic Korsakov's syndrome. They found a widespread deposit of

lipochrome material in the nerve-cells and neuroglial cells of the cortex. In 3 of the cases the lipochrome was particularly heaped up in the nerve-cells of the prefrontal cortex. In one case the cells of the thalamus were loaded with lipid. Deposits of lipochrome around blood-vessels and in their walls were common. The only other condition where such widespread deposits of lipochrome occur is pellagra. The authors consider that the chromatolytic changes which they observed in the nerve-cells of the cortex, particularly in the Betz cells, are the same as described by other writers in "central neuritis." They could find no tract degeneration in the spinal cord.

G. W. T. H. FLEMING.

Angioma Arteriale Racemosum in an Acallosal Brain: A Clinical and Pathological Report. (*Journ. of Neur. and Psychopathol.*, April, 1931.) Stewart, R. M., and Ashby, W. R.

The authors describe a case of a female epileptic æt. 53 in whom an angioma arteriale racemosum was found at autopsy. The corpus callosum was absent. The patient had received a severe blow on her head many years previously. Clinically she showed a definite extracranial vascularity. The angioma lay principally in the territory of the anterior cerebral artery. Saccular aneurysms were also present on the basilar and left anterior cerebral arteries. Deposits of iron and calcium were found in the vascular tumour, and in numerous cortical areas. The left cerebral hemisphere contained 158 mgrm. of calcium per 100 grm. of brain, the right only 31 mgrm. Abnormal and aberrant vessels were found in the mid-brain and in the falx cerebri.

G. W. T. H. FLEMING.

The Equilibrium between Cerebro-spinal Fluid and Blood-Plasma. II. The Composition of the Human Cerebro-spinal Fluid and Blood-Plasma in Meningitis. (*Arch. of Neur. and Psychiat.*, June, 1931.) Fremont-Smith, F., et alii.

The authors found that the principal changes in the chemistry of the spinal fluid characteristic of all forms of acute meningitis, including tuberculous and acute syphilitic meningitis, are—(a) an increase in cells and protein, (b) a decrease in sugar and chlorides. In those cases in which the authors studied the phosphorus and calcium content they found an increase in these substances and in a few cases a decrease in sodium. In the blood-plasma the sugar is frequently increased, even though the patient may be fasting. This increase is in marked contrast to the decrease in the spinal fluid. The chlorides in the blood-plasma are nearly always decreased. The values for sodium, calcium and phosphorus in the serum are usually below normal. The protein in the serum varies greatly, but in the majority of cases is within the normal range.

G. W. T. H. FLEMING.

Part IV.—Notes and News.

THE ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.

THE NINETIETH ANNUAL GENERAL MEETING of the Association was held on Wednesday, Thursday, Friday and Saturday, July 8, 9, 10 and 11, 1931, at the Royal College of Physicians, Dublin, by kind permission of the President and Fellows, under the Presidency, in the earlier proceedings, of T. Saxty Good, O.B.E., M.A., M.R.C.S., L.R.C.P., and later of Richard Robert Leeper, L.R.C.P.I., F.R.C.S.I.

On the previous day, Tuesday, July 7, the Council and Committees met at the Royal College of Physicians, as under :

Mental Nursing Advisory Committee	9.30 a.m.
Library Committee	10 a.m.
Educational Committee	10.30 a.m.
Parliamentary Committee	11.30 a.m.
Research and Clinical Committee	2 p.m.
Council Meeting	2.30 p.m.

LECTURE AND DEMONSTRATION BY PROF. KAPPERS.

At 12 noon, on Tuesday, July 7, the members assembled in the Anatomy Theatre of Trinity College to hear an address on "The Development of the Cerebral Cortex and the Functions of its Layers," by PROF. C. U. ARIËNS KAPPERS, Director of the Central Institute for Brain Research, Amsterdam (*vide* p. 692).

The PRESIDENT (Dr. T. SAXTY GOOD) said that they had all listened with great pleasure to the lecture, and they were under a great obligation to Dr. Kappers. He thought the best way he could show their appreciation would be by calling on Dr. Leeper to propose the vote of thanks to Dr. Kappers.

Dr. LEEPER, in proposing the vote, said that every one of them realized it was a very great privilege to see such a distinguished man as Dr. Kappers, and he thought that they would all go a long distance for that privilege alone, but to actually hear him speak on a subject they were all supposed to know something about was an honour every one of them would always remember. He thought it was an outstanding honour to them that they had been able to get such a distinguished man to address their Congress.

Prof. SHAW BOLTON, in seconding, said it was many, many years since he first heard of Dr. Kappers, and he had often wished to see him, but never thought the opportunity would occur in such unusual circumstances and in such a place. It was quite unnecessary to make any remarks on the subject of the address, but he would like to point out that though Dr. Kappers had given only one address, he might have given fifty all equally important.

Dr. KAPPERS, replying, said that he must confess that he had not known Dr. Shaw Bolton personally. He only knew him through his works, and he had not known that he was to be present. Another great worker in the same field, Sir Frederick Mott, had unfortunately gone from the scene of his work several years ago, but it was a great pleasure to him that at least one of these men, who had contributed so much to their knowledge of the functions of the cortex, was present. He (Dr. Kappers) had always regretted that he had not had a chance to meet in

England a third research worker he had referred to in his lecture, Dr. Campbell, whose work he had always admired. He was now in Australia and no longer did laboratory work, and his excellent researches had not been continued. He (Dr. Kappers) had heard that he was now a practising physician in Sydney.

Dr. Kappers then said that he had only mentioned three names in the course of his address, but that he could have mentioned many more, including those of Sherrington, Head, Holmes, and many others. The agreement to which they had all come only showed that science was one in all countries, and it was a great privilege to collaborate with them in Dublin, as it was also a privilege to collaborate with their neighbours of other countries. This collaboration was even more necessary in psychiatry than in other branches of medical science. In this connection, concluded Dr. Kappers, it might interest them to know that one of the streets in a town of Holland, where the largest asylum was, was called after one of their countrymen, Conolly Norman, who did much to improve the conditions of treatment.

CIVIC RECEPTION.

In the afternoon a reception was held at the Royal College of Physicians, Dublin. Members and their guests were received by the Lord Mayor of Dublin (Senator Alfred Byrne), to whom they were introduced by the President of the Association, Dr. T. Saxty Good.

MORNING SESSION.—WEDNESDAY, JULY 8.

At the Royal College of Physicians.

Dr. T. SAXTY GOOD in the Chair.

I. *MINUTES AND OBITUARY.

The PRESIDENT, opening the meeting, said that he was departing slightly from the agenda in referring to the fact that—as he dared say they had all heard—Dr. Hunter, of the Coppice, Nottingham, had had a serious attack made on him. He understood that Dr. Hunter had been very seriously ill, but was getting better. He had taken the liberty that morning of sending a wire to Dr. Hunter wishing him a speedy recovery. There had been no reply yet, but he thought the Association would like to hear that the wire had been sent. He was sure they all wished Dr. Hunter a speedy recovery.

The minutes of the last annual meeting, having appeared in the Journal, were taken as read.

The PRESIDENT said that the next item on the agenda was always a sad one—the obituary references. The names were:

Hugh de Maine Alexander, who died on June 19, 1931; William Charles Clifford Smith, June 3, 1931; Patrick Joseph Dwyer, June 19, 1931; John Carswell, June 20, 1931; and George Robert Lawless, February 21, 1931.

Dr. McRÆ said that in his Division they felt that by the death of Dr. Alexander they had lost a very charming colleague. Dr. Alexander did not attend their meetings very regularly because his whole life was spent in the administration of his institution. He went to Kingseat Mental Hospital as Medical Superintendent in 1906, succeeding Dr. Angus. The hospital was the first in Scotland to be based on the colony system. It was not the first to be erected, because he believed Bangour preceded it in that respect, but it was, he believed, the first actually in operation. It began with a population of 400 patients, and at the time of Dr. Alexander's death there were 800 patients. It must be obvious to all that in an institution of that type, demanding a very large amount of original ideas and involving great administrative responsibility, Dr. Alexander had little time

* Numbers refer to items on the Agenda.

for anything but what was really his life's hobby—the care of his institution. He had consummate tact, and was exceedingly interested in all the cases under his care. He was rather proud of the fact that he had the largest proportion of patients on *parole*. He had also tried to found a sort of Gheel system under which the patients who had partially recovered were boarded out in farm-houses in the surrounding district, where he and his assistant used to visit them regularly. The speaker believed that the scheme had now been given up, but Dr. Alexander had made a great effort to introduce this system into this country. There were very many things one might say about him, but in addition to his ordinary work he had done a great deal of reviewing for the Journal, and had written several papers which had appeared in its pages. He thought that they would feel that in him they had lost a man who was a very great credit and honour to the Association, and it would be very hard to find a man who would fill his place as ably as he had done. He proposed that their condolences be sent to his widow.

Dr. COLLINS, referring to the late Mr. Clifford Smith, said that Mr. Smith was not a member of their profession. He was Chief Engineer to the London County Council Mental Hospitals. He started his profession in the Turkish Navy, which was hardly the work that might be expected to lead him to what he afterwards did. He subsequently became Chief Engineering Officer to the London Asylums Committee, and when the Committee was abolished the Council kept Mr. Clifford Smith in his old position. He acted as architect and built three of the Council's institutions—the Epileptic Colony at Ewell, which was an entire new venture at that time for England at any rate, being composed of separate small villas without any boundaries, fences or restrictions of any kind; and later the Maudsley Hospital and West Park Mental Hospital. He was always interested in the welfare of the patients, and always willing and anxious to help the medical superintendents and to obtain from the Committee, over whom he had considerable influence, anything they required. When he retired it was a great loss to his medical colleagues. He left a widow and one son and one daughter. His son was a doctor, and it was always his father's desire that he should take up this work. Unfortunately he lost a leg in the war, with the result that he was never able to do this. He (Dr. Collins) hoped that the Association would send a message of sympathy to his family.

Dr. LEEPER said that in the last few months they had lost two members from the Irish Division. The first of these was Dr. Dwyer, Acting Medical Superintendent at Portrane. Dr. Dwyer had met his death in a very tragic way. He (Dr. Leeper) happened to be there one morning when he came in saying that he was not feeling well and that his collar was a little tight. Unfortunately it turned out that there was a malignant growth in his neck. Notwithstanding every treatment he had been taken away, and had left a widow and three children. Until recently he was very active in his professional work. He caused him (Dr. Leeper) to summon a special meeting of the Irish Division to consider the treatment of dementia præcox. He had recently brought over a Swedish professor (Dr. Loberg) and had him shown round many of the mental hospitals of Ireland. Dr. Loberg published an interesting brochure of his experiences, and that was due to the action of Dr. Dwyer. He (Dr. Leeper) was sure his wife would appreciate an expression of regret from the Association.

Another member had been taken away in the person of Dr. Geo. Lawless. He was in the specialty from the day of his birth, for he was born in his (Dr. Leeper's) hospital. He was for many years a member of the Association and attended the meetings. He was very active in many ways, and during the war had taken on special duty. He had been taken away very suddenly, and he (Dr. Leeper) thought a letter ought to be sent to his wife expressing the regret of the Association.

Dr. MACDONALD said that he had had the privilege of Dr. Carswell's friendship from his earliest connection with the specialty. Dr. Carswell was considerably older—indeed when he (Dr. MacDonald) was still an undergraduate, Dr. Carswell had already established a reputation as a man of learning and wide experience. He spent most of his professional life in Glasgow, and he (Dr. MacDonald) thought that the thing they remembered most about him was that he was responsible for the common-sense treatment, without certification, of early cases of insanity. He believed that Dr. Carswell drew his inspiration from his former asylum superintendent, Dr. Rutherford, who was responsible for the open-door system in Scotland, which was a great step in the advancement of the treatment of insanity.

Dr. Carswell went a step further. When he became the certifying physician in Glasgow he had to examine many patients, and it was his duty to certify those who were to be removed to the asylums. It was then that he recognized that a great number of patients might be treated without certification, and it was largely owing to his efforts that the Glasgow Poor Law Board and the Board of Control were induced to establish wards in their hospitals for the reception of cases of incipient insanity for treatment there without certification. The modern call for psychiatric clinics was a development of the work done by Dr. Carswell, and for that alone his name should be remembered. Later he became a member of the General Board of Control. He was a man of wide culture and broad outlook. He was rather combative in disposition, but he had the courage of his convictions and never failed to carry them to success. He served as a member of the Glasgow Corporation, and his professional experience was of great value to that body. He was particularly interested in legislation for the control of inebriates. He read extensively, being a man of literary interests, which were reflected in the works of his daughter and of his son, Donald. He was a man of a humane and sympathetic character, which could not fail to make an impression on those who met him.

In conclusion Dr. MacDonald asked that an expression of regret should be recorded in the minutes and an extract sent to the bereaved family.

Dr. DONALD ROSS said that Dr. Lawless was one of those men who never seemed to be in a flurry and yet was always getting things done. He (Dr. Ross) had the privilege of being his guest at Armagh and was greatly impressed with him as a host. It was a great pleasure to hear him describe the history of Armagh. He was a genial and charming character, in whom they had lost a great and good man.

Col. DAWSON said that in his former capacity as Inspector of Hospitals he knew both Dr. Dwyer and Dr. Lawless. Dr. Dwyer he had known longer—practically for the whole of his medical life. In 1906, when he (Col. Dawson) was investigator for the Royal Commission, Dr. Dwyer acted as his assistant, and he did very good work indeed, and he (Col. Dawson) valued his capacity and interest in the subject. He knew Dr. Lawless well and had a great regard for him. His kindness and geniality were points of his character that had impressed themselves on him. His (Col. Dawson's) relations with him were always of the friendliest. In the days when he (Col. Dawson) was secretary of the Irish Division it was a great pleasure to work with him.

The CHAIRMAN said that they had heard the expressions of the speakers regarding the deceased gentlemen, and he was sure that it was the wish of the meeting that letters of sympathy should be sent to their relatives.

This was agreed to, all present rising and standing in silence as a tribute to the departed members.

2. ELECTION OF OFFICERS AND COUNCIL FOR 1931-32.

The following resolutions were put from the Chair:

- 2 (a). That the Officers of the Association for 1931-32 be:

President.—Richard Robert Leeper, L.R.C.P.I., F.R.C.S.I.

President-Elect.—Robert Brown Campbell, M.D., F.R.C.P.E.

Ex-President.—Thomas Saxty Good, O.B.E., M.A., M.R.C.S., L.R.C.P.

Treasurer.—George William Smith, O.B.E., M.B., Ch.B.

General Secretary.—Reginald Worth, O.B.E., M.B., B.S.

Registrar.—Daniel Frederick Rambaut, M.A., M.D.

Editors of the Journal.—

John Robert Lord, C.B.E., M.D., F.R.C.P.E.

Douglas McRae, M.D., F.R.C.P.E.

Maurice Hamblin Smith, M.A., M.D.

Alexander Walk, M.D., D.P.M.

Librarian.—James Richard Whitwell, M.B.

[Agreed.]

- 2 (b). That the Nominated Members of the Council for 1931-32 be:

Drs. W. J. T. Kimber, J. Ernest Nicole, M. J. Nolan, W. Starkey, J. S.

Ian Skottowe, Aidan G. W. Thomson.

[Agreed.]

APPOINTMENT OF STANDING AND SPECIAL COMMITTEES.

The following resolutions were put from the Chair :

- 2 (c). That the Parliamentary Committee, as revised by the Council, be re-appointed.
 Retirements : Drs. G. A. Auden, G. N. Bartlett, W. Norwood East, W. F. Nelis, E. W. White.
 Additions : Profs. G. M. Robertson and J. Shaw Bolton, Drs. Hamilton Marr, T. Saxty Good, J. R. Gilmour, Neil T. Kerr, E. Barton White, A. W. Neill, M. J. Nolan. [Agreed.]
- 2 (d). That the Educational Committee, as revised by the Council, be re-appointed.
 Retirements : G. A. Auden, T. Beaton, W. R. Dawson, J. H. Macdonald, W. F. Nelis, D. McKinley Reid.
 Additions : Profs. G. M. Robertson and J. Shaw Bolton, Drs. A. W. Neill, M. J. Nolan, T. Saxty Good, Douglas McRae, J. R. Gilmour, E. Barton White, Neil T. Kerr. [Agreed.]
- 2 (e). That the Library Committee be re-appointed.
 Addition : Dr. J. L. Baskin. [Agreed.]
- 2 (f). That the Research and Clinical Committee be re-appointed.
 Retirement : Dr. G. A. Auden.
 Additions : Dr. F. J. Deane (representing Northern Ireland), Drs. Hubert J. Norman and J. Norman Glaister (representing Private Mental Hospitals). [Agreed.]
- 2 (g). That the Mental Nursing Advisory Committee (Official Members) be re-appointed as follows :
For England and Wales.—Drs. H. Dove Cormac, T. Beaton, W. J. T. Kimber, F. R. P. Taylor and R. Worth.
For Scotland.—Drs. W. M. Buchanan, Donald Ross, T. C. Mackenzie, Douglas McRae, and Prof. G. M. Robertson.
For Northern Ireland.—Drs. F. J. Deane, N. B. Graham, M. J. Nolan, W. S. Smyth and J. Watson.
For Irish Free State.—Drs. J. O'Connor Donelan, L. Gavin, J. C. Martin, R. R. Leeper and Stanley Blake. [Agreed.]
- 2 (h). That the Mental Deficiency Handbook Special Committee be re-appointed. [Agreed.]
- 2 (i). That the Special Committee for the Revision of the Bye-laws be re-appointed. [Agreed.]
- 2 (j). That G. F. Barham, M.A., M.D., and C. W. Bower, L.M.S.S.A., be appointed Hon. Auditors.

The appointment of the Maudsley Lecturer for 1932 was postponed till the October meeting.

3 (a). REPORT OF THE COUNCIL.

The Council begs to submit its 35th Annual Report as under :

At the Annual General Meeting (1929), the criticism was made that the Annual Report of the Council was not in the hands of members until the morning of the meeting, so that individual members had no opportunity of reflecting on its contents and formulating considered views before being called upon to discuss it.

The Council felt that there was some justice in this criticism, and directed that steps should be taken to meet it. These steps were detailed in its 1930 Report, but it has been found impracticable to carry them out during the present year. It is proposed to essay the attempt next year. This Report, however, will not record the Council proceedings at its meeting, July, 1931, which will be included in next year's report.

The number of members—ordinary, honorary and corresponding—as shown in the list of names published in the *Journal of Mental Science* for January, 1931, was 847, as compared with 819 in 1930.

1929.		1930.
47	Number of new members elected	46
819	Number of members registered	847
1	Removed according to Bye-law 17	15
10	Number of members resigned	10
10	Number of deaths	3

Members :	1921.	1922.	1923.	1924.	1925.	1926.	1927.	1928.	1929.	1930.
Ordinary .	631	676	710	694	703	700	706	727	753	771
Honorary .	25	27	30	29	29	30	31	33	35	36
Corresponding	10	13	14	16	16	15	17	22	31	40
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
	666	716	754	739	748	745	754	782	819	847

A study of the above figures shows that the gratifying increase in the number of ordinary members since the year 1926 has continued, despite the fact that the names of 15 members have been removed in accordance with Bye-law 17.

Only 3 members died, the lowest number recorded for many years.

The number of members resigning in 1930 is the same as in the previous year.

To keep up our average number of ordinary members, about 30 new members are required annually. During 1930 this was exceeded by 16.

Revision of the Bye-laws.

The Special Committee for the revision of the Bye-laws, appointed at the last annual meeting, has not met during the year. Those concerned have been too busily occupied in other important matters, but the items which will interest them have been much added to, and the Committee's re-appointment is recommended.

The Advancement of Research and Clinical Psychiatry.

The Report of the Research and Clinical Committee is again of absorbing interest. The standard method of applying the Wassermann test has occupied the attention of three special sub-committees since May, 1929, the report on which reached its final stage in May, 1931, when it was approved by the Committee and Council and ordered to be published. The comparative incidence of cancer in mental hospital patients and the general population is still being investigated by the Infectious Diseases, etc., Sub-Committee, and the Mental Deficiency Sub-Committee's report on "The Place in Family" is an important contribution to the aetiology of mental deficiency.

The Clinical Sub-Committee has issued a draft report on the classification of mental disorders.

The Irish Sub-Committee created to link up study groups in Ireland with the work of the Sub-Committees has commenced its labours.

The establishment of a special medal and prize, value £250, to be awarded every third year according to a scheme which has been approved by the Council, now awaits the approval of this Annual Meeting.

Mention should also be made of the activities of the Study Tour Sub-Committee, which is arranging a tour of psychiatric centres in Germany and Austria.

The Committee again draws attention to the zeal and enthusiasm displayed by the honorary secretaries to the Sub-Committee, and specially mentions the services of Drs. W. Ford Robertson, F. S. Mann and L. Penrose.

The Committee also takes the opportunity of appealing to medical superintendents to further as much as possible the holding of Divisional Clinical Meetings for assistant medical officers; an appeal which the Council heartily endorses.

Educational Matters.

The Council at its meeting in June, 1930, considered very fully a report by the Educational Committee in regard to complaints received from the Scottish and Irish Divisions of the undue severity of the markings in the May, 1930, Final Mental Nursing Examination, and steps were subsequently taken to remedy the situation.

The Educational Committee instructed that, in the future, papers marked between 45% and 50% should be sent to a third examiner for re-assessment.

The revised mental nursing regulations and rules came into force for the May, 1931, examination. On the whole the change of procedure has been successfully initiated, thanks to the loyal response of the medical superintendents and the excellent work of the Registrar and Area Examination Secretaries, who have had

a difficult and onerous task. The inspection of the examinations will shortly commence, which will complete the initiation of the new system. A few points will need adjustment, such as a better definition of the various examination areas, and as far as it is within the power of the Association to afford it, a more generous scale of remuneration and refunding of out-of-pocket expenses of Chief Examiners and Nurse-coadjutors, which matter is being considered by a Special Committee of the Council.

The Committee has revised the system of marking written papers, and issued regulations for the calling, when necessary, of a Board of Examiners to consider the examination results before they are announced by the Registrar.

The number of new entrants for the Nursing Certificates continues to increase, and for the year May–November, 1930, was 6316.

Commendable progress is being made in the writing and publication of the Handbook for the Nursing of Mental Defectives by the Handbook Committee.

Dr. W. J. T. Kimber was regretfully compelled to resign his position as Hon. Secretary to the Educational Committee, owing to an increasing amount of other work. The Committee elected Dr. W. G. Masfield in his place. Dr. Kimber has done much really fine work for the Committee, especially in regard to the revision of the Regulations and Rules for the conduct of the various nursing examinations.

Parliamentary Matters.

A special meeting of the Committee was held in October, 1930, to consider the draft rules to be prescribed by the Board of Control under the Mental Treatment Act, 1930. The Committee at this and subsequent meetings took strong exception to the decision of the Board that the wording of the heading of Schedule 3 did not give it discretionary powers in this matter, but that it was obligatory on its part to apply wherever possible the sections of the principal Act and the Board's existing rules in regard to all matters scheduled. Counsel's opinion was obtained in favour of the Committee's views. In the meantime the Board announced a change of policy which acknowledged the justice of the Committee's contention. The Committee worked with other bodies interested and sent in a considered criticism of the draft rules. The Board's final rules met in many respects the Committee's objections, and ultimately on the whole were considered satisfactory.

The Committee studied with care the Report of the Select Committee of the House of Commons on Capital Punishment, in so far as the question of mental disorder and the McNaghten Rules were concerned. It expressed approval of the suggested reconsideration of these rules, and the Council was recommended to support this attitude. A letter to this effect was sent to the Home Secretary. Other matters considered were the Edinburgh Corporation Bill (still *sub judice*) and the Nursing Hours and Wages Bill, which the Committee decided strongly to oppose.

Legalizing Eugenic Sterilization.

In July, 1930, the attention of the Council was drawn to an arrangement that the Eugenics Society, proposed to further legislation on the subject. A draft Bill was outlined. In September, 1930, a letter was received from Sir Frederick Willis, asking the Council to nominate a speaker on this subject at the forthcoming Public Health Congress. It was known to the Council that there was no unanimity of opinion in favour or against eugenic sterilization among members of the Association, so a *questionnaire* was issued to all members to ascertain if possible what was the dominant opinion among them on this matter. Over 230 members responded. Dr. W. F. Menzies spoke at the Congress on November 21, 1930, and said that probably on the whole the feeling in the Association would be that, with careful selection of cases and adequate safeguards, sterilization might have a limited application in dealing with mental deficiency.

The Library.

The last annual report of the Council records in full the Council's efforts to secure the best accommodation possible for the Library, and concludes by announcing the appointment of a second Committee, with much the same reference as the previous one.

The Honorary Librarian, Dr. J. R. Whitwell, whose tireless efforts in the best

interests of the Library are so greatly appreciated by the whole Association, reports that more use is made of the Library than formerly. He is very anxious to build up and complete a historical collection of psychiatric works from the seventeenth century onwards. The Council gives its hearty support to Dr. Whitwell's appeal in this matter, and is grateful for his fine gifts of books for this purpose, and hopes members generally will follow his example. Those so disposed are advised to consult Dr. Whitwell as to what books it is desirable the Library should possess. Thanks to the Hon. Librarian the Association's album of past presidents has been brought up to the year 1920. This collection was commenced by the late Dr. T. Outterson Wood, whose death this year the Association bemoans.

The Journal of Mental Science.

The Journal continues its successful career, and the value and variety of its original articles is much appreciated by members and outside subscribers. Its reviews and epitomes, though interesting to all readers, are of special value to research workers and psychiatric students.

Members' Badges.

A members' badge was approved for sale at the annual meeting, Oxford, 1930. Over 200 were distributed, mainly sold. It is hoped that these badges will be used by members at all subsequent annual meetings, and at other meetings when convenient.

Resignation of the Treasurer.

Dr. J. Chambers, owing to ill-health, resigned his post as Treasurer of the Association, which he has occupied with much distinction since 1917. Both in this capacity and as Co-Editor of the Journal, 1905-14 (previously Assistant Editor, 1900-5) he has rendered services of immense value to the Association. His kindly personality and the advantage of his ripe wisdom and experience will be greatly missed by the Association.

Complimentary Dinner to Sir James Crichton-Browne.

A suggestion was considered at the November, 1930, meeting that a dinner should be held to commemorate Sir James Crichton-Browne's long and distinguished service to psychological medicine.

The dinner, at which Sir James and Lady Crichton-Browne were present, took place on May 21, 1931. It was a great success, and was remarkable for the fine speeches, especially that made by Sir James himself. A full report of the dinner will be published in the *Journal of Mental Science*.

Miscellaneous Matters.

The Council did not see its way to appoint a representative to serve on the Committee of the Central Association for Mental Welfare *re* Short Course of Training in Mental Health Work for Social Workers.

The Council has sent a letter to the Board of Control protesting vigorously against the inadequacy of the remuneration offered by the Treasury in respect of the post of Commissioner (Officer) of the Board.

Dr. Reginald Worth resigned his post as member of the General Nursing Council.

Dr. Donald Ross kindly acted as the Association's delegate at the Congress of French-speaking Alienists and Neurologists, 1930. Dr. G. W. Smith was appointed delegate to the same Congress held April, 1931. Drs. Helen Boyle, H. Devine, J. Brander and G. W. B. James were appointed representatives of the Association on the Committee *re* the *Ætiology, Prevention and Treatment of the Cyclothymias*, instituted by the National Council for Mental Hygiene and Royal Society of Medicine.

Dr. T. Saxty Good was nominated to act as the Association's representative on the Board of Control's Advisory Committee on Scientific and Ancillary Mental Health Services.

Dr. J. R. Lord was nominated to act as the Association's representative on the Organizing Council for the International Congress of Local Authorities, 1932.

Obituary.

Honorary Members: Henri Colin, October 19, 1930; William Charles Clifford Smith, June 3, 1931.

Ordinary Members: T. Outterson Wood, July 19, 1930; Owen Felix McCarthy, November 6, 1930; William Ireland Donaldson, April 4, 1931; Walter Smith Kay, April 22, 1931; Hugh de Maine Alexander, June 1, 1931; Patrick David Joseph Dwyer, June 19, 1931; John Carswell, June 20, 1931.

J. R. LORD,
For the General Secretary.

In the absence of the General Secretary and of Dr. Lord Dr. R. THOMPSON read the Report and moved its adoption.

The PRESIDENT said that before putting the resolution to the meeting he wished to announce that he had received a letter from Dr. Blacker, the General Secretary of the Eugenics Society, stating that the modified Bill for voluntary sterilization would be brought before the House of Commons by Major Church, M.P. The Bill had been greatly modified, and only applied to mental defectives.

The President then asked if there were any comments on the Report.

Dr. DRURY said that the deaths of only three members were recorded in the Report and in the obituary remarks six were mentioned.

Dr. RUSSELL said the other three had died since the Report was made.

Dr. MILLS said he would like to draw the attention of the meeting to, and to dissent from, the tendency which existed to reduce the standard and, in consequence, the value of the nursing certificate of the Association. He saw by the Report that the Council seemed to be what he might respectfully call "giving in" to the reducing of the standard. He wished, as one of the oldest examiners of the Association, to protest against any further reduction of the standard of this nursing certificate, which he thought was quite low enough already.

Dr. COLLINS said he had raised the matter at the Educational Committee, and it was stated that the wording in the paragraph in question simply meant that the case was sent to a third examiner when a person had been rejected by one of the examiners.

Dr. MILLS said he would move that the President express clearly what the paragraph did mean, as he had interpreted it differently.

Dr. COLLINS said that if the examiners agreed the matter was settled, but if they disagreed the case was sent to a third examiner.

Dr. DONALD ROSS said that of about twenty papers sent to him, in the case of one-third he added marks and in another third he deducted marks. This showed that there was difference of opinion amongst examiners.

The PRESIDENT said that what they were all anxious for was that there should be absolute justice. They all had different opinions and they could not help having them. When two people differed they appointed a third person to act as arbitrator. The Association had appointed a third person and that was only in fairness to the candidates; it was not a lowering of the standard, but rather a raising of it.

3 (b). REPORT OF THE TREASURER.

The Treasurer submits the Revenue Account and Balance Sheet for 1930, and also the Financial Statement of the Maudsley Bequest and of the Gaskell Fund. £800 of 3½% Conversion Loan was purchased for the Association. The Asylum Workers Convalescent Fund is exhausted.

Dr. G. W. SMITH read the Report and moved its adoption.

Dr. MACDONALD seconded.

[Agreed.]

3 (c). REPORT OF THE EDITORS.

The Editors beg to submit their Report for 1930-31.

The subjoined table shows the cost of the Journal under various headings.

The size of the Journal compared with that of the previous year answers for the increased cost of production.

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.—For the Year 1930.

REVENUE ACCOUNT—January 1st to December 31st, 1930.

1929.		Dr.		Expenditure.		Cr.		1929.				
£	s.	d.	To	Journal—Printing, Publishing, Engravings, Advertisings, and Postage	£	s.	d.	£	s.	d.		
1270	5	4	Journal—Printing, Publishing, Engravings, Advertisings, and Postage	1431	6	0	332	10	0	406	5	7
1802	2	11	Examinations, Association Prizes, and Clerical Assistants to Registrars	1974	7	1	105	8	0	9	11	0
23	8	9	Petty Disbursements, Stationery, Postages, etc.	28	7	2	33	0	7	370	0	6
400	16	8	Annual, General, and Divisional Meetings	89	6	1	...	...	...	2908	16	2
80	0	0	Rent of Premises, and care of Offices	86	0	6	...	...	...	1235	11	9
12	12	0	Audit and Clerical Assistance	355	0	4	...	...	...	2	9	10
158	9	3	Miscellaneous Account	26	0	0	...	...	...	...	...	...
170	12	5	Library Expenses	...	...	...	...	...	...	...	...	...
50	0	0	Special Research Fund—Grant	4337	4	8	...	...	...	...	...	...
971	1	9	Balance	585	19	2	...	...	...	...	...	...
4894	9	1		4923	3	10	...	...	...	...	...	...

BALANCE-SHEET—31st December, 1930.

1929.		Liabilities.		Assets.		1929.				
£	s.	d.	£	s.	d.	£	s.	d.		
300	14	0	To Journal Account, balance of	498	5	2	By Lloyds Bank—Bankers	774	8	5
57	10	7	Meetings Account, balance of	120	13	3	Deposit Account, General	400	0	0
40	0	0	Rent Account, balance of	40	0	0	" " Interest due	3	0	3
7	5	3	Miscellaneous Account, balance of	31	3	0	Sales Account, balance of	44	0	11
160	0	8	Gaskell Account Dividends	149	8	6	Subscriptions Account, balance of	303	0	0
3	14	0	Income Tax, etc.	5	7	3	Library Account, balance of	104	17	6
181	11	6	Maudsley " Dividends	204	8	11	Fees Account, balance of	2208	10	2
22	2	0	" " Dividends	77	8	9	Mott Memorial Fund, balance of	235	2	8
22	12	0	" " Income Tax, etc.	31	12	0	Stocks, value at this date:	564	12	6
1393	7	11	Examinations Account, balance of	1713	18	10	£534 8s. 3d. New Zealand, 3½ per cent. Stock, 1940	385	9	0
7	10	7	Asylum Workers' Convalescent Fund	44	10	0	£320 14s. 8d. Ditto, ditto (Hack Tuke)	272	12	0
44	—	0	Research Fund	4	13	6	£103 7s. 2d. Victoria, 3 per cent. Stocks, 1929-49 (Dr. Paul)	56	6	6
—	—	—	Petty Disbursements, balance of	3	3	0	£413 18s. 1d. Manchester Corporation, 3 per cent. Stock, 1910-30	143	6	3
—	—	—	Deposit Account, Income Tax	—	—	—	£315 18s. 1d. New South Wales, 3½ per cent. Stock, 1910-30	221	4	3
2320	8	3	Balance as at 1st January, 1930	12,178	6	7	£386 os. od. London, Midland and Scottish Railway, 4 per cent. Pref. Stock	239	6	5
11,811	10	3	Add Balance as per Revenue Account	485	19	2	£1864 1s. 2d. War Loan, 5 per cent. Stock, 1920-47	1919	19	7
971	1	9	Increase in Value of Investments	715	3	2	£972 1s. 3d. Conversion Loan, 3½ per cent. Stock	8152	3	2
15,113	0	3	Less: Deduct:	13,479	8	11	£800 os. od. Ditto, ditto (purchased in 1929)	618	12	0
33	16	9	Subscriptions written off	120	15	6				
586	8	8	Decrease in Value of Investments	13,358	13	5				
604	5	5		£16,273	5	7				
£14,508	14	10		£16,273	5	7				

(Signed) JAMES CHAMBERS, Hon. Treasurer. }
 (Signed) DUJARDIN, BOLI & Co., Incorporated Accountants, Philipot Lane, E.C. 1. }
 G. F. BARHAM }
 CEDRIC W. BOWER } Hon. Auditors.

MAUDSLEY BEQUEST.

1930.	Dr.	Expenditure.	£	s.	d.	Income.	£	s.	d.
Jan. 9.	To Cash—	Income Tax ...	...	21	2 0	Jan. 1. By Balance (owing) ...	...	...	21 2 0
Oct. 29.	"	Adlard & Son ...	...	5	6 6	Jan. 1. By Balance (Dividends) ...	...	...	181 11 6
Dec. 31.	"	Amount owing—Lecturer's Honorarium	52	10	0	June 1. " Cash—Half-year Dividend on War Loan	52	16	4
"	"	Postages ...	...	10	6	Dec. 1. " " " "	"	"	52 16 4
"	"	Income Tax ...	...	23	14 9				
"	"	Adlard & Son ...	...	1	3 6				
"	"	Balance (Dividends) ...	...	204	8 11				
					£308 6 2				£308 6 2

GASKELL FUND.

1930.	Dr.	Expenditure.	£	s.	d.	Income.	£	s.	d.
Jan. 9.	To Cash—	Income Tax ...	...	3	14 0	Jan. 1. By Balance (owing) ...	...	...	3 14 0
July 21.	"	W. A. Mussett (Medal) ...	...	25	4 6	Jan. 1. By Balance (dividends) ...	...	...	160 0 8
" 30.	"	Prize ...	...	30	0 0	" 1. " Cash—Half-year Dividend on New Zealand 3½ per cent. ...	...	...	19 6 7
Sept. 5.	"	Examiner's Fees and Expenses ...	...	14	11 0	Apr. 1. " " Half-year Dividend on New South Wales 3 per cent. ...	...	...	4 1 0
Dec. 31.	"	Amount owing—Income Tax ...	...	4	3 3	June 2. " " Half-year Dividend on War Loan ...	...	...	9 5 0
"	"	"The Lancet' ...	...	1	4 0	July 1. " " Half-year Dividend on New Zealand 3½ per cent. ...	...	...	18 14 6
"	"	Balance (Dividends) ...	...	149	8 6	Oct. 1. " " Half-year Dividend on New South Wales 3 per cent. ...	...	...	3 18 6
						Dec. 1. " " Half-year Dividend on War Loan ...	...	...	9 5 0
					£228 5 3				£228 5 3

At the May meeting of the Nominations Committee, the Editors' representative reported that it was imperative to increase the editorial staff if the Journal was to be published at all regularly. The Committee thereupon nominated Drs. M. Hamblin Smith and Alexander Walk for election as additional editors, and acceded to Dr. Beaton's request to retire. The Editors express their thanks to Dr. Beaton for his work in editing the Epitome section of the Journal. After consultation with the Council, the Editors have appointed Dr. G. W. T. H. Fleming to be Assistant Editor.

Owing to the pre-occupation of Dr. J. R. Lord, the indisposition of Dr. Graves and other causes, but little progress was made during the year in the editing of the Journal's *Monograph on Sinusitis in Mental Disorders*.

Thanks are due to Dr. Alexander Walk, the Assistant Editor, for his co-operation. The Editors are most grateful to the reviewers and epitomizers, whose valuable services are so ungrudgingly maintained throughout the year.

Dr. DOUGLAS McRAE read the report and moved its adoption.

Dr. GILMOUR seconded.

[Agreed.]

Analysis of Cost of Journal 1929 and 1930.

1929.				1930.				
£	s.	d.	£	s.	d.	£	s.	d.
758	3	9				871	13	1
45	2	0				81	19	0
79	5	0				93	3	9
47	2	6				41	14	11
71	15	6				87	19	7
<hr/>			1,001	8	9	<hr/>		
87	4	2				108	9	1
8	15	1				12	5	6
51	4	4				55	6	9
<hr/>			147	3	7	<hr/>		
8	13	0				8	6	11
26	6	9½				30	14	6
<hr/>			34	19	9½	<hr/>		
41	11	3				42	1	5
<hr/>			41	11	3	<hr/>		
			£1,225	3	4½	£1,433		
						14		
						6		

£	s.	d.	Credit.	£	s.	d.
266	12	0		232	10	0
28	12	10		23	0	7
<hr/>				<hr/>		
£295				£255		
				10		
				7		

Cost of Journal.

1929.		1930.
5s. 7d.	Cost of production of Journal per copy	6s. 3d.
4s. 2½d.	Cost to Association of Journal per copy	5s. 0d.
850	Size of Journal in pages	955

3 (d). REPORT OF THE HONORARY LIBRARIAN.

This is included in the Report of the Library Committee.

3 (e). REPORT OF THE HONORARY AUDITORS.

We, the undersigned, having examined the Treasurer's books, and having duly compared and scrutinized receipts and vouchers, hereby certify that the accounts

and Balance-Sheet, as set forth, represent a true statement of the Royal Medico-Psychological Association's finances for the year 1930.

G. F. BARHAM
CEDRIC W. BOWER } *Hon. Auditors.*

3 (f). REPORT OF THE REGISTRAR.

The total number of entries for the Preliminary and Final Examinations for the year 1930 was 6,316—570 being candidates for the Mental Deficiency section.

Of this number (6,316), 3,569 were for the Preliminary and 2,747 for the Final Examination.

For the May, 1930, Examination the number of candidates was: 2,325 Preliminary, 1,756 Final, a total of 4,081.

For the November, 1930, Examination the number was: 1,244 Preliminary, 991 Final, a total of 2,235.

It is interesting to compare the number of entries for recent years. Below I give them:

Year 1925	5,560
„ 1926	5,789
„ 1927	6,212
„ 1928	6,095
„ 1929	6,283
„ 1930	6,316

The South African candidates for the year 1930 numbered 487—239 in May and 248 in November.

The details for the Preliminary Examinations for the year 1930 are as follows:

Class of institution.	Entries.	Passes.	Percentages.
English County Mental Hospitals	1,897	1,269	67.00
English Borough Mental Hospitals	484	269	55.58
Registered Hospitals and Licensed Houses	143	105	73.43
Scottish Mental Hospitals	464	300	64.65
Irish Mental Hospitals	261	137	52.49
Federated Malay States	2	1	50.00
Mental Defective Institutions	318	241	75.78
Totals	3,569	2,322	65.06

For the Final Examinations for the year 1930 the details are:

Class of institution.	Entries.	Passes.	Distinc- tions.	Percentage of—		
				Passes to entries.	Disti. to entries.	Disti. to passes.
English County Mental Hospitals	1,408	894	81	63.49	5.75	9.06
English Borough Mental Hospitals	362	227	13	62.71	3.59	5.73
Registered Hospitals and Licensed Houses	150	90	4	60.00	2.67	4.44
Scottish Mental Hospitals	329	177	4	53.80	1.22	2.26
Irish Mental Hospitals	246	89	4	36.18	1.63	4.49
Mental Defective Institutions	252	138	4	54.76	1.59	2.90
Total	2,747	1,615	110	58.79	3.86	6.56

MAY, 1931, EXAMINATIONS.

For the May, 1931, Examinations the entries numbered 4,137. This is a record for a May examination. Of this number 2,420 were Preliminary and 1,717 were Final Candidates.

The whole of the results of both examinations have been despatched to the various institutions.

Below I give the details of the results:

Preliminary.

Class of institution.	Entries.	Passes.	Percentage.
English County Mental Hospitals	1,269	767	60·44
English Borough Mental Hospitals	232	136	59·62
Registered Hospitals and Licensed Houses	138	87	63·04
Scottish Mental Hospitals	373	236	63·27
Irish Mental Hospitals	204	119	58·33
Federated Malay States	1	1	100·00
Mental Defective Institutions	203	145	71·43
Totals	2,420	1,491	61·61

Final Examination.

Class of institution.	Entries.	Passes.	Distinctions.	Percentage of—		
				Passes to entries.	Distts. to entries.	Distts. to passes.
English County Mental Hospitals	943	621	27	65·85	2·86	4·34
English Borough Mental Hospitals	179	97	8	54·19	4·47	8·25
Registered Hospitals and Licensed Houses	93	61	4	65·59	4·30	6·56
Scottish Mental Hospitals	240	200	12	83·33	5·00	6·00
Irish Mental Hospitals	103	55	0	53·39	0	0
Federated Malay States	1	1	0	100·00	0	0
Mental Defective Section	158	105	3	66·45	1·89	2·85
Totals	1,717	1,140	54	66·39	3·15	4·73

There were 76 candidates whose papers were marked 45% to 49% (both inclusive). On re-assessment 30 of these candidates were raised to a pass mark and 46 remained below 50%.

There were no entries in May, 1931, for either the Gaskell Prize or the M.P.C. Examination.

There were four entries for the Bronze Medal and Prize. With regard to these entries the President reports as follows:

"I have carefully considered the four papers that you sent me for the Bronze Medal. Three of them are, in my opinion, of great merit, and I think are all worthy of a Bronze Medal. The three papers approach the problem of psychiatry from different points of view. The order in which I place them is as follows: First, 'Pervicax Recte'; the next one would be 'Isoëtis,' and then 'Two Leaves.'

"I notice that the regulations say that original observations and research will be considered as the principal points of excellence. In the first paper these conditions are fulfilled more than in the other papers, although both the latter show an immense amount of care and application, but at the same time I do not think there is as much original observation or research as is shown by 'Pervicax Recte.'

"'Pervicax Recte' is, in my opinion, the most worthy of the Prize, and the other two papers mentioned above are of exceptional merit.

"I have opened the envelope containing the name of the writer 'Pervicax Recte,' and I find it is John H. Ewen, M.R.C.S.Eng., L.R.C.P.Lond., D.P.M., Assistant Medical Officer, County Mental Hospital, Netherne, Surrey. The other envelopes, of course, have not been opened."

There was one entry for a Divisional Prize. With regard to this the President reports: "We have, with great regret, come to the conclusion that although the paper for the Divisional Prize shows a good deal of industry, yet it shows no indication of original work, which it must be according to the Regulations; therefore we are unable to award it a Prize."

DANIEL F. RAMBAUT,
Registrar.

Dr. RAMBAUT read the Report, and moved its adoption.
Dr. MILLS seconded.

[Agreed.]

The PRESIDENT said he would like to make a statement regarding the Bronze Medal. The three papers were of exceptional merit, and the Council suggested that in the case of the two papers that did not gain the Medal a certificate should be issued to the two candidates who submitted them, together with a prize of £10. The papers were very good indeed, and it was extremely difficult to adjudicate between them. The only difficulty was with regard to the regulations. The papers were sent in with the names in sealed envelopes, and according to the regulations these envelopes could not be opened except for the one that was awarded the Bronze Medal. He did not know what was going to happen, because if unclaimed at the end of one year the papers became the property of the Association and the envelopes were burned without being opened.

Dr. DRURY proposed that the President be authorized to open the envelopes.

Dr. RUSSELL proposed that, as apparently the regulation was intended to be something in the nature of a protection to the candidates, the latter should be consulted, and invited to claim back their papers.

Dr. GRANT seconded the last speaker's amendment.

Dr. COLLINS proposed as a further amendment that a post-card should be sent to every member asking whether the envelopes should be opened. There was the difficulty that the candidate might not wish to accept the prize of £10.

Dr. SHAW BOLTON proposed that the meeting simply publish the mottoes of the candidates who submitted the two papers and leave it to them to claim the prizes.

The other proposals having been withdrawn, Dr. Shaw Bolton's suggestion was agreed to.

It was subsequently ascertained that the essays submitted under the mottoes "Isoëtis" and "Two Leaves" were the work of Dr. G. W. T. H. Fleming and Dr. G. de M. Rudolf respectively.

Several members having expressed the view that the various prizes open to members of the Association were not widely enough known and appreciated, it was proposed and seconded that Dr. Good and the Registrar should review the conditions of obtaining these prizes and make a report to the next Council meeting.

A suggestion received from Prof. Robertson that appropriate thanks be conveyed to the Free State Government officials for their courtesy in recognizing the Association's Certificate of Proficiency in Mental Nursing was adopted.

3 (g). REPORT OF THE EDUCATIONAL COMMITTEE.

The Educational Committee beg to submit the following report for the year ending June 30, 1931.

Four meetings have been held.

The number of candidates who presented themselves for the Nursing Examination (exclusive of candidates in S. Africa) during the year was :

Mental nursing.—Preliminary : 3,334. Final : 2,456.

Nursing of mental defectives.—Preliminary : 330. Final : 252.

The Revised Regulations for the Training and Examination of Candidates for the Certificate of Proficiency and the Revised Rules for the conduct of the Examinations came into force at the May, 1931, examinations. Much work was thrown upon the Area Examination Secretaries, and it was mainly due to their successful efforts that the new Rules were satisfactorily initiated. It was not found possible to appoint Examination Inspectors in time for the May examinations. It is hoped that, as time goes on, and the details of the changes are more thoroughly understood, the value of the Association's Examinations may be appreciated even more than in the past.

At the meeting held in November the resignation of Dr. W. J. T. Kimber, who had held the post of Hon. Secretary to the Committee since 1927, was received with much regret. His work on behalf of the Committee and the Association as a whole has been very valuable, especially in regard to the revision of the Rules and Regulations concerning the Nursing Examinations.

The following institution was approved during the year : Laverstock House, Salisbury, for the Training of Mental Nurses.

Dr. MASEFIELD read the Report and moved its adoption.

Dr. COLLINS seconded.

[Agreed.]

3 (h). REPORT OF THE PARLIAMENTARY COMMITTEE.

There have been five meetings of the above Committee during the year.

At the November meeting Dr. Nathan Raw was re-elected Chairman and Dr. H. G. L. Haynes Hon. Secretary.

The chief business during the year has been the consideration of the rules proposed by the Board of Control in connection with the Mental Treatment Act, which came into force on January 1, 1931.

It will be in the recollection of the members of the Association that it was deemed desirable to take Counsel's opinion upon the draft rules.

Eventually the more questionable rules were amended, and the rules finally were regarded as satisfactory in view of the experimental character of the Act.

The Committee has also considered the question of eugenic sterilization. It has expressed its approval of the suggested reconsideration of the McNaghten rules; this latter matter has been brought up by the Royal Commission on Capital Punishment.

The Hours of Nurses Bill has not reached its second reading in the House of Commons. The Committee has made arrangements for the Bill to be objected to, though there is no likelihood of its being brought before the House during the present session.

On the advice of this Committee the Association has expressed its strong disapproval of Section 194 of the Edinburgh Corporation Bill. Other influential bodies are also strongly opposed to the principle introduced in this clause.

The help of the Parliamentary Agent has again proved of great value.

F. R. P. TAYLOR,
Acting Chairman.

Dr. BOWER read the Report and moved its adoption.

Dr. IVISON RUSSELL seconded.

[Agreed.]

3 (i). REPORT OF THE LIBRARY COMMITTEE.

The Secretary reported that the Library Committee had met on three occasions during the year, that a certain amount of use had been made of the Library, and that the circulating journals had been sent round regularly. Certain presentations of books had been made to the Committee and these gifts had been acknowledged, from time to time in the Journal.

Dr. COLIN McDOWALL read the report and moved its adoption.

Dr. GRANT seconded.

[Agreed.]

3 (j) REPORT OF THE RESEARCH AND CLINICAL COMMITTEE.

THE Research and Clinical Committee beg to submit the following report for the year ending July, 1931 :

Meetings.

The Committee has met four times during the year, *viz.*, June 30, 1930, November 19, 1930, February 24, 1931, and May 20, 1931.

Encouragement of Research.*Special Prize and Gold Medal for Research on Mental Disorders.*

It was stated in the Committee's last report that considerable attention had been given to the stimulation of research work in psychological medicine, especially since the Gaskell Medal and Prize was no longer available for this purpose. The matter was referred to a Sub-Committee, which recommended—

- (1) That a special prize and gold medal be awarded triennially for research on mental and nervous disorders and on any condition bearing on them.
- (2) That the minimum award should be £250.
- (3) That the award should not be limited to members of the Royal Medico-Psychological Association.
- (4) That three assessors be appointed to decide as to the value of such research, with power to consult an expert adjudicator.

These recommendations were approved by the Council and the Treasurer. The Annual Meeting, Oxford, 1930, expressed approval of the expenditure of £250 every third year, and requested the Council to submit the proposals in a final form for the consideration of the Association at a general meeting. The Council referred the matter to the Committee for completion. A Sub-Committee was appointed at the November, 1930, meeting to formulate this final scheme.

At the February, 1931, meeting, the recommendations of this Sub-Committee were approved by the Committee and Council:

- (1) That a Special Prize and Gold Medal be awarded triennially for submitted Research on Mental Disorders or any condition bearing on them.
- (2) That the total award be limited to £250.
- (3) That the award be not limited to members of the Royal Medico-Psychological Association, but open to all British subjects.
- (4) That the Assessors for adjudicating on the research submitted be appointed by the Council on the recommendation of the Research and Clinical Committee.

Reappointment of Sub-Committees.

At the November, 1930, meeting the following Sub-Committees were reappointed:

Pathology, Bacteriology and Bio-Chemistry.
 Psychopathology and Psychotherapy.
 Clinical Psychiatry.
 Infectious Diseases.
 Mental Deficiency.
 Study Tours and Post-Graduate Education.

The Hon. Secretaries of the Epidemic Encephalitis, General Paralysis and Actinotherapy Sub-Committees were appointed Officers of the Committee, to be known as Hon. Secretaries to the Committee for these subjects respectively. The Sub-Committees on these subjects were not to be reappointed unless developments made it advisable.

Irish Divisional Research and Clinical Sub-Committee.

Owing to the peculiar difficulties existing in Ireland it was not found possible to hold meetings of this Sub-Committee apart from the ordinary Divisional Meetings. The remote situation of most of the mental hospitals makes travelling to any one centre difficult and costly, and the general understaffing of the public mental hospitals makes it exceedingly difficult to collect a quorum.

Members of the Sub-Committee undertook to form study groups at convenient centres—Downpatrick for the northern area, Dublin for the midland area, and Limerick for the southern area. The Dublin group has carried out special investigations in the treatment of epilepsy and dementia præcox, and the results of their work were embodied in communications read at the Divisional Clinical Meetings and reported in the Journal.

No reports of the work done by the Northern and Southern groups have yet been issued.

Pathology, Bacteriology and Bio-Chemistry Sub-Committee.

Two meetings of the Sub-Committee have been held during the course of the year, one on February 24, 1931, and the other on June 26, 1931. Owing to various unforeseen circumstances and to the difficult nature of the work, the publication of the Report on the Standardization of the Wassermann Test had to be delayed until May, when it was put before the Research and Clinical Committee for consideration. The Report was accepted with one amendment, *vis.*, that the full text of the technique relating to the Meinicke Klarungs-reaction should be added, since it was agreed that as a flocculation test it fulfilled all the necessary requirements, and further, that it had been proved to be of high sensitivity, comparing favourably with the new standard Wassermann technique and being of particular value in fading reactions occurring in treated cases. Authority was given to the Hon.

Secretary to write to Dr. Hinton asking his permission to publish his flocculation test; this request has been kindly granted. It was urged that every mental hospital laboratory should adopt the standard method, not only because it was especially adapted to meet the needs of psychiatry, but because the test was now in line and strictly comparable with the recognized method of the Ministry of Health Laboratory. Further, its general adoption would undoubtedly lead to a uniformity of results and enable the work of one laboratory to be compared with that of another, which, from the point of view of research, would be of inestimable value. Those who are willing to undertake a revision of their present Wassermann technique on the lines of the Report will thus not only benefit themselves, but will be making a contribution of scientific value to psychiatry.

The Report will be published in the *Journal of Mental Science* for July. The Committee desires to record its great appreciation and gratification at the conclusion of this valuable piece of research, and draw the Association's special attention to the devoted labours of Drs. W. M. Ford-Robertson and S. A. Mann in this matter.

On February 24, 1931, the members of the Sub-Committee considered the question of a suggested research on post-encephalitic states, including the psychoses and particularly schizophrenia in relation to virus disease, the subject being introduced by Dr. Goodall and Dr. Scholberg. The scheme as put forward was not considered favourably, various amendments being made. The matter was therefore referred back by the Research and Clinical Committee to the Sub-Committee in the following terms: "That all possible steps be taken for the investigation of schizophrenia in its pathological, bacteriological and bio-chemical aspects, including its relationship, if any, to encephalitis lethargica, particularly in early cases." It also instructed the Sub-Committee to consider and put forward a scheme for such investigation, having in view the powers given to local authorities under the Mental Treatment Act, 1930, to provide financial assistance for such research. The activities of the Sub-Committee since then have been mainly directed towards this end, and tentative schemes of research have been formulated for further consideration. At the meeting of the Sub-Committee held at the British Medical Association House on June 26, 1931, the whole question was discussed, but details are not available for this report. The difficult problem of undertaking schemes of research in all branches of laboratory work is being investigated, and plans are being made to bring the whole question up for discussion at a later date. The first task of the Sub-Committee will be to ascertain whether or not such schemes have a practical bearing on the present needs of scientific work in psychiatric hospitals, and if so, how the numerous difficulties can best be overcome. Dr. F. E. Reynolds, Pathologist to the Scottish Asylums, has in course of preparation an epitome of literature on the morbid histology of the brain and nervous system, which will be received in due course and be available for co-opted members.

Dr. W. Rees Thomas has been elected a member of the Sub-Committee.

Clinical Psychiatry Sub-Committee.

During the last year four meetings of the Sub-Committee have been held.

Time has been devoted almost entirely to the revision of the classification of mental disorders, and a report on this matter is now in draft form. It is hoped to present the final Report to the Council and Association at an early date.

The present position with regard to the psychological research advocated by Prof. Spearman in his Maudsley Lecture can be gathered from the following report by Dr. J. R. Lord:

Psychological Research.

Mental phenomena first became the subject of exact measurement from the time of the publication, in 1883, of Sir Francis Galton's *An Enquiry into Human Faculty and its Development*.

The most important results so far have been:

- (1) The establishment of mental tests of ability. Mental facts rather than physical facts (physiognomy, phrenology, anatomical stigmata, and so forth) came to be relied upon in the diagnosis of mental characteristics.

- (2) The formulation, in due course, of ultimate laws having a scientific foundation, embracing cognition, affection and conation. The decisive factor here was the fine work of Prof. Spearman, of University College, and his assistants; his mathematical method of measuring correlations of psychological data, his discovery of the general factor of ability, "g," and other fundamental work.

For many years I and others have urged the necessity of applying as far as practicable such definitely ascertained mental facts, and the methods of ascertaining them, to mental patients, and of substituting them, where necessary, in psychopathology, for such purely hypothetical "faculties" as cannot by any scientific method be shown to exist.

This would result in greater efficiency in the diagnosis, prognosis and classification of mental disorders.

It is thought that the remarkable developments in psychopathology due to the advent of biological and dynamic conceptions are not bearing the fruit they should do, because they are correlated in our mental examinations and estimations with faculties which have no reality. For instance, though the faculty of "attention" as a special process of mind has no existence, yet abnormal functioning of it is still looked for in mental cases, and when found is said to be symptomatic of mental disease. Similar criticisms may apply to all formal faculties of ancient psychology and also to many others of more recent creation. In fact, to quote Prof. Spearman, "the doctrine that the faculties constitute unitary functions appears everywhere to have broken down," and "would seem on closer scrutiny to be wholly devoid of foundation."

It is recognized that the application to psychopathic states of a system of abilities which can be accurately determined, measured and classified, cannot be achieved without some years of special research by skilled teams of psychologists and psychiatrists assisted by physiologists and pathologists.

Preparing the ground for this has been the object of a team of psychological and psychiatric workers.

Some early work of this kind was done by Prof. Spearman and Dr. Bernard Hart at Long Grove (*vide Journal of Abnormal Psychology*, October–November, 1914), and yielded some important and encouraging results.

The publication in 1927 of Prof. Spearman's *Abilities of Man* revived interest in the application of these new methods to mental patients, which was further stimulated by Prof. Spearman's Maudsley Lecture in 1929.

In November, 1929, the Research and Clinical Committee, through its Clinical Sub-Committee, decided to assist in creating a number of Research Centres, where the preparatory work mentioned could be done. Work was commenced at the Maudsley Hospital, and on November 26, 1929, the L.C.C. Mental Hospitals Committee gave permission for Dr. William Stephenson, of the Psychological Department, University College, to commence work at Horton Hospital, in co-operation there with the medical staff.

The following scheme of research was agreed upon:

- (1) To commence with cases exhibiting marked changes, either between normality and abnormality, or between one sort of abnormality and another, such as cases of manic-depressive psychosis, and of general paralysis before and after treatment.
- (2) To investigate perseveration ("p") or oscillation ("o") among the more stable cases. Special interest would attach to cases of paranoia and to "shut-in-ness" (brooding, loss of interest, introversion, etc.).
- (3) To investigate "r," retentivity, in cases of loss of memory for new impressions, e.g., "Korsakov type."
- (4) To investigate cases which display extreme results from physiological tests.
- (5) Ratings by the psychiatric staff. In general the tests will measure mental powers, whereas the ratings are primarily derived from the degree of exercise of these powers, which largely depends upon emotional experience. Cases which show a striking disparity between tests and ratings are of great interest. As to the nature of the characters rated, what is at present recorded about patients can well be adopted as a beginning. These will need supplementing as necessary.
- (6) Physiological tests up to date, such as those for blood-pressure, blood sugar, basic metabolic rate, endocrine disturbances, etc.

Preliminary work was commenced at Horton in February, 1930, by Dr. Stephenson, assisted by Dr. D. M. Wilkins, of the Hospital medical staff.

On July 7, 1930, Prof. Spearman reported on the progress made. He said, "So far, the results have fulfilled our most sanguine expectations. Our work falls into three phases. The first is preparatory and rough; it has been done by three investigators in different medical institutions. This is now over. The next phase is still investigative, but needs to be both accurate and comprehensive. All three investigators have to work hand in hand, and therefore in one institution and for this purpose we are all agreed that no place can compare with Horton. The third phase will be that of application, by which time we hope to have supplied psychological tests ready to do valuable service in the diagnosis and prognosis in mental cases." (Abstract.)

An application was made in July, 1930, that more research workers might visit Horton Hospital.

This permission having been obtained, a larger research team was created by the withdrawal of workers from other hospitals and their concentration at Horton, associated with further members of the Horton medical staff.

RESEARCH CLINIC.—This team commenced soon afterwards the second phase of the research under the direction of Prof. Spearman for the psychological view-points, and under Dr. J. R. Lord's direction for the psychiatric view-points, and is composed as follows:

William Stephenson, D.Sc., Miss G. Studman, and Miss C. A. Simmons, M.A., Assistants, Psychological Research Department, University College.
Dr. J. Norman Glaister, Deputy Medical Superintendent, Northumberland House.

Miss D. M. Wilkins, B.Sc., M.B., Miss M. E. Tyars, B.Sc., M.B., Miss M. Whelan, M.B., Assistant Medical Officers, Horton.

Dr. Stephenson has devoted the whole of his time to the work of the Clinic.

REPORT ON WORK COMPLETED AND IN PROGRESS.—Methods have been evolved, suited to abnormal subjects, for measurements of the Spearman factors "g," "p," "o," "w," etc. Since the work was commenced at Horton, tests have been constructed for these Spearman factors, and will be available for use by any psychiatrist in the recording of objective conditions of mental patients.

The batteries of tests, which in part will be standardized as the number of patients tested is increased, have been employed in a survey covering in a broad way the whole field of psychiatry.

Physiological and psychiatric data are being recorded by the psychiatrists in the team, while the psychologists are recording measurements of "g," "p," "o," "w," and the like. The critical examination of about 100 typical patients is in progress, and certain significant findings, notably in schizophrenia, where "p" tests are showing anomalies, are already indicated.

To further the understanding in psychiatry of these experimental methods, several papers are being prepared which illustrate the psychological tests and their functioning. One is ready, and will be published in the *Journal of Mental Science* at an early date.

Prof. Spearman suggests establishing an instructional course at University College, which medical officers from mental hospitals can attend in order to learn the technique. The course would have to last at least a month, if not six weeks. In this connection arrangements may be possible for practical experience in testing to be gained at a neighbouring research centre.

Mental Deficiency Sub-Committee.

One meeting was held during the year, when Dr. Geoffrey Cobb, in Dr. Litteljohn's absence, reported further results of the Wassermann blood tests which have been conducted on patients at The Manor, Epsom, through the kindness of Dr. Lindsay. All the patients have now been examined.

The following are the results:

- (1) *The incidence of the reaction in the cases of amentia examined.*—A positive reaction was found in 129 out of 1,275 cases examined (10.11%).
- (2) *The relation of the reaction to sex.*—A positive reaction was found in 43 out of 655 males, (6.5%), and in 86 out of 620 females examined (13.8%).

- (3) *The relation of reaction to age.*—207 cases were under 16 years of age, and of these 28 (13·5%) were positive; 331 cases were over 16, and of these 36 (10·8%) were positive; 556 cases were over 20, and of these 68 (12%) were positive; of the remainder, namely 94 over 30 years of age, only 9 (9·5%) were positive.
- (4) *The relation of the reaction to the degree of amentia.*—There is a difficulty in giving this, owing to the different standards adopted by successive medical officers. There were, however, practically no idiots or low-grade cases, so to that extent the picture is one-sided.
- (5) *The relation of the reaction to the clinical varieties of amentia.*—
1. Of the 24 mongols examined all were negative.
 2. All 5 cases of hydrocephalus were negative.
 3. All 3 cretins were negative.
 4. Of 65 epileptics 13 were positive (20%).
 5. Of 43 cases of amentia with paralysis 4 were positive (9·3%)

The Sub-Committee have experienced great difficulty in obtaining bloods from normal children for purposes of control. So far Dr. Litteljohn has only succeeded in getting 43 normal boys, all but four over 16 years of age. Only one of these was positive, *i.e.*, 2·3%. Further efforts are being made to obtain controls.

A short preliminary report has been presented by Dr. L. Penrose on Wassermann work amongst the patients at the Royal Institution, Colchester. The results are as follows:

- (1) *The incidence of the reaction in the cases of amentia examined.*—A positive reaction was found in 72 out of 320 cases examined (22·5%).
- (2) *The relation of the reaction to sex.*—119 cases of those examined were males, and of these 2·5 gave a positive reaction (21%); 201 were females, and of these 47 gave a positive reaction (23·4%).

- (3) *The relation of the reaction to the age and grade of the patients examined.*—

	Age below 16.	Age above 16.	Total.
Idiots	32·2%	18·2%	27%
Imbeciles	32·2%	16·19%	21·8%
Feeble-minded	26·4%	16·5%	20·3%

- (4) *The relation of the presence of the reaction to sex and age.*—

	Age under 16.	Age above 16.
Males	24·7%	13·1%
Females	37·5%	17·9%

A point to notice is the much higher percentage of positive reactions when the cases tested are below the age of 16.

The investigation into "Place in Family" of defectives has resulted in the return of 1,455 questionnaire papers. Elaborate tables have been compiled by Dr. Penrose from 500 cases personally investigated and 778 similarly analysed from case-papers. One result of the questionnaire was that it showed the advantages of personal investigation over case-paper methods. A full report of the investigation will be published in the July number of the Journal.

The Committee highly commended Dr. Penrose for this valuable research.

Dr. Douglas Turner, owing to pressure of work, has found it impossible to continue in the office of Honorary Secretary to the Sub-Committee. He has done an extraordinary amount of very valuable work, and his resignation was accepted with regret. Dr. E. O. Lewis, whose work on mental deficiency is well known, was appointed Honorary Secretary.

Psychotherapy and Psychopathology Sub-Committee.

No meeting of the Sub-Committee has been held during the past twelve months. The routine work of replying to queries and giving assistance to workers has continued. The scope of collection of references has been slightly enlarged. The references for last year were published with the April number of the Journal.

The local groups have met repeatedly, and these meetings have been much

appreciated—especially has this been the case in connection with the London group. The venture to organize *research* groups along definite lines has not met with success.

A new departure has been the fortnightly issue of a special "Correspondence Bulletin," an informal organ under the leadership of Dr. I. D. Suttie, for the exchange of views and theories that may be too fragmentary for publication in the journals, and yet can profitably be discussed among a few keen workers.

Study Tours Sub-Committee.

Meetings were held on November 19, 1930, and February 24, 1931.

Schemes have been prepared for private visits by members of the Association to mental hospitals at home and abroad.

Notice was circulated in January of the Summer course in Neurology and Psychiatry in Vienna, and correspondence conducted with the organizers and with members thereon.

Arrangements have been in progress for some months to promote a study-tour of Continental mental hospitals in the autumn. The practicability of a visit to Austrian institutions this year was first explored, and a programme is now awaited of a less costly visit to the mental hospitals of North-West Germany, which Dr. Roemer is very kindly preparing.

Infectious Diseases Sub-Committee.

The Infectious Diseases Sub-Committee has met twice during the last twelve months.

At the November, 1930, meeting the subject under consideration was the importance to mental hospitals in England of dysentery due to the Sonne bacillus. The Sub-Committee had sent a questionnaire on the subject to various mental hospitals, and a considerable amount of information had been obtained. This information was carefully examined, and the Sub-Committee drew up a Report on Sonne dysentery, which was published in the January number of the *Journal of Mental Science*.

Another of the Sub-Committee's reports published during the last twelve months was Dr. Petrie's report on "Carriers in Mental Hospital," which appeared in the October number of the *Journal of Mental Science*.

Since the Sub-Committee published its first Report on Cancer in Mental Hospitals Dr. Rudolf has been engaged in further investigation into this important subject.

At the May, 1931, meeting of the Sub-Committee, a preliminary paper by him on "The Relative Mortality of Cancer in Mental Hospitals and the General Population" was read. Dr. Rudolf hopes to be able to present his completed report at the next meeting of the Sub-Committee. It may be mentioned that the Sub-Committee's first report on this subject received considerable attention in the medical press.

Now that the Pathology, Bacteriology and Bio-Chemistry Sub-Committee has issued its Report on the "Standardization of the Wassermann Test for the Use of Mental Hospital Laboratories," the Infectious Diseases Sub-Committee hopes shortly to consider the question of the complement-fixation test as an aid in the detection of tuberculosis in mental hospitals.

Epidemic Encephalitis Research.

At the Maudsley Centre, under Dr. Golla, pathological examination of *post-mortem* material has been done, and Dr. Cooper, the officer in charge of the encephalitis cases, has been doing a large amount of work on the problem of recording alterations in muscle tone. He has also been trying the effect of some alkaloids allied to banisterine, in conjunction with Prof. Gunn, of Oxford.

At the Oxford Centre, under Dr. Good, two cases were examined which showed definite traces of lesions in the basal ganglia, and one of the two also showed cortical lesions in the frontal region. The lesions presented themselves as "gliascars," and some vascular proliferation gave the impression of a still active lingering process. The clinical history of the cases seemed to tally with the anatomical findings. The cerebro-spinal fluid of patients whose previous history

led to the tentative assumption of an encephalitic infection showed some permanent changes which appeared to confirm the clinical contention. An endeavour is being made at Oxford to correlate the anatomical findings with the symptomatology of the patients.

At the Birmingham Centre for Research, under Dr. Pickworth, in three cases the nasal sinuses have been investigated bacteriologically, and in one case the cerebro-spinal fluid. In the latter Pfeiffer's bacillus was found, and this was also present in two of the nasal sinus examinations—*Staphylococcus aureus*, streptococci and *Micrococcus catarrhalis* being also found in one case.

Three *post-mortem* examinations have been carried out apart from Rubery Hill—at Winson Green, Leicester, and Stafford. In the case at Winson Green pus was present in the sphenoidal sinus (confirmed by microscopic examination of the film); a swab taken from the sinus showed streptococci (hæmolytic), staphylococci and *Micrococcus catarrhalis*. Histological examination of the brain showed a large number of capillary hæmorrhages, especially in the basal ganglia. In the second, at Narborough, the sphenoidal sinuses contained a quantity of thin yellowish pus, also present in the left posterior ethmoidal cells. Some thin muco-pus was present in the antrum, and the left frontal sinus showed a thickened wet mucosa suggestive of old inflammatory change. The frontal sinus was sterile, the sphenoidal showed *B. xerosis* and *Staph. albus*, the ethmoidal swab showed streptococci (non-hæmoglobinitic) and *Staph. aureus*. The brain parenchyma was sterile, also anaerobically. In the third case at Stafford all the nasal sinuses were clear. The pituitary showed some abnormality, and there was a thin brownish fluid in the left middle ear (later shown to be sterile); there were adhesions of the arachnoid to the dura over this ear, which suggested old chronic infection. Swabs taken from the nasal sinuses were quite sterile, both aerobically and anaerobically. The brain parenchyma was sterile, also anaerobically.

Ten specimens of brain from various cases investigated for "virus" by intracerebral inoculation gave quite negative results.

Nineteen clinical cases and six less typical cases are under observation and examination in Birmingham at present.

Clinical Meetings.

The Scottish and Irish Divisions hold their Clinical Meetings in connection with their usual Divisional Meetings. An account of them is always published in the *Journal of Mental Science*.

No other Divisional Clinical meetings have been reported to the Committee.

The Committee again desire to point out that it was never intended that these meetings should be more than informal gatherings of small groups of assistant medical officers, together with such local practitioners as might attend at the invitation of the medical superintendent, who was to be host and (or his deputy) preside.

Attendance at such meetings is not limited to members of the Association. They are initiated by the divisional administration, and their proceedings reported in the *Journal of Mental Science*.

Invitations are sent to the medical staffs of convenient groups of mental hospitals through the medical superintendents, who are asked to give leave of absence to as many as possible of their medical officers for this purpose.

The educative and social value of these meetings has never been questioned, and the Committee once more draw the attention of medical superintendents in England and Wales to this fact, and ask their good offices in favour of a movement which is of great promise to psychiatry.

Acknowledgments.

The Committee wishes to thank Honorary and Corresponding Members who have continued to send the current psychiatric literature of their respective countries.

The Director of the National Committee for Mental Hygiene, U.S.A., has continued to supply the Committee monthly with current literature collected from all over America. The Committee much appreciates this co-operation.

In conclusion the Committee desires to express its thanks to all officers, special

advisers, and especially the Hon. Secretaries of the Sub-Committees, for their assistance in its labours, and for the generous support it has received from members generally.

J. R. LORD, *Chairman.*

B. H. SHAW, *Hon. Secretary.*

Dr. B. H. SHAW read the Report and moved its adoption.

[Agreed.

Dr. COLLINS drew attention to the fact that clinical meetings were not being held in England. A discussion followed, in which the PRESIDENT, Drs. McRAE, RUSSELL, SHAW BOLTON, HELEN BOYLE, TAYLOR, BOWER and GRANT took part.

5. MOTIONS INVOLVING EXPENDITURE OF FUNDS.

Dr. SHAW submitted a report on the Regulations for the Award of a Special Prize and Medal for Research in Mental Diseases. The total amount of the award was limited to £250. The prize was not to be confined to members of the Association, but was to be open to all British subjects; the assessors for adjudicating on the research submitted were to be appointed by the Council on the advice of the Clinical Committee. The only other point was what were they to call this prize? He would suggest it be simply the Triennial Prize of the Royal Medico-Psychological Association for original research.

Dr. McRAE seconded.

Dr. GAVIN said that in his opinion the prize should be confined to members.

The PRESIDENT: That matter has already been decided by the Council and I am afraid it would be out of order to re-open the question.

[Agreed.

A motion put from the Chair seeking authority to increase liabilities and expenditure in respect of accommodation at the B.M.A. House was lost after a discussion in which members expressed the desire that alternative accommodation should be provided. It was agreed to refer this matter back to the Committee already dealing with this subject, to add the names of Dr. Good, Dr. Shaw Bolton and Dr. Collins to this Committee, and to appoint Dr. G. W. Smith Convener of the Committee.

With reference to a motion put from the Chair for authority to pay a permanent Assistant Secretary, the President said that the Council had appointed a small committee to go into various matters connected with the work of the Association. It was obvious that the work had increased enormously, and the Council suggested that there should be a sub-committee formed to go into this matter and report to the general meeting. This sub-committee, it was agreed, should consist of the President, Ex-President, President-Elect, General Secretary, Treasurer and Registrar. It was felt that some assistance was necessary to the General Secretary, and they now sought authority from the meeting to allow them the sum of £100 annually for this purpose. He would put that motion.

Dr. LEEPER seconded.

[Agreed.

6. DATES OF QUARTERLY MEETINGS OF THE ASSOCIATION AND OF THE COUNCIL.

A motion fixing the dates for the Quarterly General and Council Meetings as follows—Tuesday, November 24, 1931; Wednesday, February 24, 1932; Thursday, May 19, 1932—was then put.

Dr. CAMPBELL said that it was an advantage to fix the date for a Tuesday because the members coming from Scotland could take advantage of the week-end tickets.

The CHAIRMAN said that they were bound to pass these dates. The President, in consultation with the Secretary, could alter them, and it could be left to them.

7. ELECTION OF HONORARY, CORRESPONDING AND ORDINARY MEMBERS.

Honorary Members.

JAMES CHAMBERS, M.A., M.D., late Treasurer of the Association; Medical Superintendent, The Priory, Roehampton. (Ord. Mem. since 1888; President, 1913-14.)

MICHAEL JAMES NOLAN, L.R.C.P.I., L.R.C.S.I., Consulting Visitor-in-Lunacy to the Lord Chief Justice of Northern Ireland and to the Chief Justice, Irish Free State; Medical Superintendent, Down County Mental Hospital, Downpatrick. (Ord. Mem. since 1888; President, 1924-25.)

Proposed by Drs. T. Saxty Good, R. R. Leeper, Prof. G. M. Robertson, Drs. D. F. Rambaut, J. R. Lord and R. Worth.

Corresponding Members.

Dr. CLARENCE MEREDITH HINCKS, General Director of the National Committee for Mental Hygiene, 450, Seventh Avenue, New York, U.S.A.

Dr. ARTHUR H. RUGGLES, Medical Superintendent, Butler Hospital, Providence, R.I., U.S.A., Lecturer in Psychiatry, Yale University, New Haven; Chairman, Executive Committee of the National Committee for Mental Hygiene.

Dr. GENIL-FERRIN, Chief Physician, Seine Department Mental Hospital; General Secretary, French League for Mental Hygiene; 99, Avenue de la Bourdonnas, Paris.

Prof. A. J. JOUCHTENKO, Director, Ukrainian Government Institute of Clinical Psychiatry and Social Mental Hygiene, Kharkov, Ukraine, U.S.S.R. Konuchennaia 34.

Dr. SAMUEL RAMIREZ MORENO, Director, Manicomio General, Mexico City.

Dr. med. HANS ROEMER, Director, Institute for Mental Diseases, Illenau, Germany; Secretary, German Association for Mental Hygiene; Secretary, Health Welfare Committee, Baden.

Dr. GUSTAVO RIEDEL, Director, Hospital-Psychopathic Colony of Engenbo de Dentro, Rio de Janeiro, Brazil; Hon. President, Brazilian League for Mental Hygiene; Vice-President, Brazilian Society of Psychiatry.

Proposed by Drs. T. Saxty Good, R. R. Leeper, J. R. Lord and R. Worth.

Ordinary Members.

HUNTER, CONSTANCE PRIMROSE HELENA, L.R.C.P.&S.Edin., D.P.H.Edin., Secretary, Scottish Association for Mental Welfare, 26, Palmerston Place, Edinburgh; St. Catherine's, Linlithgow.

Proposed by Drs. Kate Fraser, Mary R. Knight and Wm. M. Buchanan.

LORD, Mrs. RUBY THORNTON (née CARR), M.B., Ch.B.Edin., Horton House, Epsom, Surrey.

Proposed by Drs. J. R. Lord, W. D. Nicol and G. F. Peters.

MAGRATH, DONALD, M.B., Ch.B.Birm., M.R.C.S., L.R.C.P.Lond., D.P.H. Lond., Assistant Medical Officer, Caterham Mental Hospital, Caterham, Surrey.

Proposed by Drs. Thomas Lindsay, K. Paddle and R. Worth.

EARL, CHARLES JAMES CECIL, M.R.C.P.I., D.P.M., Assistant Medical Officer, Caterham Mental Hospital, Caterham, Surrey.

Proposed by Drs. Thomas Lindsay, K. Paddle and R. Worth.

SMITH, ROBERT SYDNEY STEELE, L.M.S.S.A., Assistant Medical Officer, Caterham Mental Hospital, Caterham, Surrey.

Proposed by Drs. Thomas Lindsay, K. Paddle and R. Worth.

MILMO, DERMOD HUBERT FRANCIS, M.B., B.Ch.Dubl., D.P.H., Assistant Medical Officer, Caterham Mental Hospital, Caterham, Surrey.

Proposed by Drs. Thomas Lindsay, K. Paddle and R. Worth.

The PRESIDENT said he could not hope to have the fluency of Dr. Lord, who was to have spoken to the election of the Honorary Members. However, he thought that the Association, in offering to Drs. Chambers and Nolan the honorary membership, was only doing what it was right that it should do. Both had been Presidents of the Association, and one had also been Treasurer. He did not think any man could be more worthy to be made an honorary member than Dr. Chambers, and it was only a just reward of his services and a sign of the Association's appreciation of them. It was absolutely unnecessary to speak there about Dr. Nolan. They all knew his intense enthusiasm and the work he had done. As to his personal attributes, no words could give expression to the feeling of the members.

Drs. Collins and Masfield were appointed scrutineers. The candidates were declared unanimously elected.

This concluded the morning session.

AFTERNOON SESSION.

Dr. T. SAXTY GOOD in the Chair.

9. VOTE OF THANKS TO THE OFFICERS AND COUNCIL.

The PRESIDENT said he now came to his swan song, which was a vote of thanks to the Officers and Council of the Association. He would very soon be giving up his peacock's plumage and become the jackdaw he really was, but meanwhile it was his pleasant privilege to thank the Officers of the Association—their Secretary, Treasurer, Registrar, Editors and other officers for their work. The amount of work, anxiety and trouble they had to face was very large indeed, and the President could not exist without their whole-hearted assistance. As regards the Council, he would personally like to thank them for the kind way they had treated him during his year of office. The Association was now in a position to make itself felt, and this was due to the people who did the work. He proposed a vote of thanks to Officers and Council for the way in which they had steered the ship during the last year, which had not been a particularly easy one, and he thought that the fewer words he used in doing so the better; the members would see the truth of what he really felt. He would now put the motion. [Agreed.]

10. INDUCTION OF RICHARD ROBERT LEEPER, F.R.C.S.I., TO THE OFFICE OF PRESIDENT.

Dr. Good said his next duty was the induction of Dr. Richard Robert Leeper to the office of President.

Addressing Dr. Leeper, he said: "I now invest you with the badge of President of this great Association and I wish you on behalf of myself and the Association a very happy year of office and the best of luck."

Dr. R. R. LEEPER in the Chair.

11. INVESTITURE OF THE EX-PRESIDENT WITH THE PAST-PRESIDENTIAL BADGE.

The new PRESIDENT (Dr. Leeper), having taken the Chair, said the kind words Dr. Saxty Good had spoken were badly wanted for a man who had, as President, to follow such a man as Dr. Saxty Good, and he appreciated them. To fill the position of President was a thing he had never dreamed of, but he hoped he would be able to carry through the work. There was a great deal of work, and from the ordinary member to the President there were no idlers in the Association. "I hope," said the President, "that when my term of office ends, Longfellow's line may apply to me—'And departing leave behind them footprints in the sands of time.' You, Dr. Good, have unquestionably left footprints in the sands of time, and it devolves on me to struggle to follow in those footsteps. I now have the great privilege of affixing to your breast the Past-Presidential Badge."

12. PRESENTATIONS.

Prof. Burrige, representing India, and Dr. K. O. Newman, Austria, were then introduced to the President by Dr. Thompson.

Referring to Prof. Burrige's presence, the PRESIDENT said that Prof. Burrige had come all the way from Lucknow to be present at their meeting. Everyone knew his work, and he (the President) considered it a high honour that he had half crossed the world to be amongst them.

Dr. NEWMAN then conveyed the greetings of his country to the Association, and said the members would always be welcome to Vienna.

14. THE PRESIDENTIAL ADDRESS.

The President then read the Presidential Address, entitled "**Some Reflections on the Progress of Psychiatry**" (*vide* p. 683).

15. VOTE OF THANKS TO THE PRESIDENT.

Col. W. R. DAWSON, in proposing a vote of thanks to the President for his address, said that they had listened in the past to a great number of Presidential addresses on different subjects, some of which dealt with special points in psychiatry, while others took wider ground. The President's address was of the latter type, and if discussion of an address of this kind were not forbidden, he thought they would have heard many opposing views, because there were numerous points on which many members would differ in an acute manner. One thing that characterized the address was the very commonsense way in which Dr. Leeper looked at the subject. They might not agree with all the points and each might have different views on them, but they would be sure his opinions had been formed after due consideration. In a general way one might say that a great many of the steps which were now being urged on their profession in the way of treatment were urged by men who took an extreme view, but he would submit that they were not to be blamed for thus taking an extreme view, if only in that way could they arrive at the end they sought. It was impossible for a man working on a particular line of treatment to be quite fair to men working on other lines, and not to go beyond what the facts warranted. It was for them, who had to apply these methods, to weigh one against the other, and to arrive at the happy mean.

It gave him particular pleasure to propose this vote of thanks because he had had the honour of being the last Dublin President of the Association. He felt he could wish Dr. Leeper no better than that he should meet with as loyal and kindly treatment, and that he should enjoy his year of office as much as it had been his (Col. Dawson's) happiness to do.

Dr. SHAW BOLTON seconded the vote, which was passed with acclamation.

The PRESIDENT, in reply, said he wished to return the heartiest thanks to Col. Dawson for the kind words he had spoken. Time went very fast, and it did not seem so long ago since he took over the Honorary Secretaryship in the year his friend Col. Dawson was in the Presidential Chair—the year 1911. He could only thank the members and Col. Dawson in the sincere hope that he would be worthy—and he would try to be worthy—of their good wishes during his term of responsibility and office in that great Association.

RECEPTION AT ST. PATRICK'S HOSPITAL.

From 4 to 6 p.m. Dr. R. R. Leeper and the Governors of St. Patrick's Hospital gave a reception in honour of the visitors. The guests were received by Mrs. R. R. Leeper and Mrs. Hugh Kennedy.

An interesting feature was the presentation to the Hospital Governors by Miss Swift McNeill of some relics of Dean Swift, with whose name the institution is associated. These were a miniature containing a portrait of Swift, which was worn by Stella, and a replica of a silver coffee-pot which was presented about 1730 by the poet Gay to Swift to commemorate the success of the "Beggars' Opera," the original inspiration of which was provided by the Dean. Gay told Swift that he was about to write a pastoral opera, and the Dean replied, "Why not write a Newgate pastoral?" The result was the immortal "Beggars' Opera."

At the presentation Dr. LEEPER explained the conditions attached to the gift.

Mr. MACONCHY, on behalf of the Governors, thanked Miss Swift McNeill, who he said was the last living relative of Dean Swift. Her brother, the late Mr. Swift McNeill, they knew very well, and during the short time he had been a member of the Board he had endeared himself to his colleagues.

Miss SWIFT MCNEILL briefly replied.

During the afternoon the guests took the opportunity of inspecting the large collection of Swift relics, of which the hospital is justly proud.

THE ANNUAL DINNER.

The Annual Dinner was held in the Royal College of Surgeons, the President (Dr. Leeper) presiding.

Amongst the guests were their Excellencies the Governor-General of the Free State and Mrs. McNeill, the Chief Justice and Mrs. Hugh Kennedy, General Eoin O'Duffy and the Lord Mayor of Dublin (Senator Alfred Byrne).

The toast of "The King" having been honoured—

Dr. T. SASTY GOOD, in proposing the toast of "THE GOVERNOR-GENERAL OF THE IRISH FREE STATE AND PROSPERITY TO IRELAND," said that he had so much trouble sometimes in proposing toasts that on this occasion he had been tempted to journey to the south of Ireland and kiss the Blarney Stone, by which means, he had heard, one was able to acquire the gift of eloquence. However, he had finally decided not to do so, and he felt that even if he did not speak well, members would at any rate believe that what he said he really meant. Ireland had not only been a great country, she had been the home of poetry, and her bards had spread everywhere. The Irishman had always been a poet, even during his restless roamings in every country on the face of the earth. If they went back into the past and thought of their great hero Cashulain, and read some of the myths about him, they would remember the chivalry with which he fought, and his sympathy with the foes whom he conquered. He was a poet and a musician—although the instrument he used was one with an unpronounceable name. It was his people to whom they were now wishing prosperity. They had seen how Ireland was looking after the mental welfare of its people; here was one way in which progress was being made. It was mental science that made the world go round. When he had said how much they appreciated the fact that this great race had invited them to their capital, as well as the presence of His Excellency the Governor-General, he thought that all would agree that he was saying what not only he, but all members, really meant.

The GOVERNOR-GENERAL, responding, said: "I thank you for your kindness to myself and for your Association's goodwill towards my country. That goodwill was shown before the toast of prosperity to Ireland was proposed. Even to the lay mind that was made obvious when our visitors decided to come over here and discuss with their Irish colleagues matters of wider importance than anything that is of purely local interest. We are gratified that Dr. Leeper has had the honour of being elected your President. I should like to add to the welcome given to our visitors by their Irish colleagues a national welcome. I hope that the meeting of your Association in Dublin will further its own progress, because, amongst other desirable consequences, that will be good for Ireland. I should like to think that all the members of the Association will find time to enjoy themselves, and that they will satisfy themselves that we regard their branch of the medical profession as well worthy of public appreciation and support. At the same time I further hope that you will find everywhere a purposeful anxiety to have *all* our affairs so ordered that we will have an unending succession of bad harvests of mental disease. But whatever you find, I hope that our visitors will enjoy their visit, and that you will all feel that both your discussions and your relaxations have been good for you and good for us."

Dr. McRAE, speaking to the toast "THE CITY OF DUBLIN," said that the President had made a mistake when he had said that he called on him to propose the toast. As a matter of fact he wrote him a letter saying, "I have put you down for the toast of 'The City of Dublin'; wire me at once 'Yes.'" Getting a command like that from the President of the Association, he could do nothing but wire "Yes." The responsibility rested entirely on the President. What did he (Dr. McRae) know about the City of Dublin? He recollected that he had read a good deal about Dublin, but what one read was apt to fade, and to be frank, his memory was quite gone. However he realized that there was no spot on earth where there was not somebody who used to belong to Dublin at some time or other. That was the one thing he really knew about Dublin. A charming lady was reported to have resided in Dublin and she was reported to sell shell fish. Throughout the civilized world, when the boys were lonely and wanted a bit of song they sang about that sweet girl. He had heard that her ghost was still to be seen in the "streets broad and narrow," but though he had had an opportunity of looking for it he had failed to find the ghost. As a medical student one had to get up a lot of information, and in his young days they used not to bother about being able

to tell what exactly were the signs and symptoms of a disease. What one had to get up was the names of the fellows who found out about these diseases. They were given the name of a man and asked, "What disease is that?" He must say that it was a matter of astonishment to him on going into the College of Physicians and the College of Surgeons in Dublin to see name after name written up there that had been the bugbear of his existence in his student days. It was a satisfaction to him to know now that these men came from Dublin, and he thought that after all they, as an Association, knew a lot about Dublin in the matter of what Dublin sent out. In 1911 they had had Col. Dawson as President of the Association, and this year they had Dr. Leeper, and he must not leave out the largest man of the lot—their Registrar. And the name and fame of Conolly Norman, and his life's work in the cause of the mentally afflicted, was well known throughout the world, and were imperishable.

He wanted them to realize what Dublin was like. He did not know anything about stout, but Dublin, he understood, possessed the largest brewery in the world. When he wished to obtain any information about a city, being a canny Scot, he did not go and buy a guide-book; he picked one up in the hotel, where he was charged nothing. He would like to quote a piece out of it with the idea of suggesting that if Dublin had a past like that described in the guide-book it must surely have a great future. He then quoted: "Dear delightful Dublin"—I always heard it was "dirty," he said—"undoubtedly the second city in the Empire one hundred years ago, is gradually getting back to her old position faster perhaps than her citizens realize." He was sure that it was the wish of them all that that should soon be realized in the future. He had lived within five hours' journey of Dublin but never had the courage to visit it. However, one visit only produced the temptation to come back again. For the benefit of the members of the Association he would say that the Lord Mayor was the proper person to tell them about Dublin, and with that idea he suggested that the Lord Mayor should tell them how he was going to make Dublin like what it was one hundred years ago. The manner in which he treated them on the previous day, when he took them round to see the sights of interest, was an exhibition of good nature, energy and kindness. He realized that the Lord Mayor of Dublin was particularly interested in children, and in his civic capacity he had made a special point of being hospitable to children. From that trait in his character he thought Dublin ought to get back to what it was like one hundred years ago in a very short time. They, as an Association, wished him every success during his term of office.

THE LORD MAYOR OF DUBLIN (Senator ALFRED BYRNE), responding, said he was privileged to be there to say to them once more, "Welcome to the City of Dublin." He hoped they would have a very pleasing time, and that the results of their conference would bring about many great benefits for those whom they looked after. Looking round that building and thinking of the toast now before them, he said that Dublin was very fortunate in having amongst its citizens many members of their great profession. In the city life of this State their profession played a prominent part, and its members had been honoured by the country in both houses of the Oireachtas. Right in front of him he saw one of the leading members of the Dail—Sir James Craig. The speaker who had just sat down said he knew very little about Dublin, but he thought Dublin had been very much in the lime-light within the past twelve months, and if this was so it was because Deputy Sir James Craig had seen that their hospitals were in difficulties, and, against great opposition, he had made up his mind that the hospitals should be taken out of their difficulties, and they had now gone a long way in that direction. Dublin was looking forward to the day to which the proposer of the toast had referred, when the City would be as prosperous and as well off as it was one hundred years ago. They had in this country at the moment a very young Government, and if the country got a chance at all, and if its progress was as rapid as it had been in the past ten years when these young men took over charge, they would have no fear for the future. To-day, as could be seen from the Stock Exchange reports, the Irish Free State National Loan stood at 108, and as a government security it was higher than any other in Europe. They might then look further and they would find from the civic bonds that Dublin City's credit was equal to that of any of the great cities of Europe; and the same applied to the Dublin Harbour Board. He merely mentioned these facts to show that there was a hope for this country, and from this display of confidence in the country, not alone by the Irish

people, but by people of other countries, he felt—and he did not say it in any boastful spirit—rather proud of his native city. He felt proud to be associated even in a small way with the young men who were in charge of the affairs of the country, and he thought they would agree that he was justified in that pride.

He would not detain them much longer, but would conclude by saying that he was very happy that they had honoured one of Dublin's most worthy citizens by making him their President. He hoped they would all come back to Dublin. On the previous day he was informed at the reception that there were a number of delegates who, living within three or four hours' journey of Dublin, had never visited Ireland before, but he was hopeful that they would all come back, because the exchange of views cemented old friendships and made new friends for both their countries. Whilst he had mentioned some good points in favour of his own city, he did not want them to go away with the idea that everything was perfect. They, in Dublin, had the same troubles as existed on the other side. They had their share of unemployment, and they also had the greatest evil of the lot—the tenement slum problem. There was no need to mention what it meant to a city like Dublin to have a slum problem. The members of the Association knew exactly what it meant to the occupiers of these houses where fifteen families lived in one house originally built for one family. It was bound to have a bad effect, and it was bound to require attention from men who specialized, as the members of the Association specialized. Once more he hoped that their conference would result in many new benefits for those for whom they cared, and once more he bid them welcome to Dublin and hoped to see them in Dublin again.

Prof. SHAW BOLTON, proposing the toast of "THE IRISH MEDICAL SCHOOLS," said he would like to say how much he appreciated their Irish impromptu speakers. They had a custom in England whereby they prepared their speeches days beforehand or had them prepared by someone else. The result was that the audience was sent to sleep or, more often, to drink. He well remembered the speech of a friend of his who was proposing a similar toast, and having made use of an out-of-date calendar referred to the names of members long dead or retired. He (Dr. Shaw Bolton) did not intend to fall into that error, but he wished he had had an opportunity of inspecting the Dublin Medical Schools and both the Universities before speaking there. From the important pamphlet written by Dr. Percy Kirkpatrick, of which he had read every word, it was really remarkable to notice how the treatment of the insane in Ireland followed on exactly similar lines to those in England. During the first half of the nineteenth century the treatment of the insane in Ireland was barbarous, and so was theirs in England. He remembered reading in one of the old books of the committee of Wakefield Asylum a minute recommending the expenditure of £12 10s. for the swinging chair. He only came across a few cases of its use, for it appeared that the threat was more efficacious than the actual treatment. In the second half of the nineteenth century they in Ireland progressed remarkably. They began to look upon lunatics as persons who needed care. During the present century a very important change had taken place. An attempt had been made to turn the asylums into hospitals, and they in England were endeavouring to obtain suitable recognition of medical superintendents of mental hospitals. In this respect in Ireland they would appear to have progressed much more rapidly than had been done in England. It was most gratifying to see the President of their Association sitting between the President of the Royal College of Surgeons and the President of the Royal College of Physicians, and he did not think he could pay a higher compliment to the medical schools of Ireland than by pointing out that they in Ireland had grasped the importance of the co-operation of the different branches of medicine better than had been the case in England.

Dr. GILLMAN MOORHEAD, President of the Royal College of Physicians, responding, said he felt highly honoured at being present, and very much privileged in having his name associated with that of his colleague in the toast that had just been proposed. He would like, in the first place, on behalf of the Fellows of the Royal College of Physicians, to give to the members of the Association their greeting, and to say how pleased the Fellows were that the Association was making use of their halls. With the Lord Mayor he hoped sincerely that they would return to Dublin. The College of Physicians had never been lacking in Fellows who paid special attention to diseases of the mind. In 1884 Sir Francis Cruise was particularly struck by the psychological work then being done in France. He journeyed there, and on his return he began to put into practice their methods of psychological

treatment. He wrote several pamphlets, and gave a powerful fillip to the study of psychology. Dr. Conolly Norman, a past-president of the Association, was one of the Fellows of the College. He would not attempt to assess the value of his work in psychology, but he felt very proud when he heard Dr. Kappers say that one of the streets of a town in Holland had been called after him. They had another Fellow in Dr. Dawson, whom he felt he could claim as a friend of his student days. He was Secretary of the Biological Society when Dr. Dawson was president, and he well remembered the address he gave on a psychological subject. Since then they had followed his career with great interest especially now that he had gone to the other side. In other ways they had always shown interest in psychiatry. In 1926 they included, amongst the subjects entitling candidates to the Fellowship, that of nervous and mental diseases. Continuing, Dr. Moorhead said that in addition to the Royal College of Physicians he represented Trinity College, and there in the last five years they had established a diploma in psychological medicine, and there were a large number of candidates in this subject. Furthermore, they had in the undergraduate curriculum a course and examination in mental diseases. Some people said that it was well they in that country had such training, for—to quote Swift—"no nation needed it so much," but as they exported so many of their doctors, it was pleasing to know that that education would be of value to them in England too. He would like to mention a mental disorder very prevalent in this country, and, indeed, throughout the civilized world during the past twelve months. It was characterized by restlessness and excitement, which reached its culmination on certain dates. This was generally followed by a period of melancholia. Amidst laughter, Dr. Moorhead said he referred to the sweepstakes, and added that every purchaser seemed convinced he was going to win, and on the fatal day when he found he had not, he was filled with suspicion that the draw had been unfair. He did not wish to say any more about the sweepstake, but the plan seemed to be to take the cash and let the credit go, and he did say that a curious psychological change had come over the people. Some years ago there were sweepstakes for prizes of small value, and he remembered a domestic lady near him won a prize of £1,000. He understood she had so many proposals of marriage subsequently that she had to be admitted to an asylum for treatment.

Dr. CRAWLEY, Vice-President of the Royal College of Surgeons, who also responded, said that when he looked at his menu card he was plunged into the depths of gloom, for he saw he had to respond to the toast. He was only there because the President of the College, being in grievous straits, had asked him to go.

There was one thing he knew about their education, and that was that the word "psychology" was rather a stumbling-block. Their education in the College of Surgeons was more or less practical as opposed to the scientific. This was illustrated by the story told by one of their students attending a man who was grievously ill, and who had a wife who was rather apt to talk too much. When the boy came in he said he was giving the man a sleeping-draught. "Oh," said the woman, "when shall I give it him?" "Take it yourself," said the boy, "and give the man a rest." He thought the Dublin medical education was more of that type than of the purely scientific type, and long might it continue to be so. They required the scientist, who was a great help to them, but they also wanted men who would come out and treat a patient, not as a case, but as an individual, and he did think that Trinity, National, Physicians and Surgeons had set up that high idea of medical practice, and he thought that was why their men succeeded so well in other countries.

He wished to thank the members of the Association for the kind way in which they had honoured the toast.

Dr. SERGEANT, in proposing the toast of "THE GUESTS," said that after-dinner speeches were divided into three parts. In the first part one explained and apologized for speaking at all, in the second one attempted to be flippant and gain the sympathy of the audience, and in the third one got over as quickly as possible what one had to say of importance and sat down. He could claim to be the only genuine impromptu speaker, and there was evidence of that in the menu card. Unfortunately Dr. Shaw was not able to speak and someone else had to be brought in. It was obvious that it would be difficult to approach any other distinguished man because he might feel piqued at not having been asked before. It was necessary to find somebody who was at once obscure and good-natured, and the choice obviously fell on himself. He (Dr. Sergeant) would quickly get to the real business

of the toast. Other speakers had talked about the city of Dublin, but after all the people were the really important thing. As mere Englishmen what they observed about Irishmen and women was their sincere and intense love for Ireland, and this explained any slight disorder that might appear from time to time. For if they saw a young man in love they were not surprised if he was subject to some disorder.

They would carry away from Ireland many pleasing memories, not the least of which would be that their hosts had consented to honour them by becoming the guests of their Association.

The CHIEF JUSTICE (Mr. HUGH KENNEDY), responding, said that he was greatly relieved because he knew that at this late hour his fellow guests would regard it as unkind to their hosts if he were tedious in returning thanks. He was very glad for another reason—because it did seem to him a rather frightening experience for them, as lay people, to be amongst so many distinguished alienists, and particularly to be, as it were, specimens on exhibition before a gathering of medico-psychological diagnosticians. For one never knew what they might find out. Not only they themselves, but even some of their patients were very acute in observation, if one was to rely on the following story told by Dr. Leeper. Dr. Leeper told of a predecessor of his (the Chief Justice's) of a very imposing presence, resounding voice and dignified bearing, who went on one of his surprise visits to St. Patrick's Hospital to see one of the Chancery patients. The patient, a lady, was produced, and when she saw the Lord Chancellor she said, "Who is that old lad?" Dr. Leeper said, "That is the Lord Chancellor, who is specially interested in you." "Oh, indeed," she replied, "and how much does he get?" Dr. Leeper said he got £6,000 a year. "Well," she said, "just look at his trousers; there is a fringe round them." (Laughter.)

Continuing, the Chief Justice said he thanked them all in the first place for visiting the ancient city of Dublin. They would have discovered by now that it was a city with ancient institutions and respectable traditions. They would also have discovered that one of its oldest and most respected institutions was St. Patrick's Hospital. He thought he might mention that St. Patrick's Hospital, which had been conducted on such wonderful lines since Dr. Leeper came into charge, was one of the few hospitals which had no connection with the "Sweep," and supported itself. It was as well to mention that, because they might otherwise suppose from the proceedings there that night that Dr. Leeper had been reaping a great harvest from the sweepstake which Sir James Craig had introduced. One of the men of whom they in Ireland were most proud was Dr. Leeper. It had been his (the Chief Justice's) privilege to come into contact with him in connection with Chancery cases, and Dr. Leeper had been a great help and support to him in many cases. Dr. Leeper was the first man to whom he turned in the difficulties of administration, and he thought it would not be right if he were to resume his seat without offering to him some little tribute for the enormous amount of help he had given him (the Chief Justice) in his work. He knew he spoke for the distinguished company there present as guests when he offered thanks to the Association—thanks for coming amongst them, and thanks for having entertained them so sumptuously that night, and he assured them that they had enjoyed themselves enormously, and that they would be delighted if the members of the Association would accept the Lord Mayor's invitation to come back in the near future.

Sir JOHN LUMSDEN, *K.B.E.*, speaking to the toast of "THE ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION," said that he considered it a very great privilege to be permitted to propose the toast which he thought most of them would agree was the most important of the evening. It was, he understood, twenty years since the Association met in Dublin under the Presidency of Col. Dawson, and he joined with Prof. Moorhead in saying how pleased they were to see Col. Dawson and the members of the Association amongst them once again. They regarded it as a very great compliment that the Association had decided to hold its conference in this city, and it was a very great satisfaction to them that the President of the Association was Dr. Richard Robert Leeper. Dr. Leeper was held in high regard and affection in Ireland by all his medical *confrères*, and as a consultant in his own particular line he was thought of very highly, and the fact that they had appointed him to the chair of their Association proved that their confidence in Dr. Leeper had not been misplaced. Dr. Leeper was a cheery optimist, always helpful, and when one departed from him one generally carried away a story that was well worth repeating.

Men of his type were far too rare in these times, when there were so many pessimists. Dr. Leeper presided over a comparatively small institution, but one with the advantage of great historical associations. Dr. Jonathan Swift, one of their greatest historical personalities, as no doubt they knew, bequeathed all his money to found the hospital, and he wrote :

" He left what little wealth he had
To build a home for fools and mad,
Showing by one satiric touch
No nation needed it so much."

There were to-day in Ireland as many insane persons as there were one hundred years ago, but the advance made in their treatment was truly remarkable, and this was due to the research of members of the Association, and had been assisted by the conferences which they had been holding for the last ninety years.

They in Ireland were very proud to see the members in their city and hoped that they would come back again.

The PRESIDENT of the Association (Dr. LEEPER), responding, said he had no words to thank them for the way in which they had pledged the toast. He had hoped the speakers would confine themselves to the work of the Association instead of indulging in praise of the very unworthy man who happened to be President. The many fine words used by the Chief Justice left him powerless to express to them the gratitude he felt to the Association as a whole for their action in placing him in the Presidency. Those who spent their lives in mental hospitals had been described as people who spent their lives amidst phantasies, melancholias, furies and fatuities, and caricatures of mankind. That was fairly true, and if they had not got something in their characters to carry them through they were in a very parlous state indeed. A little story sometimes helped to smooth the way. He hoped they had all had a very comfortable dinner, and in this connection he remembered a story of a dinner in Dublin some years ago where a very distinguished man said he wished to propose a toast. He was asked what he wished to propose. "Well," he said, "the toast is 'Our absent friends.'" "Oh well," they said, "there is no harm in that—you can propose it." So he got up and said, "I wish to propose a toast to our absent friends, and particularly to our absent friend the wine waiter." (Laughter.) He (Dr. Leeper) hoped that the wine waiter had not been an absent friend to anyone that night.

He wished to thank them all from the bottom of his heart both on his own behalf and on behalf of his wife for the wonderful kindness that had been shown to him on the commencement of his year of office. He had only commenced his year of office that afternoon when the chain of office was fastened upon him, but he thought that as long as he carried on in the footsteps of Dr. Dawson, Dr. Nolan and Dr. Saxty Good he would be doing well. He remembered the last time the Association met under the presidency of Dr. Nolan; and those that had the privilege of attending that meeting knew how much he had done for the Association. He (Dr. Leeper) felt personally that it would be wrong if he did not refer to these predecessors of his—Dr. Good, Dr. Nolan and Dr. Dawson—who were there that night. It was due to these men and others that this great Association had the training of four thousand mental nurses, that it carried on scientific work, and that it was able to bring together their young and keen junior psychiatrists. They had in Ireland a band of young men fired with enthusiasm for research and the study of psychiatry, and it might be that some day they might produce a Pasteur or a Lister in their speciality.

The President added that he had omitted to mention that they had a General Nursing Council in the Irish Free State which recognized the training and the examinations of the Association. The Association were the pioneers in this work, and but for it there would not be a single trained mental nurse in the British Isles to-day, nor in South Africa, New South Wales or the Malay States. The Free State Government had been sensible enough to register their nurses upon the register of the General Nursing Council—a concession which had not been obtained in either England or Scotland. "But thank God," concluded the President, "we have sane minds in the Irish Free State."

MORNING SESSION.—THURSDAY, JULY 9.

16. PAPER.—“**Insanity in its Relation to the Parturient State,**” by Dr. BETHEL SOLOMONS, Master of the Rotunda Hospital, Dublin (*vide p. 701.*)

The PRESIDENT said that when he asked Dr. Solomons for a paper he knew he was going to get something well worth the hearing, and he thought they would all agree that though Dr. Solomons had said he has not going to read a long paper, what it lacked in quantity it made up for in quality.

Dr. SEXTY GOOD said that he congratulated the writer of the paper on the way he had put the subject. The question bristled with difficulties, but he thought that they might say they had never heard it put more clearly or fairly. He (Dr. Good) had to apologize because he was a little bit out of touch with certain ideas, but when Dr. Solomons referred to puberty and the instruction of the family in the natural processes, and traced the causation of some cases of insanity to ignorance and superstition at that period, he (Dr. Good) thoroughly agreed. Secondly, Dr. Solomons had referred to marriage. Some of them knew that he (Dr. Good) for many years had had out-patient clinics at Oxford, and there they got cases coming in at all stages of psychosis. One was astonished at the ignorance shown of the natural function of creation. He thought he would best illustrate that by a case he was called to in the Radcliffe Infirmary. The woman in this case had a temperature of 101° F., which went down to 99° the next morning. She was in a state of intense confusion, with excitement. She was talking of nothing but “blood, blood,” and “burst, burst.” He was able to get that woman into a somewhat quieter state by means of sedatives, and he then attempted to dig down into her mind for the origin of the trouble. There was nothing definite in her family history, but her mother, she said, had been nervous and was frightened of certain things. This was confirmed later because, living in a small area with a small population, it was easy to trace her history. It was found she had been a rather hysterical woman. As a child she often heard of the dangers of giving birth, and she had once heard somebody screaming. She was a youngest daughter and had been very much spoiled. She had married without knowing anything about the functions of marriage, and she went on until about a week before her labour without seeking any advice. At this time she felt pains in her limbs and her temperature rose. The doctor who was called in diagnosed influenza, though this was not subsequently reported at the clinic. An injudicious woman told her, “You are sure to lose blood and you will burst.” From that moment the woman became very agitated, and passed into such a state that she was incapable of thinking in terms of time, place or persons. She was then admitted to the hospital. She was now home, and, as far as he knew, quite well. What struck him about these cases they called puerperal insanity was that confusion was always present. This was borne out by the paper, and the statistics showed that in the maternity hospitals the percentage was small. It was a good deal larger in the mental hospitals. Confusional states were among the most recoverable, and where one could exclude conditions like epilepsy, general paralysis, etc., cases did recover and remain well. What recovery really was he did not think any of them could at present say, because it really should mean that the patient should never show any further sign of insanity in this life.

Some of them would remember the lecture given last year by Prof. Gunn, at Oxford, on the use of sedatives. The professor pointed out that hyoscine acted directly on the lower nerve centres. And he told them something else which was extraordinarily interesting, and that was that he had carried out a large number of experiments, and he found that there was no other drug as far as he was aware that had the same action in that it made the patient feel better. In encephalitis he had noticed that where the attack had started with symptoms of lethargy, and later showed hyperkinetic symptoms, hyoscine did not seem to have as much effect in causing sleep and quiescence of the movements as it did in those cases which were hyperkinetic from the start. In the former type of case, bromide seemed to have a better effect than hyoscine. This might be due to the fact that hyoscine acted more on the lower and motor centres, whereas bromide acted on the cortical control centres. The reason he mentioned this was because Dr.

Solomons had referred to a case of encephalitis where there was about five years between the attacks. The patient had several births and suffered no ill-effects. She then had an attack of acute confusion. Subsequently she completely recovered. That was an extraordinarily interesting fact, because they did not know in these cases of encephalitis whether the toxicity lay latent for some period and required something to bring it out, or whether the patient recovered and could have a second attack.

It seemed to him that in speaking of puerperal insanity the term "puerperal" should be rather used to indicate the time of the attack only, because apparently the puerperium had very little to do with its causation. He thought the sooner medical men made it known to the public that having children and the ordinary functions of nature were natural processes and not any more dangerous than any other things in their existence, the better, because then they might help people to be more calm. The mental condition of a patient was immensely important, and they did know that if you had mental stress you had biochemical changes in the organism. He was very keen on looking at insanity as an illness that had many factors which had to be considered. One of the great factors was what the patient thought of his condition. Every individual had different ideas, and therefore would have different emotions about the same fact, and it was only by the work of people like the writer of the paper that they had any hope of solving those problems. In conclusion he wished to say that one of the things that struck him in the city of Dublin—which he hoped they would in time have in England—was the close relationship between the different branches of the medical profession. This was not universal, but to come to this city and see the medical men working so closely together was one of the greatest things to cheer them on their difficult path, for they had only got to the stage of knowing how little they really knew.

Dr. McRAE said that Dr. Solomons' paper, coming from a gynæcologist, was an extraordinarily fine and lucid description of the subject, succinct and intensely interesting. However, Dr. Solomons had said nothing on the bacteriological side of the question. Many years ago he (Dr. McRae) had a case of puerperal insanity. The woman was extremely confused and appeared to be going to die. They tested her bacteriologically and they could not find any pus. Nevertheless he decided to curette the uterus. The woman was discharged recovered after three months. After that every similar case was curetted, as he was convinced at the time that there was a local irritation that produced these states. He continued this practice for years, until he heard Prof. G. B. Watson say that curetting was criminal, and he thought that it was time for an ordinary asylum doctor to stop what was being termed criminal practice. However, he continued in cases where the woman was not getting better, and he thought that in these cases the womb ought to be scraped, and that one was perfectly justified in the assumption that there was something there. Of course they were dealing with a form of insanity that was recoverable, and perhaps the woman would have got better in any case, or, as had been said, "in spite of medical interference." He thought there was far too much said about the influence of heredity. After all, no one in that room was safe, for if you went back twenty generations who could say that there had been no "insanity among their (million) direct ancestors"? They had cases of families where the father or mother, and sometimes both, had been insane without having insanity in their children. Indeed marriages had taken place between a man and woman after they left an asylum. They had produced children and grandchildren, and no child or grandchild of theirs had been admitted to the asylum suffering from insanity. In order to take statistics one would have to live two thousand years, and if one could live long enough one would probably find that in the case of the insane parents Nature re-asserted herself and restored sanity in the progeny. With regard to the suggestion that a person who had been insane must never have children, he had never advised that, because he found that it was not of much use to do so. What could be done in the case of the woman who came in with puerperal mania, having had many children? He had had two such cases, where one woman had had nine children and the other ten, and in neither case were any of the children insane. Should the public be worried about the dangers of heredity? For they must remember that in such cases, when these children were grown up they would be living in terror, as they would feel that it was only a question of time until they would be admitted into the asylum. It was a mistake

to be dogmatic, and the very fact that one was afraid of going off one's head was enough to put one off one's head. He thought he had said enough to suggest that when they were going to talk about insanity and the influence of heredity, it would be more scientific to be frank and say they did not know.

Dr. COLLINS said that he was sorry to hear Dr. Solomons say that it was impossible to nurse these cases in a maternity hospital. It might be impossible now, but it ought not to remain so. It seemed to him that it ought to be possible for the patients to be looked after, and not turned out of the maternity hospital. Where there were symptoms of insanity, surely curetting ought to be done by the people who were experienced in that work rather than by people who were experienced in mental diseases. With regard to heredity, he did think that many people were made insane and kept insane by insistence on that point. He (Dr. Collins) had two people in his hospital whose fathers died there and both of them said they were going to die there, and they came in with that view impressed upon them probably in early life. He (Dr. Collins) had seen a number of children born in mental hospitals, and only knew of two of these who afterwards became insane, and surely if there was much in hereditary influence, they ought to see very many more people born in mental hospitals ultimately break down. If you went into the history of these people you found that they were suffering from some definite psychosis, and the fact that the onset was noticed at the time of childbirth was a pure accident, and the puerperium had nothing to do with it. It was a time when a person was restrained from her ordinary activities, and therefore the symptoms were more readily noticed. He thought they could lay far too much stress on puerperal insanity. Referring to prevention, Dr. Collins asked what had the puerperal period to do with insanity? From what Dr. Solomons had said, toxæmia, sepsis and chorea were the only things he could mention that had any direct influence. These were matters for preventive medicine, for instruction during the period of pregnancy.

Dr. GILMOUR asked Dr. Solomons whether he had any knowledge of cases where the involution of the enlarged uterus in itself caused mental symptoms, without there being any sepsis or toxæmia. He had reason to think that they had cases in which that was the only factor.

Dr. HELEN BOYLE said she would like to raise the question of the influence of lactation in cases of puerperal insanity. Amongst the many cases she had seen she had tried in vain to find any case of insanity after birth, in which the baby had been steadily nursed at the breast. She had heard very frequently of nervous symptoms arising at the time lactation ceased. The value of lactation as an excretory function was often overlooked, and she thought it enabled the products of involution to be efficiently excreted. She suggested that inefficient excretion of these products was one of the chief causes of instability after childbirth.

Dr. F. R. P. TAYLOR said his only excuse for speaking was that he had worked at Queen Charlotte's Hospital, and he was interested to hear Dr. Solomons' figures as to insanity. During his time they had had nearly one thousand births and not one single case of insanity. It might be accounted for by the fact that all the patients received ante-natal care and treatment.

Dr. O'CONNOR DONELAN described cases at Grangegorman Mental Hospital, Dublin. He divided the cases occurring during pregnancy into three groups: those occurring in early pregnancy—in those cases he thought a good deal was due to the anxiety of a patient having an abnormal fear of parturition; those occurring in the middle months of pregnancy—in those cases as pregnancy went on the insanity generally passed away; and those occurring late—these cases were much less satisfactory than those in the early stages. He was inclined to think that these were cases in which the patient might have become insane in any case, and it was merely a coincidence that it occurred under those conditions. The case might be accelerated by pregnancy, or that might be the determining factor. The point was rather puzzling, for in a good many cases there was a good delivery and everything seemed to be going on admirably, and the nurse would say, "She is getting on very well; she is looking very bright and well," and that "looking bright and well" was the onset of insanity. There was practically no rise of temperature, and this was very puzzling if the mental symptoms were assumed to be due to sepsis at the time of birth.

In cases where the blood-pressure was very low they found that filling the patient up with food seemed to have a very good effect. When drugs appeared to be

utterly ineffective one big feed made the patient quiet and she slept for hours.

Prof. BURRIDGE said he thought he could give them some explanation of the confusional state. The first thing one ought to get hold of was that in the mind one had a supply of energy which had its limit. This energy was derived from two sources, and the more you had of one the less you had of the other.

Every image one received had its after-image, but it lasted only so long that there was no confusion. If that room were strongly illuminated they would get exactly the same image as they got at present, but because the image was strong they would get an after-image which would be confusing. Or again if he looked at the sun he got exactly the same image at noonday as when he looked at it through dark glasses, but the intensity was so different that in the first case he got an after-image which was confusing. The confusional state was similar to that of someone who took a glance at the sun and then at the audience. That man's view of the audience would be wholly confusional. If a man took alcohol all the data he received were enhanced. His view of life was confused by the after-images of everything he had seen. Toxins did exactly the same, for they increased one supply of energy and decreased the other.

Dr. SERGEANT said that the elements of stress and strain predisposed to mental breakdown, and in pregnancy and parturition there was special stress and strain; they wanted to know whether this stress and strain had any special significance over and above other ordinary stresses and strains. If pregnancy was a special strain were they not justified in fearing it? And if there was a tendency for parturition to cause mental disorder, was it practical to take such steps as would prevent further pregnancies? It seemed to him that it was irrational to say that a history of insanity should contra-indicate the giving birth to children. Insanity was an extraordinarily wide term and one could not say "Yes" or "No."

Dr. WILKINS said they ought to distinguish between the cases due to sepsis and those due to psycho-pathological causes. This could be done in actual practice, for they knew that sepsis went with a rise of temperature and confusion, and they also knew that there were other cases exactly similar to mania not associated with the parturient state. They knew that in these cases the condition recurred with subsequent pregnancies, and was probably entirely psycho-pathological. If they considered the case of a woman who had an attack and the question of whether she should have more children, then it depended on whether it was a psycho-pathological case or one due to sepsis. If it was sepsis it could be allowed, but if it was a psycho-pathological case it should be forbidden.

Dr. GRANT agreed that it would be of the greatest importance if they could differentiate between cases due to physiological conditions and those due to psycho-pathological conditions. Unfortunately, when they could not find a definite cause for anything there was a tendency to attribute it to some psychological cause. He thought the crux of the matter was, Could they differentiate between causes that were physiological and those that were not? It seemed to him that the first thing to do was to look for the physiological basis, and even if they could not find it he questioned whether they were justified in saying that no physiological basis existed.

Dr. SOLOMONS, replying, said he was rather flattered by the discussion which the paper had evoked. He had come there to learn and he would go away having learnt a great deal. Dr. Good had drawn attention to some of the points raised in the paper. With regard to the ignorance of the natural functions, he found that this was often most striking. He had got patients coming to him very nearly on the verge of insanity. They had been married for years without proper coitus, and a small operation would have got over the trouble. The more the people were taught, the fewer would be in mental hospitals. With regard to the shirking of their duty by mothers who did not teach their daughters about the natural function of menstruation, he considered there ought to be a school for mothers. Psycho-logical treatment was most valuable in the pre-natal period. Pre-natal treatment had now assumed very large proportions, and they tried to get as many as they could to come for treatment. It might interest them to know that in this religious country people refused to come for "ante-natal" treatment because they thought the word "ante" was spelt with an "i." However, they were now doing their utmost to get the people to come. Someone had said that all their troubles could be avoided by pre-natal treatment. That was absolutely impossible. One case, for instance, suddenly, for no apparent reason, developed albuminuric toxæmia.

All they could do was to try and prevent these things, though some occur in spite of them. He was very interested to hear that hyoscine was thought well of by them. He had done a lot of work with hyoscine, and while he had found it sometimes controlled the patient, it sometimes did the opposite. On some occasions they had been able to detect the presence of hyoscine in the urine of a newborn baby. It did, however, make the patient feel better.

Referring to the question of curetting for puerperal sepsis, he said that when he was assistant at the Rotunda they used to curette, and he came to the conclusion that it was a bad thing. He knew that the cases Dr. McRae referred to were old cases, and he did think that it should come from that meeting that there were old cases in which curetting was allowable. Once a fortnight was passed curettage might be done.

One very important point had been brought home to him: evidently people who had suffered from puerperal insanity might be allowed to continue having children, and he should certainly have to modify his teaching in the future.

He agreed with Dr. Collins that it should be made possible to nurse insane women in the maternity hospitals, but it was terribly difficult. First of all they had not got the staff to look after them. Secondly, he did not think that the maternity nurses had the knowledge that mental nurses required. He tried to keep these patients as long as possible, but it came to the stage where they had not got the staff to look after them; he honestly did not see how it could be done. Dr. Collins had also referred to the question of the possible prevention of sepsis, toxæmia and chorea. In the pre-natal period they tried their hardest and they did get quite good results.

With regard to the enlarged uterus, Dr. Boyle had hit the nail on the head when she attributed it to the absence of lactation.

He wished to thank Dr. Donelan for the information he had given him.

Dr. Sergeant had put the question whether pregnancy was a matter of ordinary stress and strain or of special stress and strain. Here he did believe that pre-natal management could make it a physiological process of ordinary stress and strain. If a woman were properly instructed and had no gross disease, then he would say that she would be in a condition of ordinary stress and strain, and therefore it was surely up to them to make it in every case a condition of ordinary and not extraordinary stress and strain.

He agreed with the speakers who had found how difficult it was to say whether some cases were of physical or of mental origin. It was easy to say in most of them whether they were physical or mental, but cases very often did arise in which it was difficult to know.

In conclusion Dr. Solomons said he would like to thank Dr. Leeper and the members for the way they had listened to and discussed the paper, and once more to agree with those speakers who had stressed the necessity for co-operation between the different branches of the medical profession—particularly between psychiatrists and obstetricians.

The PRESIDENT, in thanking Dr. Solomons, said that there was not one man there who did not feel that the Association owed a debt of gratitude to Dr. Solomons for coming there and reading his paper.

This concluded the morning session.

LUNCHEON AND ENTERTAINMENTS.

In the afternoon members and guests were entertained to lunch by Messrs. Arthur Guinness & Co.

The gentlemen were then invited by some members of the Strollers' Club to dinner at the Royal College of Physicians, while the lady members and guests were invited by Mrs. Leeper to a performance at the Abbey Theatre.

MORNING SESSION.—FRIDAY, JULY 10.

18. PAPER.—“**The Mechanism of Personality**,” by Prof. WILLIAM BURRIDGE, Professor of Physiology, University of Lucknow (*vide* p. 708).

Introducing Prof. Burridge, the PRESIDENT said, speaking under correction of older presidents, he thought that it was a unique experience for the Association that

a man should cross the world to read a paper at the Annual Meeting. Prof. Burridge had come all the way from Lucknow, and he (Dr. Leeper) thought the meeting should give three times thrice thanks for the kindness he had done them. They had all heard of the extraordinarily interesting communications he had made to the Journal. He had approached personality in an entirely new way, and he (Dr. Leeper) was sure they would all go away from hearing the paper very much more learned than they came.

Prof. BURRIDGE then read the paper.

Dr. DRURY said that the paper deserved the appreciation of them all. When they got theories put down in black and white and a table where they could work them out it made it much easier. Personally he thought the diagrams they had been shown would be appreciated by ordinary people, and would facilitate their understanding of abnormal mental processes. He had always felt that everybody must have some capacity, and they could now readily appreciate that that capacity could vary within different people and that people could vary within their own capacity.

Dr. SHAW BOLTON said he heartily agreed with the last speaker that the exposition so ably given by Prof. Burridge would enormously help people seeking the light in such obscurity as they were in. He was impressed by the enormous amount of labour and extreme originality of the paper, and the almost convincing theories Prof. Burridge had formed. They would all agree that Prof. Burridge had rendered them a great service, and they were highly complimented by his reading this paper to them.

Col. DAWSON said one of the most striking things about this very interesting but difficult lecture was the enormous amount of ground it covered. He fully appreciated that this was going to be a most important theory, which, if established and accepted, would greatly simplify the difficult range of subjects it dealt with and bring them on all fours with physiological theory. That would be a great advance in itself. The difficulty of all who endeavoured to get a grasp of the psychological theories of the different men who studied the subject was the enormous variety, not only in the items they discussed, but in their terminology. It seemed that a great deal of the difficulty would disappear if they could only co-ordinate the observations which had been made on different lines of theory.

He wished to join in the remarks of the other speakers as to their obligation to Prof. Burridge for coming there and giving them, with the advantage of the human element, this paper, which they hoped to study at greater length in cold print.

Dr. MACDONALD said that the thing he appreciated most of all about the lecture was that it was an earnest endeavour to co-ordinate psychological facts with biology and physiology. During the past years there had been too many theories that did not appeal to the biologist. Many of these theories left the biologist dissatisfied, and the lecture was an endeavour to make psychology cerebral physiology. That was the most important thing about it.

Dr. MILLS said he was unable to understand how the mechanistic and biological theory was consistent with manic-depressive insanity.

Prof. BURRIDGE said that in depression everything had gone down and the man did not consider there was any value in anything. He then explained by means of the diagrams various points raised by members.

The PRESIDENT conveyed the heartfelt thanks of the members of the Association to Prof. Burridge.

This concluded the morning session.

GARDEN PARTY AND RECEPTION.

In the afternoon members and guests were invited to a garden party by the President and Mrs. Leeper in the Royal Zoological Gardens.

In the evening His Excellency the Governor-General and Mrs. McNeill gave a reception in the Viceregal Lodge, to which members and guests were invited.

CONCLUDING SESSION.—SATURDAY, JULY 11.

20. VOTES OF THANKS FOR HOSPITALITY.

The **PRESIDENT** expressed the hope that the visitors were not displeased with their visit, and suggested that the Association should send letters of appreciation to the President and Fellows of the Royal College of Physicians for placing the College at their disposal during the meetings, to the President and Fellows of the Royal College of Surgeons, who placed their Hall at the Association's disposal for the Annual Dinner, to the Strollers' Club, Trinity College, the Governor-General and Mrs. McNeill, the Lord Mayor of Dublin, and others.

Dr. Good, proposing a vote of thanks to the President and Mrs. Leeper, said that they had had so much entertainment that really one was stupefied. The only thing he could say was that he had never had such a week. (Hear, hear). The President, who knew the place very well, had gone very carefully through the list of entertainments, and he would suggest that the only way to give a vote of thanks was to ask the Irish papers, which seemed very keen, to print a special edition. Although the President was such a modest man, it was he and his wife who were really responsible for their enjoyment. If they had not shown such energy, the visitors would not have had the time that they had. There was one thing he would like to emphasize, and that was that, coming from various parts of a great Empire, what struck them most in Dublin was the interest shown by those that governed the country in the specialty that the Association represented. It took, apparently, a Celtic mind to realize that it was the mind that mattered, in medicine as in everything else. That week had shown that everybody was interested. That was not only extremely flattering to the Association, but it was a sign that, even though the pessimist might say that we were all going to the dogs, we had very great hopes.

"I do propose a most hearty vote of thanks" (Dr. Good concluded) "to all the people who have treated us in this wonderful way, and particularly to two people who have almost worn themselves out looking after us. I have never been looked after as I have been this week, and I, therefore, propose a hearty vote of thanks to the President and to Mrs. Leeper."

Dr. R. B. CAMPBELL said that, on behalf of the members who had come from Scotland, he would like to associate himself with everything that Dr. Good had said. He had been at many annual meetings; this was the second he had attended in this country; and really hospitality seemed to increase. So did the kindness that was showered upon them. It was a great satisfaction to know that they were so much appreciated in Ireland, and he could give an assurance that they were taking back many happy memories. The only fly in the ointment—there was always some fly in the ointment—was that they were setting such a very high standard of what should be done, and as he was to succeed Dr. Leeper next year it terrified him. His enjoyment had almost been spoilt by that knowledge. He thanked Dr. and Mrs. Leeper for their kindness in arranging everything while the visitors had been there.

Dr. LEEPER said that he wished very briefly to try to express to them his gratitude for the kind words that had fallen from the lips of Dr. Saxty Good and Dr. Campbell. It had been a labour of love for him and Mrs. Leeper to try to make the meeting a success, and they had been more than rewarded by the words that had been said.

Following the meeting, members and their guests were entertained by the Irish Division to an enjoyable motor trip through the mountains of County Wicklow.

NORTHERN AND MIDLAND DIVISION.

THE **SPRING MEETING** of the Division was held by the courtesy of Dr. Rambaut and the Committee of Management of St. Andrew's Hospital, Northampton, at their Seaside Branch, Bryn-y-Neuadd, Llanfairfechan, North Wales, on Wednesday, April 29, 1931, when Dr. J. R. Gilmour, Divisional Chairman, presided.

Four visitors and twelve members attended.

Members had the privilege of seeing all parts of the magnificent house and beautifully laid-out grounds, and were kindly entertained to luncheon.

Dr. GILMOUR proposed a vote of thanks to Dr. Rambaut and his Committee for their hospitality, and Dr. RAMBAUT responded.

The minutes of the previous meeting were read, confirmed and signed.

Apologies for absence from twenty-seven members were communicated.

The following were unanimously elected Ordinary Members of the Association :

ELIZABETH COWPER EAVES, M.D., B.S., D.P.M.Lond., Lecturer in Physiology, University of Sheffield; Honorary Neuropathologist, South Yorkshire Mental Hospital; Grindleford, Derbyshire.

Proposed by Drs. W. J. Vincent, F. T. Thorpe and J. M. Mathieson.

EUSTACE HUTTON, M.R.C.S., L.R.C.P., Deputy Medical Superintendent, North Wales Counties Mental Hospital, Denbigh.

Proposed by Drs. W. S. Hughes, K. M. Rodger and J. I. Russell.

SIDNEY DAVIES, M.B., B.S.Lond., Assistant Medical Officer, North Wales Counties Mental Hospital, Denbigh.

Proposed by Drs. W. S. Hughes, K. M. Rodger and J. I. Russell.

Dr. J. Ivison Russell was elected Divisional Secretary for the ensuing year, and Drs. Blair, Dove Cormac and Shaw were elected Representative Members of Council.

Dr. Dove Cormac was elected Divisional Chairman on the proposal of Dr. A. T. W. FORRESTER, seconded by Dr. MARY BARKAS.

Dr. DOVE CORMAC proposed that the Council be asked to reconsider the amount of the fees payable to Examiners for the Nursing Certificate. This was seconded by Dr. FORRESTER, and carried.

Dr. CHEVENS read a paper on "**The Correlation of Cause of Death with Type of Insanity**" (*vide* July No., p. 562), and an interesting discussion followed in which several of the members took part.

A brief discussion on the question of Volition, as interpreted by Approved Practitioners for the Purposes of Section 5 of the Mental Treatment Act, was introduced by Dr. DOVE CORMAC.

Dr. DOVE CORMAC, on behalf of the Division, thanked Dr. Gilmour, the retiring Chairman, and Dr. GILMOUR suitably replied.

Members were afterwards kindly entertained to tea by Dr. Rambaut.

GILGAL HOSPITAL, PERTH.

THIS hospital has been designed by the Directors of James Murray's Royal Asylum, Perth, as it became apparent during recent years that more accommodation should be provided for acute and recent cases. It was decided to erect a self-contained hospital block of forty beds for voluntary patients whose malady is slight or of short duration, and who, fully appreciative of their surroundings, may be apprehensive of harmful or painful contact with invalids of a more confirmed type.

The property named Gilgal, on which the new hospital has been built, extends to about ten acres on the slopes of Kinnoull Hill, 200 ft. above sea-level, and is about one mile from Perth, on the east side of the river. The private rooms, verandahs and garden face south and west, and to the north there is a magnificent view of the valley of the Tay and the mountains beyond.

The hospital consists of two wards and a central administrative block. The latter contains on the ground floor a medical office, reception room, surgery and dental room, electrical treatment room, dispensary and laboratory, and office of Matron, all connecting with the main entrance hall. At the back are the kitchen and store, nurses' messroom and service pantry. On the first floor of the central block are the staff quarters, including detached rooms for night nurses. In the basement, with access only from outside, is the central heating and domestic hot-water plant. Under the entrance hall is the meter-room and a compartment for luggage. The surgery is equipped for minor operations and dental treatment, having a gas-fed sterilizer, wash-hand basins and sinks, a dental chair, and instruments. The electrical treatment room contains an ultra-violet projector, radiant heat lamps and apparatus for faradic, galvanic and Schnee baths. The laboratory is fully equipped for investigation of the body fluids, etc.

The hospital is a self-contained unit and all cooking is done by gas, the plant consisting of two "Falcon" ovens, a "Richmond" boiler, a "Main" grill and

toaster, and a "Main" hot-closet. The total consumption of gas when the hospital is fully occupied is expected to be 50,000 to 60,000 cub. ft. per month.

Oil-fuel is used for both the central heating and domestic hot-water supply. The plant for the former consists of two (one in reserve) Britannia boilers fired by "Oil-o-matic" burners, and for the latter there is a "Rapid Heater" fired by a similar but smaller unit. All the burners are automatic in action. The oil tank (which is filled outside the building) has a capacity of 1,000 gallons (four tons), being twenty-one days' supply in cold weather.

The heating of the rooms, etc., is by means of the "Panel" system designed by Messrs. G. N. Haden & Sons. The heating elements on the ground floor consist of "grids" or "panels" of high-grade steel tubing with $\frac{1}{4}$ -in. bore. These are fixed to the lower edges of the rafters and, being under the plaster, are invisible. For a large bedroom as much as 120 ft. of tubing is used in one panel, and for dormitories, corridors, etc., a series of panels is employed. All joints are welded, and each section is tested to 300 lb. pressure. Each panel is fed by a hidden pipe, which can be controlled by a key. The advantages of this system of heating are the absence of cumbrous radiators, of air-currents and of dust, with their deleterious effect on decorations; a higher proportion of radiant heat, with much less drying effect on the air. Owing to the small tubes in which the water must circulate, a $\frac{1}{4}$ h.p. electric rotary impeller pump is connected to the return main, near the boiler. On the first floor heating is by the usual "Ideal" radiators in each room and corridor.

Each ward unit consists of a dormitory (8-11 beds), a day-room or lounge and a dining-room, six bedrooms, three observation bedrooms, two bathrooms, a clinical treatment room, a service pantry, a verandah, three w.c.'s, a sluice room, linen store and cupboards. The dormitory and corridor have controllable ceiling extractor ventilators, and all the rooms have "Ewart" controllable ventilators in outer wall, and fixed openings in the corridor, etc. The south side of each dormitory consists of three sheets of glass, one 72 in. by 152 in., and two 72 in. by 72 in., with mechanism for opening. The verandah, 40 ft. by 16 ft., accommodates eight beds. It faces south-west, and the end is enclosed by glass. It is so arranged that a nurse working in the service pantry or the dormitory has a view of its whole area. The dormitory also can be observed from the pantry by day or night. The main bathroom contains a "Shanks" porcelain continuous bath with thermostatic control in addition to the usual equipment. The pantry contains a hot-closet and two gas-burners by "Main." All w.c. doors are fitted with a light bolt, and have a strong handle on the outside. The floors throughout are of oak, the doors and other fittings of Lagos mahogany, and all metal parts are chromium-plated.

The building is protected against fire by two outdoor hydrants on the water main, a "Norsen" automatic hose-reel in the centre, and by an electric system of automatic fire alarms, having twenty-three sensitive points situated in the attics, and connected to an alarm bell and indicator in the entrance hall.

The cost of erection, including all new roads, laying out of grounds, etc., is approximately £21,500, and that of furnishing and equipment £2,800, making a total cost per bed of just over £600.

BOARD OF CONTROL.

ADVISORY COMMITTEE ON SCIENTIFIC AND ANCILLARY MENTAL HEALTH SERVICES.

The Board of Control, with the approval of the Minister of Health, have appointed the following to advise the Board upon questions arising in connection with Scientific and Ancillary Mental Health Services:

L. G. Brock, Esq., C.B. (*Chairman*), Sir Hubert Bond, K.B.E., D.Sc., M.D., F.R.C.P., Robert Bruford, Esq., J.P., W. E. Lovsey, Esq., J.P., T. S. Good, Esq., O.B.E., M.A., M.R.C.S., L.R.C.P., Dr. Adeline Roberts, O.B.E., J.P., J. C. Grime, Esq., M.B.E., J.P., Prof. J. Shaw Bolton, D.Sc., F.R.C.P., P. Barter, Esq. (*Secretary*).

The Mental Treatment Act, which came into operation on January 1, confers upon local authorities powers to provide for out-patient treatment and for the

after-care of mental patients, and, subject to the approval of the Board of Control, to undertake or to contribute to research in mental illness. The Board of Control have appointed the Advisory Committee to assist them in the consideration of schemes of research submitted for the Board's approval, and in regard to such questions as the organization of social services in connection with out-patient treatment and after-care, on which local authorities may seek the Board's guidance. On technical questions relating to research the Advisory Committee will have the expert advice of members of the Medical Research Council's Committee on Mental Disorders.

HONORARY CONSULTANTS AT RAMPTON STATE INSTITUTION.

The Board of Control, with the approval of the Minister of Health, have appointed the following as honorary consultants for diseases occurring amongst the mentally defective patients at Rampton State Institution, Retford, Notts :

Encephalitis lethargica : Prof. A. J. Hall, M.A., M.D., F.R.C.P.

Diseases of the ear, nose and throat : Vincent Townrow, Esq., M.B., F.R.C.S.

Ophthalmic diseases : E. Gordon Mackie, Esq., M.A., M.B.

EDUCATIONAL NOTES.

The Maudsley Hospital, Denmark Hill, S.E. 5 (University of London).—Lectures and Practical Courses of Instruction for a Diploma in Psychological Medicine, Course XV, 1932.

Part I (January and February) commencing on January 4, 1932 :

I. Twelve Lectures on the Physiology of the Nervous System. By F. Golla, F.R.C.P.

Four Lectures on Biochemistry in Relation to the Nervous System. By S. A. Mann, D.Sc., F.I.C.

II. Twelve Lectures on the Anatomy of the Nervous System. By W. Le Gros Clark, D.Sc., F.R.C.S.

Practical Instruction and Demonstrations. Demonstrator : Charles Geary.

III. Eight Lectures on Psychology. By Henry Devine, M.D., F.R.C.P. Followed by Course of Practical Instruction.

Six Lectures on Mental Mechanisms. By Edward Mapother, M.D., F.R.C.P., F.R.C.S.

Four Lectures and Demonstrations on Physiological Psychology. By F. Golla, F.R.C.P.

Part II (March to May, inclusive) :

Twelve Lectures on Morbid Psychology. By Edward Mapother, M.D., F.R.C.P., F.R.C.S.

Six Clinical Demonstrations in Psychiatry. By Edward Mapother, M.D., F.R.C.P., F.R.C.S.

Eight Lectures on Treatment :

Two Lectures on General and Routine Treatment. By Sir Hubert Bond K.B.E., LL.B., M.D., F.R.C.P.

Two Lectures on Drug Therapy. By F. Golla, F.R.C.P.

Four Lectures on Special Therapy. By A. J. Lewis, M.D., M.R.C.P.

Twelve Clinical Demonstrations in Neurology. By F. Golla, F.R.C.P., and James Collier, M.D., F.R.C.P.

Two Demonstrations on Abnormalities of the Fundus Oculi. By R. Foster Moore, M.A., B.Ch., F.R.C.S.

Eight Lectures on the Psychoneuroses. By Bernard Hart, M.D., F.R.C.P.

Four Lectures on Mental Abnormalities of Children. By T. Tennent, M.D., M.R.C.P., D.P.M., D.P.H.

Six Lectures on the Practical Aspect of Mental Deficiency. By F. C. Shrubbsall, M.D., F.R.C.P.

Four Lectures on the Legal Relationships of Insanity. By Sir Hubert Bond, K.B.E., LL.B., M.D., F.R.C.P.

Six Lectures on Crime and Insanity. By W. Norwood East, M.D., M.R.C.P.

Three Lectures and Demonstrations on Laboratory Methods, including the Examination of the Blood and Cerebro-spinal Fluid. By S. A. Mann, D.Sc., F.I.C.
 Four Demonstrations on the Pathology of the Central Nervous System. By Charles Geary.

Posts as voluntary clinical assistants at the Maudsley Hospital may be granted without fee to practitioners of both sexes specializing in Psychological Medicine. These appointments can be either for whole or part-time work in wards, out-patient department or laboratories as desired. They can be held in conjunction with attendance at either part of the course for the Diploma in Psychological Medicine. Such an appointment will satisfy the requirements of the various examining bodies in respect of clinical experience of mental disorders for the Diploma in Psychological Medicine or for the M.D. in Psychological Medicine; its necessary duration depends on whether it is whole or part time. There are various other opportunities for clinical study, also without fee, to all attending the course. Applications and inquiries regarding these clinical facilities should be made to the Medical Superintendent of the Hospital.

Fees: For the whole course of Parts I and II, £15 15s.; for Part I separately, £10 10s.; for Part II separately, £10 10s.; for one single series of lectures in Part I, £4 4s.; for one single series of lectures in Part II, £2 2s.; for one single series of Demonstrations only, £1 1s.

Inquiries as to Lectures, etc., should be addressed to "The Director of the Central Pathological Laboratory," The Maudsley Hospital, Denmark Hill, S.E.5.

The Fellowship of Medicine, 1, Wimpole Street, W., will collect fees from, and issue admission tickets to, medical men and women intending to take the course who are introduced by the Fellowship.

STUDY TOURS AND POST-GRADUATE STUDY SUB-COMMITTEE.

The proposed tour of German hospitals and institutions has been postponed.

NOTICES BY THE HONORARY LIBRARIAN.

The following journals are circulated from the Library:

American Journal of Psychiatry.
The Psychological Review.
Journal of Neurology and Psychopathology.
L'Encéphale.
International Journal of Psycho-Analysis.
Journal of Abnormal Psychology.
Mental Hygiene.
Journal of Nervous and Mental Diseases.
Revue Neurologique.
Archives of Neurology and Psychiatry.
Journal of Comparative Psychology.

Members are requested to return all long-outstanding books to the Library as soon as possible for the purpose of cataloguing.

Members are invited to make gifts to the Library to assist in building up a historical collection of psychiatric works from the seventeenth century onwards. In selecting books for presentation, members are advised to consult the Hon. Librarian to see what books the Library possesses and those it is desirable it should possess.

The Librarian is prepared to obtain for members practically any book on psychiatry and allied subjects. Books can be despatched to members on payment of postage.

All communications concerning Books, Journals or Library matters should be addressed "Librarian, Royal Medico-Psychological Association, 19b, Tavistock Square, London, W.C. 1."

NOTICES BY THE REGISTRAR.

EXAMINATIONS FOR THE NURSING CERTIFICATES.

List of Successful Candidates.

Those marked * passed "with distinction."

MAY, 1931.

Mental Nursing.

GREAT BRITAIN AND IRELAND.

Beds, Herts and Hunts (Three Counties).—Mary Morris, Herbert Samuels, William Champion, Walter Howes, Frank Breed.

Berkshire.—Morfydd Jones, Myfanwy Jones, Reginald Vivian Vere Dawtrey.

Cambridgeshire.—Reuben Bevan, Harold Martin Taylor, William Howard Walters.

Carmarthen, etc.—*Glenys Maud Jane Evans, Annie Richards.

Cheshire, Chester.—Gertrude Maiden.

Cheshire, Parkside.—Blanche Forster, Bridget Harte, Jane Hamilton Higgins, Mary Clarke, Mamie McGurrian, Bridie Owens, Thomas William Smith.

Cornwall.—Gladys Carhart, Gladys Elizabeth Cudmore, Gwendoline O. Napier, Dorothea Barker, William Gynn, Frederick Charles Dunstone.

Denbigh, etc.—Iild Morfydd Ellis, David John Davies, Thomas John Davies, Percy Lewis, John Gwilym Williams.

Derbyshire.—George Parsons, Ida May Gamble, Nancy Townsend, Mary Anne Campbell.

Devonshire.—Doria Lilian Maud Symons, Doris Averill David, Patricia Elizabeth Devlin, Bert Bricknell, Alfred Charles Morris.

Dorset.—Harold James Davies, Elwyn Hanford, Alice Newbury, Phyllis Hobson, *Elena May Jones, *Alice Lilian Burt.

Durham.—Joseph Blackett, Ralph Bell, Herbert E. Pyett, Robert Dawson Bagnall, John Henry Ashmore, Lawrence Kell, Francis Joice, Patrick Kelly, William Speed, May Bertram Turnbull, Margaret Mothersall Potter, Elsie Stephenson, Audrey Eugene Dunbar, Miriam Maughan.

Essex, Brentwood.—Herbert Booth, *Albert Robinson, Alfred George Uwins Watts, Lucy Florence Eady, Caroline Esther Oakes, Patricia Mary Simpson, Lily Allt, Lucy Iliffe, Sarah Maud Davis, *Bridget Agnes Ruddy, Maisie Beatrice Bowles, Mary Kindred, *Margaret Healey.

Essex, Severalls.—Charles William Leslie Jones, Ernest Ponsford, Herbert Guthrie Sorrell Clark, Isabella Templeton, *Daphne Pilmoor, Eleanor Sisterson, Mabel Alice Winchester, *Ruth Robson, Mabel Pinder.

Glamorgan.—David Maldwyn Jenkins, George William Davies, Hugh Griffiths, George Henry Williams, Walter Leslie Hold, Emlyn David Blackwell, David Jonah Davies, William Henry Poole, Evan David Hopkins, Trevor John Samuels, Glynmor Thomas, Eva Carter, Esther Lloyd, Agnes Phyllis Burton, Rachel Hannah Jones, Lilian Downing, May Edmunds, Elizabeth Holiday James, Mary Elizabeth Phillips, Margaret Ceridwen Roberts, Eileen Yeoman.

Gloucester (1st).—Elizabeth Lyon Pirie, Arthur Frederick Dee, Charles Henry Sysum, Donald Randall Amphlett, Albert Henry Walford.

Gloucester (2nd).—Edith Hawkins, Gladys Josephine Abel, *Alexandra May Lane, Alice Wyllie, *Lillias Beatrice Anderson, Mary Gwendoline Poole, Linda Angela Sheridan, James Albert Edwards, Victor James Alfred Whittard, Ernest Albert Gooch.

Hampshire, Knowle.—Henry Stephen Hall, Albert Edward Heath, Eileen Elsie Davis, Phyllis May Underwood.

Hampshire, Park Prewett.—Walter Frederick Nicholls, David Winston Rees, Sadie Annie Horran.

Herefordshire.—Edith Elizabeth Lewis, Betty Hegarty.

Hertfordshire, Hill End.—Grace Emily Trena Ayers, Beatrice Joan Bewkers, Alice Maude Chalkley, Mavis Thurza Doreen Lester, Ceinwen Morris, Mona Adelaide Rankin, Thomas Kennedy.

Isle of Man.—Marguerite Cockburn, Elizabeth Conville, Millicent Bellamy,

Norah O'Sullivan, Nellie Kelly, *Jennie Brew, Maurice Millington, David Young. *Kent, Chartham*.—Robert Henry Thomas Mann, Samuel Roebuck, *Frederick William Shelton, Albert George Hayes, Beatrice Mary Reeves.

Lancashire, Lancaster.—Henry Frank Berry, Robert Newing, Frederick Nutter, Walter Robinson, Harry Ward, Kathleen Coyle, Ena Hughes, *Kate Semple, Elizabeth Simpson.

Lancashire, Prestwich.—Alfred John Langslow, Harry Millington, William Proudfoot, George Graham, James Lees, John Houston, Albert William Gray, Bertha Stuart, Gladys Edge, Catherine May Robson, Helena Bowers, Margaret Nesta Evans.

Lancashire, Rainhill.—Elizabeth Agnes Graham, Violet Constance Dunn, Margaret Hughes, *Ethel Mary Spooner, Elsie Grundy, Yvonne Jones, Elizabeth Craine, Joseph Green, Thomas Edward Williams, Ernest Arthur Foxley, James Steele Scott Greenbank, Thomas Warburton, Richard Peters Wilcock, Mary Latham.

Lancashire, Whittingham.—Nita Evelyn Batty, Jennie Kellett, Margaret Irene Reid, Elizabeth Gwyneth Williams, Jack Billington Hall, Bertram Simpson, Hugh R. Gillespie.

Lancashire, Winwick.—Ethel Richardson, Frank Howard, Frederick Whitby, William Stanley Butler, Edward Pridden, William Josiah Gilliland.

Leicestershire and Rutland.—George Richard Fox, Albert Godfrey Bevan, Alfred Sherriff, Mary Anne Fitzpatrick, Susan Vandeleur, Phyllis Winifred Rosa Gorvin, Esther Murphy Routledge, May Elizabeth Eardley, Alice Norwell.

Lincolnshire, Bracebridge.—Keturah Hanson Green, Harry Simpson, Geoffrey Marshall, *Archibald Williamson, Reginald Carlos Neale.

Lincolnshire, Kesteven.—Alma Mary Almond, Ernest Chilton, Alfred Joseph Goundry.

London, Banstead.—Arthur Henry Osgood, Leonard Osborne, George Endenberg Kay Cooper, Arthur Alexander Leach, Sidney Joseph Massey, Albert Thomas Brothers, George Richard Appleton, Edward Ronald Fisher, John Skinner, George Frederick Waters, William Edward King, Annie Curran, *Catherine Jane Jones, Mary Janet Michael, Ena May Weeks, Esther Maud Woods, Helena Mary Winters, Albert Payne.

London, Bexley.—William James Proudfoot, Cecil William Harmson, Richard Jesse Divey, Harry Lennox, John Halligan, Dorothy May Pickett, Nelly Beatrice Shepherd.

London, Cane Hill.—Gwendoline Elizabeth Baskerville, Winifred May Deacon, Pearl Murrell-Talbot, Edith Wootton, Agnes Elizabeth Tennyson, Rose Winmill, Mary Donald Gordon, Catherine Bradshaw, Mary Stewart O'Brien, Doris Bell, Winifred Carter, Violet Evelyn Springate, Gwladys Elizabeth Thomas, Myfanwy Gwendoline Rogers, Ruby Maud Channon, Louis Henry Ball, John William Paxton, Jacob French Whiley, Richard Alfred James Walker, Dorothy Mary Cecilia Roberts.

London, Claybury.—*Dorothy Emma Cooper, Helen Cassidy, Albert Cartledge, Patrick Henry Cunningham, Doris Alison Hall, Nora Kilner, Janet Kernaghan, Lilian Adeline McMillan, Mabel Mary Phillips, Sydney Francis Purkis, Minnie Ryott, Irvine Senior, William Walter, Florence Edith Watkinson, Mary Vera Wilkinson, Doris Winifred Jessie Wheeldon, Edna Willingale.

London, Colney Hatch.—Ethel May Gudgeon, Margaret Anne Donnelly Todd, Herbert George Goodwin, Frederick John Lewis, Ernest George Salter.

London, Ewell Colony.—Ellen Violet Darnell, Queenie Rosina Lily Cable, Grace Victoria Welch, Mary Elizabeth Armstrong, Dorothy Isabel Todd, Beatrice Mary Impson, Charles John Leslie Pelling, Arthur George Hyde.

London, Hanwell.—Harry F. James, Stanley G. Bury, Elizabeth Keenan, Beatrice E. Fuller, Catherine A. O'Hanlon, Isabella Groucott, Maud E. Smith, Dorothy V. Pitcher, *Florence E. Griggs, Mary A. Richards.

London, Horton.—Irene Amy Andrews, Minnie Donnelly, Margaret Goulding, Rose Annette Gwyer, Margaret Hanratty, Maisie Eileen Hampton, Mary Teresa Hyland, Sarah Johnston, Bridget Agnes Kelly, Annie Mannion, Ada Brebner Melvin, Edith Mary McCarthy, Kathleen Josephine McNally, Marie Frances O'Driscoll, Frances Annie Smith, Ada Maud Tibbs.

London, Long Grove.—Frederick John Currell, Lewis Henry Edwards, Frederick Edward Franklin, William Charles Rossiter, Gladys Frances Benbow, Dorothy

Byford Lamb, Hilda Kathleen Cracknell, Doris Ethel Lagdon, Ruth Maltby, Florence Maltby, Elizabeth Robertson Macleod, Evelyn Maud Roberts, Sybil Smith, Violet Waller, Iris Molly Wallace.

London, Maudsley.—*Dorothy Ballard, *Jane Enid Maglona Evans.

London, Tooting Bec.—Walter James Leask, Frederick Austin Toby, Cirsty Flora Currie, Elizabeth Jane Davies, Doris Hilda Haycock, Francis Lilian Knight, Florence Rose Main, Delia Nally, Cissie Rose Osborne, Gladys Eva Sherman, Irene Sherwin, Joyce Caroline Vooght, Angela O'Donnell.

London, West Park.—Michael Joseph Killoran, Thomas Henry Johns, Herbert Poyser, Frank Herbert Gilkes, Alexander George Doy, Hubert Toms, Ernest Dale Robinson, *Frances Ethel Bowles, Ceinwen Griffiths, Martha Ellen Hagger, *Vera Wardle, Mair Eluned Morris, Constance E. R. Petch, Ivy Marguerite Waller, *Stella Addison, Mary Patricia O'Sullivan, Mary Anne Hurley, Kathleen Murphy, Mabel Edith Mears, Frona Zena Ricketts, *Marie Rita Emmerson.

Middlesex, Napsbury.—William John James Tiller, Arthur Edward Gale, Conrad Benjamin Smith, Walter John Browne, Charles Frederick Roy Sammels, Florence Mabel Daniels, Annie Edwardson, Louisa Fowle, Marie Elizabeth Gould, *Winnie Haddon, Mary O'Loughlin, Margaret Ann Sill, Mary Isabelle Waterman.

Middlesex, Springfield.—Grace Sarah Bullen, Lilian Jones, Emily Mason, Annie Marsh, Maud Page, Minnie Hylas Smith, Morfydd Thomas, Avis Williamson, Sydney Harry Richards, Lewis Thomas Gane.

Mid-Wales.—Albert Edward Bosley, William Henry Bowen, Owen John Thomas, Walton Bothwell Rogers, Edward Brynley Brace, Blanche Chambers Lloyd, Dorothy May Gammond.

Monmouthshire.—Gwladys Mary Phillips, Nellie Olwen Evans, Albert Leonard Pragnell, Stewart McAughey, Henry Archie Savegar, William John Richards, Charles Richard Strangward, Thomas George Llewellyn, Edwin George Louis Window, Charles Edward Bevan, William Rostrom Wilkes Bloor.

Norfolk.—Queenie Joyce Brock, Ada Baldry, Doris Mary Barnard, Kathleen Brigham, Kathleen Condon, Elsie Emma Ford, Louie Mary Hodges, Mabel Rose Jermy, Lilian Matheson, Joyce Neave, Margaret Sadler, Gladys Sarah Wheelhouse, Alexandra Nell Turner, Cyril Walter Dunham, Frank Henry Hunter, Edward Samuel Oliver, John Williams, Benjamin Marshall.

Northamptonshire.—Sybil Bonner, *Cicely Kate Hayman, Mary Ann Hollins, Lawrence William Dawes, Joseph Humphrey Tarry.

Northumberland.—Charles Baty, Robert Barr Kennedy, Joseph Edgar Oates, Arthur Pratt, *Jean Adams, Lilian Gardiner, Elizabeth Gertrude Heppelwhite, Teresa McEnaney.

Nottinghamshire.—Annie Eliza Hague, Isabel Stevens, Elsie Jew, Evelyn Wakefield, John Woods, William Herbert Whitehead, Henry Colville James, Lawrence Arthur Foster.

Oxford County and City.—Leonard Ernest Ellens, William Walter Brown, Doris Louisa Lockett, Mary Holtam.

Shropshire.—Catherine Eunice Hughes, Percival Richard Hartshorne, Alfred Taylor, Norman Wright.

Somerset and Bath, Taunton.—Mary Vickery, Ellen Mary Hurley, Daisy Evelyn Adelaide Foote, Fred Chave.

Somerset and Bath, Wells.—Wilfred Edgar Cox.

Staffordshire, Burntwood.—Florence Gwenmore Birch, Evelyn Margaret Cartmale, Alice Elizabeth Marshall, Sidonia Joyce Mason, Charles Stewart, Bromley Richard Tunnicliffe.

Staffordshire, Cheddleton.—Jean Tuckley, Frances Kathleen Connolly, Agnes Rooney, Mae Beirne, Helen Alexander Dempster, Jane Murray Reid, *Margaret Marjorie Kelly, Isabella Martin, Bronwen Williams, Mary Cecilia Crawley, Clement Earnshaw, George Edward Thomas, Michael Edward Lydon, Percy Abel Jones, Leslie Robins, Albert James Stapleton, William Duffield.

Staffordshire, Stafford.—John Ernest Herrington, John Hector McFarlane, Gertrude May Perry, Amy Roberts, Doris Nellie Teager, Marion Waldron.

Suffolk.—Grace V. Addison, Lily E. Stowe, Ellen H. Wilson, Hilda G. Robinson.

Surrey, Brookwood.—Dulcie Lena Hatfield, Ann Louisa Sutton, Veronica Cassidy, Elsie Blackford, Dorothy Hedley, Helen Elizabeth Preston, Lilian Hodgson, Archibald Richard Ward, Arthur Richard Delani, Ernest Charles Becker, George Albert Sadler.

Surrey, Netherne.—John Henry Leese, Wallis Roland Inwood, Charles Edward Parsons, Amy O'Brien.

Sussex, East.—Emily Untbank, Ellen Nelson Florence Beatrice Timmington, Elsie Cooper, Dorothy Evelyn Lucy Elliott, Lily Hearn, Caroline Georgina Watt Anderson, Naomi Dykins, Audrey Violet Beazer.

Sussex, West.—Ida Manley, Irene Josephine Wills, Bessie Irene Monaghan, Emma Varlow Shirt, Ivy Iona Griffiths, Edythe Ada Clements, Elsie Emma Harris, Dorothy Rogers, Ernest Alfred Conibeere, Albert Edward Rogers, Henry James Barnes.

Warwickshire.—Fanny Elizabeth Tranter, Ruby Kathleen Page, Elizabeth Kidd, Georgina May Cashmore, Ann Garrett Foster, Doris Mabel Hole, Alice Pamment, Phyllis Morgan, Lily Walker, *Annie Kelly, Marjorie Rose Leach, Elizabeth Baker, Albert Edward Winbush, Frederick John Astley, Victor Macklim, William James Cross, Percy Palmer, *Eric Barber.

Wiltshire.—Arthur James Haines, Ernest Strudley, Lewis Edgar Stagg.

Worcestershire, Barnsley Hall.—Ernest Hedley Geary, Norman Sheldon, Jessie Breakwell Brick, Kathleen Jones, Florence Vernon Smith, Alice Jane Thomas, Dorothy Morgan.

Worcestershire, Powick.—Charles Edwin Pullen, Charles Edward Soley, William Bailey, *Florence Annie Dallow, Jessie Merrefield, Vera May Blackwell, Hilda Griffiths, Theresa Davies, Kathleen Bernice Stephens, Ellen Beatrice Evans.

Yorkshire, East Riding.—Sidney Dawson, John Arthur Benson Myers, Sidney Scrowston, Irene Whitehead.

Yorkshire, Menston.—Eva Walters, Elizabeth Maria White, Fanny Clayton, Gladys Moxon, Minnie Grace, Hetty Midgley, Hilda Robson, Florence May Briggs, Walter Womersley, Norman Hancock, Percy Harrison, George Edgar Parker, Thomas Walshe, Frederick Wilkinson, Ethelbert Cooper, Harry McKinley, James William Thompson.

Yorkshire, Storthes Hall.—John Bruce, Edward Clarke, Joseph William Kenworthy, Joseph William Martin, Arthur North, Wilfred Senior, George Mellor Tazzyman, Tom Woollin, Gladys Bell, Kathleen Haigh, Mary O'Brien, Mary Ellen Ragsdale, Ada Thompson.

Yorkshire, Wadsley.—Sarah Ann Appleby, Margaret Bishop, Iris Buckley, Doris Buckley, Olive Mary Drury, Violet May Elvin, Ida Gibbons, Ivy Laughton, Lilian Mawhood, Edith Store, Gladys Swift, Louis Taylor, John Booker, Charles Edward Bennett, Clifford Melbourne Beet, Joseph Oxley, William Arthur Pashby, Thomas Edward Walter Peacock, Harry Robinson, James William Ronson, Lewis Henry Rhodes, Robert Spooner, Francis Ward.

Birmingham, Rubery Hill and Hollymoor.—*Charles Bannister, *Percy Lord, Dorothy Millicent Ada Wright, Elsie Elizabeth Lee, Kathleen Emma Birch, Gertrude May Jones, Evelyn Wythes, Jennie Marjory Dax, Olive Grove, Iris Rachel Ann Saunders.

Birmingham, Winson Green.—Walter Clarkson, *Herbert Hutchings, Martha Timmis, Doris Chetwood, Lucy Isobel Forgham, Kathleen Darrall, Jennie Owen.

Brighton.—Elizabeth Mary Dee, Amy Maude Beavis, Patrick Lester James Woodman, Alan Taylor.

Bristol.—Louis Charles Walker, Henry Harrison, Linda Parsons, Irene Garrad, Florence Taylor, Anne Gray, Maud Taylor, Elsie Taylor, Melinda Gill.

Canterbury.—Ethel Allen.

Croydon.—Jane Ane Taylor, Alice Lauder, Emma Vincent Wilson, Charlotte Taylor, William George Reeves, Leonard Brunton.

Derby.—Ivy Butler, Ida Insley.

Exeter.—Dorothy Phyllis Mona Pople, Kathleen Frances Annie Welch.

Gateshead.—Hector Caisley, Margaret Wilson, Margaret Jane Horne, Elizabeth Rawling Brewis, Alice Gardner Young.

Hull.—Edna Wilkinson.

Ipswich.—Gertrude Kezia Catchpole, Elsie May Stannard.

Leicester.—*Iris May Holley.

London, City of.—Edmund Lewis Stoneham, Charles Thomas Clarke, Violet Florence Graves.

Middlesbrough.—Sidney George Harvey Clark.

Newcastle.—John A. Cleghorn, Maud Wright, Julia Frances McCarthy, Gertrude

Olga Robinson, Mona Waggett, Ethel Bramhall, Margaret Ella Barrett, Mabel Clara Foggin.

Newport.—Charles Edward Powell.

Norwich.—William George Arnett, Blanche Ruth Lond-Caulk, Walter Frederick Chaplin, Winifred Dorothy Watts, Edith Mary Wiles.

Nottingham.—Horace Kniveton, Thomas Weston Cooling, *Betty Aileen Challinor, Gladys Annie Elizabeth Poole.

Plymouth.—Olive Foale, Doreen Dodd, Ernest Webb, Lilian Mabel Ottway.

Portsmouth.—*Ethel Elizabeth Rose, Ivy Verona Gilbert, Irene Patricia Hodgson, William Henry Wolfe, James Frederick Nuttall.

Sunderland.—John Proud.

West Ham.—Ena Dorothy Carson, Mary Kathleen Fox, Grace Amy Evans, Doris Gwendoline Jones, Rose Catherine Hearn, Margaret Alice Boxell, Hilda Hales, *Leslie Hewson, Joseph Edward Soley, Archibald Brunton.

York.—*Robert Ayre, Ivy Mary Welburn.

Ministry of Pensions, Kirkburton.—William Speers Armstrong, Sydney Charles Leonard Osborn, Albert Edward Tomlinson.

Bailbrook House.—Leila Annie Cayford.

Barnwood House.—Hilda Whysall, Hilda May Marion Davies, Maggie Mary Rees, Olive Blanche Stokes, Elsie Margaret Duffield, Florence Ray Tripp, Freda Louisy Mercy Hewett, Joe Walter William Richings, Alfred John Hames.

Bethlem Royal.—Muriel Nellie Edith Markham, Winifred Gladys Ceaser, Ivy Victoria May Ceaser, Dolores Elena Dent.

Brislington House.—Elsie Alexander, Beatrice Rice, Daisy Irene Harries.

Camberwell House.—Mary Catherine Blake, Christopher Dilworth, Mary Edmonds, Mary Dorothy Tilsley.

Cheadle Royal.—Edith A. Brammer.

Holloway Sanatorium.—Gertrude Ellen Mary Bertie, Lilian Mascotta Penton Smith, Amy Mildred Prickett, Josephine Fogarty, Bertha Ellen Stokes, Henry A. Brooks, William Edward Coburn, Edmond George Williams, John Christopher Butler, John Reginald Raven, Alexander John Brown.

Middleton Hall.—*George Grannycomb, Eileen Waldis, Edna Dickinson.

St. Andrew's.—Bernard Pickerill, Arthur Henry Whiting, Bertie Edward Collens, Richard Stanley Taylor, Lilian May Creese, Margaret Douglas, *Catherine Dooher, Mary Flannagan, Annie Haffey, Margaret Muriel Jones, Catherine McVeigh, Anna Mary McConnachie, Katherine O'Neill, Matilda Caroline Reburn, Katherine Montague.

The Old Manor.—Jeannie Gordon Adam, Eva Elsie Parker.

Royal Naval.—*Walter John Victor Hindes.

Ticehurst.—Ernest Norman King.

Warneford.—*Mabel Mulvaney.

Worsford House.—John Henry Quartley, Ernest Beckett, Gilbert Pyle, Winifred Mudge, Elsie Elizabeth Glanville.

Aberdeen City.—Bertha Cruden, Alice McConach, Wilhelmina Jane Duncan.

Aberdeen Royal.—William Christie, James Diack Murray, Arthur Littlejohn, William Reid, John Wright, William McConnachie, David Adams, Ian Hamilton Wilson, Frances Forbes Spence, Alice Mackie, Margaret Ann Duncan, William Critchley, Williamina Davidson, Doris Allan, Jessie Simpson Rust, Jessie Ann Cruickshank, Margaret Brown, Elsie Bella Bruce, Helen Davidson Middleton.

Argyll and Bute.—Grace Douglas, Margaret Campbell Mitchell, William Anderson Lawson.

Ayr, Glengall.—Annie D. Walmsley, *Janet P. Broadfoot, Margaret S. Howatson, Thomasina Cully, Neil R. McKinnon, Dugald MacInnes, James Stewart.

Banff.—Nellie Smith, Jeannie Geddes, William Greig Maitland, Ann Shand Craig.

Dumfries, Crichton Royal.—William Rodger, James McShane (*secundus*), Edmund Marshall, Janet Reid Watson, Sarah Coupland, Bridget Agnes Lavin, Catherine Binnie Brown, Mary Wedlock, Sarah Elizabeth Morrison, *Cecilia Meldrum Nicol, Rachel McRury, Jean Gray, Hannah Reid, Ellen Fitzpatrick, Anne Taylor.

Dundee, West Green.—Margaret Constable, *Margaret Ellen Irwin, Herbert Johnston, Christina Comyn Jeffery, Angus McKenzie Leggat, David Wallace

Murray, Jessie McIver, Jessie Ross MacLeod, Edwin Donald Reid, Frank Smart, Isabella Gordon or Symonds.

Dundee Royal.—Marion McRurtrie, James Guthrie.

Edinburgh, Bangour.—Jeanie Beaton, Winifred Frances McCabe, Jessie Campbell, Isabella Margaret Shearer Harvey, Mary McGillivray Lawson, Elizabeth Love, Jeanie Noble, Margaret Brown Clelland Ritchie, Marion Roberts Sanderson, Jean Fleming Smith, Hannah Taylor, Agnes Mary Wightman, John Allan, Duncan McIntyre, Roderick MacRae, George Shanley.

Edinburgh Royal, Craig House.—Helen Dorn, Jean Fee, Margaret Gibson, Nellie Grieve, Margaret Lorrimer, Flora McDonald, Annabella McLeod, Elsie Taylor, *Mary R. Warden, Charles Redshaw, William Robb, Robert Skinner, Robert Studdart, William Taylor, John Whyte.

Edinburgh Royal.—Mary Appleby, Louise Yoeman Ayre, Annabella Penman, Agnes Mary Davidson, Elizabeth Fenwick, Mary Burns, Isabella Forrester, Martha McCulloch, Janet M. Campbell, *Christabel Wilson, David Lees, John Gunning, Robert Gibb.

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Glasgow, Garlloch.—Ellen Scott Martin, Elizabeth Gordon, Isabella Adam McDonald, Mary McCormick, Elizabeth Scobie Porter, Mary Moore, Helen Davidson Diack Craighead, Jessie Holland or Croft, Margaret Lorne or Wilson, Elizabeth Morrison Miller, Janet Paterson, Christina McIsaacs, Annie Hamilton Edmondston Clarke Sinclair, Alexanderina McRury, Helena Hume, Helen Marnoch.

Glasgow, Woodilee.—Margaret Ferguson Bruce, Margaret O'Brien, Catherine Cunningham Henderson, Ellen McMeakin, *Margaret Spiers Duncan, Margaret Cunningham Carey, *Jean McGrigor, William McCammont, Andrew Strachan.

Goran.—Donald Boyd, Alfred Clark, John Sommerville, George Kindness.

Greenock.—*Margaret Drummond Morrison.

Inverness.—Inverness Cameron, Margaret Mackinnon, Margaret Ross, Jane Violet McLean Ross Gibb, Adeline Grant or Budge, Alexander McLeod, Neil Morrison, Roderick Alexander Bisset, William Mackay, Donald McQuarrie, Hector McKenzie, David William Francis Alexander McKenzie Munro.

Kirklands.—Donald McLean, Malcolm McLeod.

Lanark.—*Isabel Watson, Annie Miller Adams, *Richard Pearson Gibb, Robert Masson Lees, Robert Plenderleith Elder.

Midlothian.—Christopher Burns.

Montrose Royal.—William Gordon, *Jean Frame Bell, Margaret Cumming Howie, Isabella Morrison, *Isabel Sibbald, Edith Pollock.

Moray.—Jessie Ann Scott, Elizabeth McDonald Cumming.

Murthley.—Euphemia Davidson, Edith Mary Warren, Louisa Lockhart Buchanan, Jessie Gilchrist Heggie, James Lachie, jun., Alexander George Rennie.

Renfrew, Dykebar.—Sarah Quinn, Jessie Scouler, Kate MacAulay, Alexander MacLean, James Henry, Alexander MacAskill, James Bowie, Oliver Ruxton, Alexander Fleming, Peter MacDonald, James MacWilliam, Alexander Cunningham, Robert Hunter, James MacDonald, John Stewart, *Solborg Bogason.

Roxburgh.—Catherine McIntyre, Wilhelmina O. C. Pierce, David Ramsay, Hilda A. W. Thomson.

Stirling.—Isabella Campbell, Mary Ann Fallens, Sarah Ann McGettigan, Jane Campbell O'Brien, Marion Allan Brown Ross, George Murdoch Clark, Colin Graham McNab, John Philip, Wilbur Woldrage.

Armagh.—Mary Clare Mallon, Mary Fegan, Robert Nicholson.

Belfast.—Oliver Vance, George Allen, Sarah J. Johnston, Mary Quinn, Mary J. Burns.

Carlow.—James Murphy, Gerald Mooney, Thomas Burke, William J. Hunter, Michael Joseph Kelly.

Dublin, Grangeogorman.—John Finnegan, James J. Fagan, Evelyn O'Brien, Mary J. Doherty, Mary C. Flanagan.

Kilkenny.—Bridget O'Neill.

Mayo.—Margaret Macken.

Mullingar.—Kathleen Bannon, Kate Drake, Bridget Farrelly, Anne Finnan,

Margaret Igoe, Kathleen Monaghan, Bridget Moran, Michael Carley, Peter Gouldsbury, James Kincaid, Patrick Montgomery, Henry Silver, Anthony Wrafter, Francis McKeon.

Omagh.—Maggie McCann, Kathleen Cunningham, Mary A. Lunny, Sarah J. Kyle.

Portlaoighise (Maryborough).—Annie Phelan.

Portrane.—Julia O'Neill, Bridget Whelan, Bridget McCann, Agnes Byrne, Annie Ryan, William Meade, Daniel Fitzgerald, Thomas Andrews, John T. Kavanagh.

St. Patrick's.—Elizabeth Byrne, Maud Halliday, Dorothy Fergy, May Rafferty.

Sligo.—Bridget Tooher, James Lee, Patrick Conlon.

FEDERATED MALAY STATES.

Deleap Singh.

SOUTH AFRICA.

Bloemfontein.—Johannes Gerhardus Terblanche, Johannes Hendrik van Rooyen, Matthews Casparus Wessels, Susanna Muller, Elizabeth Johanna Scholtz, Aletta Catherina Schoeman, Sophie Potgieter, Hester Elizabeth Whitehorn.

Fort Napier.—Louisa Maria Susanna Nel, David Benjamin Jordaan.

Grahamstown.—Gerhardus Johannes van Antwerpen, Martha Magdalena Vorster.

Pietermaritzburg.—Susara Maria Foulds, Laura Sybil Strauch, Naomi Elizabeth Diessel, William Fred Arnold.

Pretoria.—Anna Jacomina Botha, Jacoba Johanna Coetzee, Pieter Marthinus de Beer, Heila Magdalena du Toit, Sidney Vincent Georges, Susara Johanna Lemmer, Charles Stephanus Jacobus Marais, Nicolaas Stefanus Carnelius Schoeman, Helena Dorothea Schmidt, Anna Jacoba Senekal, Elizabeth Magdalena Swartz, Helena Elizabeth van der Westhuizen, Cornelis Lourens van Rooyen.

Port Alfred.—Christoffel Andrias Francis Nel, Maria Magrietha van der Bank.

Queenstown.—Johannes Benjamin Strydon, Edna Elizabeth Nell, Mavis Hilda Janet Bell, Aletta Cornelia Wilhelmina Bosch, Dorothy Agatha Nel, Cecilia Johanna Claassen, Emmaline Anne Gerber, Clara Anna Bolton.

Valkenberg.—Ernest David Laubscher, Hendrick Erasmus Theron, Thomas Frederick Clark, Maria Sophia van Schoor, Johanna du Toit Lourens, Jacoba Johanna Potgieter, Magrieta Johanna Francina de Toit, Johanna Barendine Petronella Marais.

Nursing of Mental Defectives.

GREAT BRITAIN AND IRELAND.

Calderstones.—Euphemia Brankin, Mabel Crossley, Marion Holden, Kathleen Mulcahy, Charlotte Winifred Simpson, Richard Crowe, John Schofield, Edward Crane, William Coates, *James Turner Smith, John Broadley, John Walmsley Eccles, James Lancaster, Margaret Mary Kelly, Jessie McLaren.

Caterham.—Edgar J. Pritchard, Harold Spicer, Agnes MacGregor Anderson, Daisy Winifred Harris, Alice Emily Cass, Bridget Delia McKeon, Elizabeth Mary O'Dell, Ruth Bowman, Vera Pearl Davies, Dorothy Francey.

Darent.—Alexander George Hedley, Alfred John Hobbs, Horace Charles Readings, Nettie Matilda Bottle, Doris Mary Catt, Dora Mary Cooke, Alice Rhoda de Leur, Alice Golding, Doris May Keates, Dorothy Rose Smith, Catherine Matilda Devine, Alice Louise Nicklin, Elsie Martha Welham, Lily Devlin.

Royal Eastern Counties.—Edith Eva Gibbins, Florence Victoria Ellen Graver, Reubina Petrie.

Farmfield.—Humphrey John Hockings.

Fountain.—*Gwendoline Sylvia Fletcher, Hilda Gladys Bates, Ivy Elizabeth Cull, *Alice Emma Adams.

Great Barr Park Colony.—Dora Meddes.

Leavesden.—Joseph Edward Lay, Horace John Morley, Reginald Vale, Emily Bayliss, Eliza Blunden, Hannah Mary Deakin, Doris Sylvia Gwiliam, Eva Lillian Keene, Elizabeth Sullivan.

The Manor.—Sarah Olivia Leyshon, Emily Lyons, Elsie Minnie Winifred Shepard, Annie Maud Myfanwy Astley, Elizabeth John, Mary McGregor, Jessie Wood, Maggie Hoey.

Monyhull.—William Edward Timbrell, Wilfred James Tonks, Amy Victoria Berry, Hilda Randall, Dorothy Hordern, Violet Coventry, Elizabeth Drew.

Rampton State Institution.—Betty Slaven, Mary Jane Druery, Ellen Fallon, Alfred Blackburn, Clifford Haworth, Wilfred Kirton, Sidney Tanham, Charles James Aldridge, William Hector Walker, Arthur Withall, Norman Edwin Bourne, Spencer Wallhead, Leonard Dixon.

Royal Scottish.—Janet Walker Coombe, Nancy H. R. Edward, Grace Fraser, Margaret H. Jackson, Sarah M. Laggan, Elizabeth Marshall McCallum, Christina MacLeod, Bessie McLuckie.

Stoneyetts.—Lydia Baillie Brown, Joseph Lindsay, Harry McKee, Margaret Simpson, *Elizabeth Glen Fisher.

Western Counties.—Edward Sant, Charles Causley, Adelaide Ford, Elsie Ching, Ethel Coneybeer, Margaret Turner.

SOUTH AFRICA.

Alexandra Institution.—Anna Elizabeth Prins, Jessie Murdock Ellis.

Witrand.—Theophilus Bosch, Wilfred Percy Funchall, Gerard Henry Greyby, Frank Wilfred James Kilbourn, Uys Ludolf Steyn, Casper Jan Hendrik van der Walt, Caroline Johanna Boonzaaier, Hester Catherina Botes, Alida Susanna Freislich, Magdalena Margaretha Furstenburg, Maria Magdalena Herbst, Wilhelmina Katrina Olivier, Hendrika Christina Snyman, Susanna Helena Wentzel.

Bronze Medal and Prize for 1932.

Dissertations for the Association's Bronze Medal and Prize must be delivered to the Registrar by April 30, 1932.

Divisional Prizes for 1932.

Papers certified as eligible for this competition must be forwarded to the Registrar not later than April 30, 1932.

Gaskell Medal and Prize.

The examination for the Gaskell Medal and Prize and the examination for the Certificate in Psychological Medicine will be held at the Maudsley Hospital, Denmark Hill, London, in May, 1932.

Applications for entry to each examination to be made to the Registrar, St. Andrew's Hospital, Northampton.

There is no fee for entrance to the Gaskell Prize Examination.

The entrance fee for the examination for the Certificate in Psychological Medicine is three guineas.

The Nursing Badge.

This Badge, founded at the Annual Meeting (Wakefield), July 11, 1928, can now be obtained from the Registrar. The application must be made on a special form and accompanied by 6s., which includes the cost of engraving the name and registration number of the holder.

The badge is issued for general use, but especially for occasions when the nursing medal is inconvenient or inappropriate. It is fitted with a brooch-pin for women and a crescent-shaped button-hole stud for men.

For full particulars of the Association's Medals and Prizes and the Certificate in Psychological Medicine see "Year Book" prefacing the January number of the Journal.

NOTICES BY THE GENERAL SECRETARY.

Death.

JOHN ROBERT LORD.

Appointment.

FLEMING, G. W. T. H., M.R.C.S., L.R.C.P., D.P.M., to be Medical Superintendent, Hereford County and City Mental Hospital.

NOTICES OF MEETINGS.

Quarterly Meeting.—November 24, 1931, at the British Medical Association House, London, W.C. 1. Maudsley Lecture by Sir Hubert Bond.

Irish Division.—Autumn Meeting at the Royal College of Physicians, Kildare Street, Dublin, November 12, 1931.

As it is desired to hold the February Quarterly Meeting in the provinces, invitations from Committees and Medical Superintendents of Mental Hospitals, offering hospitality for the two days, viz., February 23 and 24, 1932, will be welcomed.

Full particulars, with available accommodation in the district, should be sent to the General Secretary, Dr. R. Worth, Springfield Mental Hospital, Tooting, London, S.W. 17, as soon as possible.

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