TRANSACTIONS

OF THE

ROYAL ACADEMY OF MEDICINE IN IRELAND.
TRANSACTIONS
OF THE
Royal Academy of Medicine
IN IRELAND.

VOL. XXIX.

EDITED BY
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GENERAL SECRETARY;
PROFESSOR OF PHYSIOLOGY ROYAL COLLEGE OF SURGEONS IN IRELAND.

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ROYAL ACADEMY OF MEDICINE IN IRELAND.
ESTABLISHED 1882.

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3. T. Donnelly,
4. T. P. C. Kirkpatrick,
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2. J. Spencer Sheil,
3. T. G. Moorhead,
4. C. A. Ball.
HONORARY FELLOWS.

1903 Bergmann, Professor von, Berlin.
1885*Billroth, Professor T.
1899*Burdon-Saunderson, Sir J., Bart., M.D., F.R.S.
1903*Brouardel, Professor.
1885*Charcot, Professor.
1885 Emmet, Thomas Addis, 9 Madison Avenue, New York.
1885*Flint, Professor Austin.
1904 Fuchs, Professor E., Vienna.
1885 Hutchinson, Jonathan, F.R.S., London.
1885*Jenner, Sir William, Bart., F.R.S.
1885*Keith, Thomas.
1899 Kelly, Professor Howard, Baltimore.
1899*Koch, Professor.
1899 Kocher, Professor, Bern.
1885*Kölliker, Professor.
1899 Leber, Professor Th., Heidelberg.
1885 Lister, Right Hon. Baron, F.R.S., London.
1885*Ludwig, Professor.
1899*MacCormac, Sir W., Bart., K.C.V.O.
1899 Martin, Professor, Berlin.
1899*Nothnagel, Professor.
1885*Paget, Sir James, Bart., F.R.S.
1885*Pasteur, Professor.
1900 Politzer, Professor Adam, Vienna.
1903 Pfe-Smith, P. H., F.R.S., London.
1885 Recklinghausen, Professor von, Strasburg.
1885*Schroeder, Professor.
1903 Treves, Sir Fred., Bart., London.
1899 Turner, Sir W., F.R.S., Edinburgh.
1885*Virchow, Professor.

* Dead.
List of Fellows.

[The figures prefixed denote the date of election. Original Fellows are marked †.]

1903 Ahern, W. F., M.D., Columba House, Howth.
1893 Allworthy, S. W., M.D., B.Ch., D.P.H., Dub., Physician Hospital for Skin Diseases, The Manor House, Antrim-road, Belfast.
1907 Anderson-Berry, D., M.D., LL.D., F.R.S., Edin., Versailles, 19 Stanhope-road, Highgate, N.
1905 Ashe, James S., L.R.C.P. & S.I., Lecturer on Materia Medica, Ph. Soc., Ireland, 21 Waterloo-road, Dublin.

† Ball, Sir Charles Bent, Bart., C.B., M.D., F.R.C.S., Regius Professor of Surgery, Univ. Dub., Surgeon Sir P. Dun's Hospital, 24 Merrion-square, N., Dublin.
1903 Ball, Charles Arthur K., M.D., F.R.C.S., Surgeon Sir P. Dun's Hospital, 22 Lower Fitzwilliam-street.

† Beatty, Wallace, M.D., F.R.C.P., Physician Adelaide Hospital, 38 Merrion-square, E., Dublin.
† Benson, Arthur Henry, F.R.C.S., Ophthalmic Surgeon Royal City of Dublin Hospital, Surgeon Royal Victoria Eye and Ear Hospital, 42 Fitzwilliam-square, W., Dublin.
1905 Benson, C. M., M.B., B.Ch., F.R.C.S., Asst.-Surgeon Sir Patrick Dun's Hospital, 65 Lower Baggot-street.
† Benson, J. Hawtrey, M.D., F.R.C.P., Consulting Physician Royal City of Dublin Hospital, 57 Fitzwilliam-square, N., Dublin.
1904 Beveridge, W. J., L.R.C.P. & S., M.D., Brux., 11 MacDonald-street, Kalgoorlie, Western Australia.
1910 Birt, Lt.-Col. C., R.A.M.C., United Service Club, Dublin (Temporary).
List of Fellows.

1910 Boxwell, William, M.B., B.Ch., Dub., F.R.C.P.I., Clinical Assistant and Assist. Pathologist Meath Hospital, 77 Harcourt-street, Dublin.

1905 Boyd, Alfred E., M.B., B.Ch., D.P.H., Anaesthetist Richmond Hospital, 4 Fitzwilliam-square, Dublin.

1898 Bradshaw, Sam. J. M., M.D., 1 Temple-terrace, Dalkey.

1883 Browne, J. Walton, A.B., M.D., Surgeon to the Royal Victoria Hospital, 10 College-square, North, Belfast.

1884 Burgess, John J., F.R.C.S., late Assistant Surgeon to the Richmond Hospital, 22 Westland-row, Dublin.

1891 Byrne, Herbert U., M.B., B.Ch., Univ. Dublin, Medical Officer No. 4 Dispensary District, South Dublin Union, Physician Cork-street Hospital, 15 Upper Merrion-square, Dublin.

1891 Byrne, Louis A., L.R.C.P., F.R.C.S., Surgeon Jervis-street Hospital, 50 Merrion-square, Dublin.


1884 Chance, Sir Arthur, Ex-President R.C.S., Surgeon to Mater Misericordiae Hospital, 90 Merrion-square.

1908 Chatterjee, K. K., F.R.C.S.I., Surgeon Campbell Hospital, Calcutta, 14 Sudder-street, Calcutta, India.

1891 Coffey, Denis J., M.B., President, University College, Dublin.

1897 Colahan, Nicholas Whistler, M.D., M.Ch., Professor of Materia Medica and Therapeutics Queen's College, Villa, Galway.

1891 Coleman, James Byrne, C.M.G., M.D., F.R.C.P., Physician to Richmond, Whitworth, and Hardwicke Hospitals, and to Nat. Hosp. for Consumption, 9 Merrion-square, Dublin.

1910 Collingwood, B. J., M.D., Camb., Professor of Physiology, National University, Adelaide Mansions, Earlsfort-terrace.


1883 Cox, Right Hon. Michael F., P.C., M.D., F.R.C.P.I., Physician St. Vincent's Hospital, 26 Merrion-square, Dublin.

1889 Craig, James, M.D., F.R.C.P., King's Professor of Practice of Medicine, School of Physic, Trinity College, Physician Sir P. Dun's Hospital, 18 Merrion-square, Dublin.

1898 Crawley, Frank Chetwode, M.D., Univ. Dub., F.R.C.S., Assistant Surgeon Royal Victoria Eye and Ear Hospital, 41 Lower Baggot-street, Dublin.

1910 Crofton, W. Mervyn, M.B., R.U.I., Professor of Special Pathology, National University, Pathologist, Steeven's Hospital, 55 Merrion-square.


1897 Dargan, W. J., M.D., F.R.C.P.I., Physician St. Vincent's Hospital, 45 St. Stephen's-green.


1899 Dempsey, Sir Alex., M.D., Q.U.I., Physician Mater Infirmorum Hospital, 36 Clifton-street, Belfast

1891 Dempsey, Martin J. P., M.D., R.U.I., F.R.C.P., Professor of Materia Medica and Therapeutics, University College, Dublin, Physician to Mater Misericordiae Hospital, 35 Merrion-square, Dublin.


1905 Donnelly, Thomas, M.D., F.R.C.S., Medical Officer No. 1 Dispensary District, North Dublin Union, 14 Rutland-square.

1895 Drury, H. C., M.D., Univ. Dub., F.R.C.P., Physician Sir P. Dun's Hospital, 48 Fitzwilliam-square, Dublin.

1885 Dywer, F. Conway, M.D., F.R.C.S., Surgeon Richmond Hospital, Professor of Surgery Royal College of Surgeons, 83 Merrion-square, Dublin.

1889 Earl, Henry Cecil, M.D., F.R.C.P., Pathologist Richmond, Whitworth, and Hardwicke Hospitals, 39 Raglan-read.

1909 Eustace, H. M., M.D., Univ. Dubl., Hampstead, Glasnevin.

1887 Falkiner, Ninian McIntire, M.D., F.R.C.P., Medical Superintendent of Statistics, General Register Office, 17 Healthfield-road, Terenure, Dublin.
List of Fellows.

1900 Fannin, Edward M., M.B., B.Ch. Dubl., Assistant Physician, Drumcondra Hospital, 3 Rutland-square.


1904 Farnan, R. P., M.B., R.U.I., Gynaecologist Mater Misericordiae Hospital, 5 Merrion-square.

1888 Ferguson, Henry Lindo, M.D., F.R.C.S., Dunedin, New Zealand.

† Finny, John Magee, M.D., Ex-President R.C.P., 36 Merrion-square, Dublin.

1902 Fitzgerald, Gordon Wm., M.D., Ex-Assistant Master Rotunda Hospital, 183 High-street, Manchester.

† Fitzgerald, Charles E., M.D., F.R.C.P., Surgeon-Oculist-in-Ordinary to the King in Ireland, 27 Upper Merrion-square, Dublin.

1891 Fitzgerald, Francis Creighton, L.R.C.P., L.R.C.S., Medical Officer Dispensary District, Newtownbutler, Co. Fermanagh.

1902 FitzGibbon, Gibbon, M.D., Gynaecologist, Royal City of Dublin Hospital, 39 Fitzwilliam-place.

1891 Flynn, Robert Alexander, F.R.C.P., Gynaecologist Drumcondra Hospital, 14 Merrion-square, Dublin.

1886 Fottrell, Wm. Joseph, L.R.C.S., Medical Officer North Dublin Union Workhouse, 2 Rutland-square, Dublin.

† Franks, Sir Kendal, C.B., M.D., F.R.C.S., late Surgeon to Adelaide Hospital and to Throat and Ear Hospital, Dublin, Kilmurry, Johannesburg, South Africa.

1905 Freeland, J. Roy, M.D., Penn., L.A.H., Assistant Master Rotunda Hospital, Dublin.

1910 Geddes, A. Campbell, M.D., Professor of Anatomy, R.C.S.I., 71 Merrion-square.

1906 Gibson, M. J., M.D., Univ. Dub., Master Coombe Hospital, 74 Merrion-square, South, Dublin.

1891 Glenn, John Hugh Robert, M.D., F.R.C.P., late Gynaecologist Mercer’s Hospital, 24 Lower Baggot-street, Dublin.

1909 Gogarty, O. St. John, M.D., Univ. Dub., F.R.C.S.I., Surgeon, Nose and Throat Department, Richmond, Whitworth, and Hardwicke Hospitals, 15 Ely-place.


1893 Gordon, Thomas Eagleson, M.B., F.R.C.S., Surgeon Adelaide Hospital, 8 Fitzwilliam-square, Dublin.
List of Fellows.

1902 Gunrn, L. G., M.D., Dub., F.R.C.S., Assistant Surgeon Adelaide Hospital, 43 Fitzwilliam-square.

1892 Hamilton, Wm. Cope, L.R.C.P. & S., late Resident Surgeon Steevens’ Hospital, 120 St. Stephen’s-green, W., Dublin.

1910 Hartigan, John, L.A.H., Assistant Master National Maternity Hospital, Holles-street.

1909 Harvey, R. J., F.R.C.S.I., Surgeon Richmond, Whitworth, and Hardwick Hospitals, 7 Gardiner’s-row.


1899 Haughton, W. S., M.D., Surgeon to Steevens’ Hospital, 16 Merrion-square.

1908 Hayes, Maurice R. J., F.R.C.S.I., X-Rayist, Mater Misericordia Hospital, 35 Upper Fitzwilliam-square, Dublin.

1904 Holmes, Arthur N., M.B., Univ. Dub., late Assistant Master Rotunda Hospital, Gynecologist Mercer’s Hospital, 21 Lower Baggot-street, Dublin.

† Horne, Andrew John, P.R.C.P., Master National Lying-in Hospital, 94 Merrion-square, W., Dublin.


1883 Jacob, David Baldwin, M.D., F.R.C.S., Surgeon Queen’s County Infirmary, Visiting Physician Maryborough District Lunatic Asylum, Surgeon Queen’s County Prison, Port Leix, Maryborough, Queen’s Co.

1890 Jellett, Henry, M.D., F.R.C.P.I., Master, Rotunda Lying-in Hospital, Ex-King’s Professor of Midwifery, School of Physic, Trinity College, 34 Merrion-square.


1893 Joynt, Richard Lane, M.D., Univ. Dub., F.R.C.S., Surgeon Meath Hospital, 84 Harcourt-street, Dublin.

1905 Keegan, John Leo, F.R.C.S., Surgeon Jervis-street Hospital, 56 Lower Baggot-street, Dublin.

1899 Kennedy Denis, F.R.C.S., Surgeon Jervis-street Hospital and Children’s Hospital, Temple-street, 68 Merrion-square.

1884 Kidd, Fred. W., M.D., Professor of Midwifery, R.C.S., ex-Master Coombe Hospital, Gynecologist Meath Hospital, 17 Lower Fitzwilliam-street, Dublin.
List of Fellows.

† Kinkead, Richard John, M.D., L.R.C.S., Lecturer on Medical Jurisprudence, Professor of Obstetric Medicine Queen's College, Galway, Foster House, Galway.

1899 Kirkpatrick, T. Percy C., M.D., Dub., F.R.C.P.I., Physician to Steevens' Hospital, 23 Lower Baggot-street.

1901 Law, S. Horace, M.D., F.R.C.S., Throat Surgeon Adelaide Hospital, 46 Merrion-square.

1884 Ledwich, Edward L'E., L.R.C.P. & S.I., Physician to Mercer's Hospital, 38 Lower Leeson-street, Dublin.

1900 Leeper, Richard R., F.R.C.S., St. Patrick's Hospital, Dublin.

† Lentaigne, Sir John, Ex-P.R.C.S., Surgeon Mater Misericordiae Hospital, 42 Merrion-square, Dublin.

1898 Lindsay, James A., M.D., F.R.C.P. London, Professor of Practice of Medicine Q.U.B., Physician Royal Victoria Hospital, Belfast, 3 Queen's Elms, University-road, Belfast.

† Little, James, M.D., Ex-President R.C.P., Regius Professor of Physics Univ. Dub., 14 St. Stephen's-green, North, Dublin.

1897 Lumsden, John, M.D., Physician to Mercer's Hospital, 4 Fitzwilliam-place.

† M'Ardle, John Stephen, F.R.C.S., Professor of Surgery, University College, Dublin, Surgeon St. Vincent's Hospital and the Mullen Convalescent Home, 72 Merrion-square, Dublin.

1910 M'Ardle, Patrick T., M.B., R.U.I., Assistant Master National Maternity Hospital, Holles-street.


1904 MacGrath, James Joseph, L.R.C.P., St. Helens, Dunfanaghy, Co. Donegal.


1902 M'Kisack, H. L., M.D., Physician Royal Victoria Hospital, 5 Chlorine-place, Belfast.

1905 M'Loughlin, E. P., M.D., R.U.I., Professor of Anatomy University College, Medical School, Cecilia-street, Dublin.
List of Fellows.

1903 McVittie, R. B., M.D., 62 Fitzwilliam-square.

1887 McWeeney, E. J., M.D., F.R.C.P.I., Professor of Pathology, University College, Dublin, 84 St. Stephen’s-green, Dublin.

1900 Magee, Katharine M. N., M.D., 67 Merrion-square, South.


1897 Maunsell, R. Charles B., M.B., B.Ch., B.A.O., Dub., F.R.C.S., Surgeon to Mercer’s Hospital, 32 Lower Baggot-street.

1902 Meldon, G. Pugin, M.D., F.R.C.S., Surgeon Westmoreland Lock Hospital, 68 Lower Baggot-street.

1904 Mills, John, M.B., B.S., R.U.I., District Asylum, Ballinasloe.

1907 Milroy, T. H., M.D. Edin., F.R.S.E., Dunville Professor of Physiology, Queen’s University, Belfast, Thornlea, Malone Park, Belfast.

1901 Mitchell, A. B., F.R.C.S., Surgeon Royal Victoria Hospital, 4 College-square, Belfast.

1894 Montgomery, Robert John, M.A., M.B. Univ. Dub., F.R.C.S., Ophthalmic Surgeon Drumcondra Hospital, Assistant Surgeon Royal Victoria Eye and Ear Hospital, 28 Upper Fitzwilliam-street, Dublin.

1897 Mooney, H. C., M.B., F.R.C.S., Ophthalmic Surgeon Children’s Hospital, Temple-street; Assistant Surgeon Royal Victoria Eye and Ear Hospital, 22 Lower Baggot-street.

1894 Moore, Henry, L.R.C.P. & S., Surgeon Royal City of Dublin Hospital, 19 Upper Fitzwilliam-street.

† Moore, Sir John William, M.D., D.Sc. Oxon., Ex-President R.C.P., Physician Meath Hospital, Professor of Practice of Medicine Royal College of Surgeons, 40 Fitzwilliam-square, West, Dublin.

1904 Moorhead, T. Gillman, M.D., F.R.C.P., Physician City of Dublin Hospital, 23 Upper Fitzwilliam-street.

1883 Murphy, John, F.R.C.P., Physician Mater Misericordiae Hospital, 13 Merrion-square, Dublin.

1904 Murphy, W. L., M.A., M.B., Cantab., F.R.C.S.I., Surgeon, Nose and Throat St. Vincent’s Hospital, 33 Upper Merrion-street.
List of Fellows.

1908 Neill, Thomas, M.B., B.Ch., Dub.; Ex-Assistant. Master Coombe Hospital, 8 Fitzwilliam-place.

1910 Nesbitt, George E., M.B., Dubl., F.R.C.P.I., Assistant Physician Richmond Hospital, 28 Lower Fitzwilliam-street.

† Nixon, Sir Christopher, Bart., M.D., Ex-President R.C.P., Physician to Mater Misericordiae Hospital, 2 Merrion-square, N., Dublin.

1889 Nolan, Michael James, L.R.C.P., L.R.C.S., Resident Medical Superintendent Down District Lunatic Asylum, Downpatrick.

1899 O'Brien, C. M., M.D., L.R.C.P. & S., Physician to City Hospital for Diseases of the Skin, 29 Merrion-square.

† O'Carroll, Joseph Francis, M.D., F.R.C.P., Physician Richmond, Whitworth, and Hardwicke Hospitals, 43 Merrion-square, Dublin.

1906 O'Farrell, Thomas T., F.R.C.S.I., Pathologist, St. Vincent's Hospital; First Assistant in Pathology, University College, Dublin, N.U.I., 44 Waterloo-road.


1883 Olpherts, J. Wybrants, M.D., Medical Officer Downpatrick Dispensary District, The Villas, Downpatrick.

† Ormsby, Sir Lambert Hepenstal, M.D., Ex-President R.C.S., Surgeon Meath Hospital, Surgeon National Children's Hospital, 92 Merrion-square, West, Dublin.

1894 O'Sullivan, A. C., M.D., F.T.C.D., F.R.C.P.I., Lecturer on Pathology Trinity College, 43 Ailesbury-road, Dublin.

† Oulton, Henry W., M.D. Dub., F.R.C.S.I., Chief Surgeon Dublin Metropolitan Police, 41 Stephen's-green, Dublin.

1893 Parsons, Alfred Robert, M.D., Univ. Dub., F.R.C.P., Physician Royal City of Dublin Hospital, 27 Lower Fitzwilliam-street, Dublin.

1895 Peacocke, Geo. J., M.D., F.R.C.P.I., Physician Adelaide Hospital, 2 Fitzwilliam-square.

1903 Peacocke, Reginald C., M.D. Dub., Medical Officer G.P.O., Blackrock District, 4 Avoca-terrace, Blackrock.

1887 Pearson, Charles Yelverton, M.D., F.R.C.S. Eng., Professor of Surgery Queen's College, 1 Sidney-place, Cork.

1910 Pearson, William, M.D., Assistant Surgeon Adelaide Hospital, 12 Lower Fitzwilliam-street, Dublin.

1904 Pringle, Seton, M.B., Univ. Dub., F.R.C.S.I., Surgeon Mercer's Hospital, 27 Lower Baggot-street.
† Purefoy, Richard Dancer, V.-P.R.C.S., Ex-Master Rotunda Hospital, 62 Merrion-square, Dublin.
1902 Purser, Frank C., M.D., F.R.C.P., Assistant Physician Richmond, Whitworth, and Hardwicke Hospitals, 20 Lower Baggot-street.

† Redmond, Sir Joseph Michael, M.D., Ex-Pres., R.C.P., Physician to Mater Misericordiae Hospital, 41 Merrion-square, Dublin.
1905 Rowlette, Robert J., M.D., Physician Jervis-street Hospital, Pathologist Rotunda Hospital, 42 Lower Baggot-street, Dublin.

1900 Scott, C. Burnett, M.D., 35 Clarinda-park, Kingstown.
† Scott, John Alfred, M.A., M.D., F.R.C.S., Professor of Physiology Royal College of Surgeons, 36 Lower Baggot-street, Dublin.
1886 Smith, Alfred J., M.B., F.R.C.S., Professor of Midwifery, Catholic University, Gynaecologist St. Vincent’s Hospital, 30 Merrion-square, Dublin.
1895 Smith, R. Travers, M.D., F.R.C.P.I., Physician Richmond, Whitworth and Hardwicke Hospitals, 20 Lower Fitzwilliam-street.
1901 Smith, Trevor N., F.R.C.S., late Assistant Master Coombe Hospital, 31 Upper Fitzwilliam-street.
† Smith, Walter George, M.D., Ex-President R.C.P., King's Professor of Materia Medica, School of Physic, and Physician to Sir Patrick Dun's Hospital, 25 Merrion-square, Dublin.
† Smyly, Sir William J., M.D., Ex-President R.C.P., Ex-Master Rotunda Lying-in Hospital, 53 Merrion-square, S., Dublin.
1905 Stevenson, Walter C., M.B., B.Ch., B.A.O., Assistant Surgeon Dr. Steevens’ Hospital, 21 Upper Fitzwilliam-street.
† Stoker, Sir Thornley, Bart., M.D., Ex-President R.C.S., Surgeon Richmond Hospital, Surgeon Swift’s Hospital for Lunatics, 21 Hatch-street, Dublin.
1902 Stoker, Graves, F.R.C.S., Surgeon Drumcondra Hospital, 46 Rutland-square.
List of Fellows.

1908 Stokes, Henry, M.D., Univ. Dub., F.R.C.S.I., Clinical Assistant, Meath Hospital, 26 Harcourt-street.

1907 Stoney, R. Atkinson, M.B., B.Ch., Dub., F.R.C.S.I., Surgeon Royal City of Dublin Hospital, 115 Lower Baggot-street, Dublin.

† Story, John Benjamin, M.B., F.R.C.S., Surgeon Royal Victoria Eye and Ear Hospital, Ophthalmic and Aural Surgeon Steevens' Hospital, Professor of Ophthalmic and Aural Surgery R.C.S., 6 Merrion-square, N., Dublin.


† Swanzy, Sir Henry Rosborough, M.D., Dub., hon. causa, Ex-P.R.C.S., Surgeon Royal Victoria Eye and Ear Hospital, Dublin, Ophthalmic Surgeon Adelaide Hospital, 23 Merrion-square, North, Dublin.

1893 Symington, Johnson, M.D. Edin., Professor of Anatomy Queen's University, Belfast.

1895 Taylor, Edward Henry, M.D., Dub., F.R.C.S., Professor of Surgery Dublin University, Surgeon Sir Patrick Dun's Hospital, 77 Merrion-square, Dublin.

1893 Taylor, William, M.B., F.R.C.S., Surgeon Meath Hospital, 47 Fitzwilliam-square.

1897 Thompson, W. H., M.D., F.R.C.S. Eng., King's Professor of Institutes of Medicine, Trinity College, Dublin.

1894 Thompson, Sir W. J., M.D., Univ. Dub., F.R.C.P.I., Registrar-General for Ireland, 59 Fitzwilliam-square.

† Tobin, Richard Francis, F.R.C.S., Surgeon St. Vincent's Hospital, 60 St. Stephen's-green, Dublin.

1893 Tweedy, Ernest Hastings, F.R.C.P., Ex-Master Rotunda Lying-in Hospital, Gynaecologist Steeven's Hospital, 6 Fitzwilliam-place, Dublin.

1900 Tweedy, Herbert, L.R.C.P. & S., Colonial Surgeon.

1901 Watson, Edward J., M.D., F.R.C.P., Anaesthetist and Medical Officer in Charge of the X-ray Department Sir P. Dun's Hospital, Demonstrator in Anatomy T.C.D., 25 Fitzwilliam-place.

1902 Watland, R. S., F.R.C.S., Physician National Children's Hospital, 67 Harcourt-street.

List of Fellows.


1900 White, Arthur H., L.R.C.P. & S.I., Professor of Pathology Royal College of Surgeons, Pathologist Meath Hospital and Cork-street Hospital.

1903 Wigham, Joseph T., M.D., Assistant to Professor of Pathology T.C.D., Albany House, Monkstown, Co. Dublin.


1894 Wilson, T. Henry, F.R.C.P., King's Professor of Midwifery, School of Physic, Trinity College, late Assistant Master Rotunda Lying-Hospital 81 Merrion-square.


List of Members.

MEMBERS.

   † Boyce, Jos. W., M.B., Medical Officer Blackrock Dispensary District, St. Kilda, Blackrock, Co. Dublin.

1903 Charles, Andrew, F.R.C.S.I., 64 Harcourt-street.
1887 Cope, Geo. Patrick, L.R.C.P., L.R.C.S., Medical Officer No. 3 Dispensary District, South Dublin Union, 36 Harcourt-street.

1905 Davys, J. H., L.R.C.P. & S.I., Visiting Physician Children's Hospital, Temple-street, 26 Westland-row.
1892 Day, J. Marshall, M.B., Univ. Dublin, Resident Medical Officer Cork-street Fever Hospital, Dublin.
   † Delahoyde, O'Connell J., F.R.C.S., Medical Officer No. 2 District, North Dublin Union, 47 Rutland-square, Dublin.

1897 Fleury, Eleonore Lilian, M.D., R.U.I., Richmond District Asylum, Dublin.

1903 Glenny, Edmund, F.R.C.S., Anaesthetist Meath Hospital, 14 Harrington-street.
1900 Goff, A. S., L.R.C.P. & S., Lynton, Dundrum.
1889 Goulding, H. Benson, F.R.C.S., 12 Rathmines-road.

1908 Hargrave, Jennette C., L.R.C.P. & S.I.,
1898 Hatch, Richard, L.R.C.P. & S., 146 Pembroke-road.
1897 Hughes, Charles, L.R.C.P. & S., 16 Lower Fitzwilliam-street.

1903 Lynn, Kathleen F., M.B., B.Ch., B.A.O., 9 Belgrave-road, Rathmines.
List of Members and Student Associates.

1898 Redington, John, F.R.C.S., Richmond District Asylum, Dublin.
1885 Shaw, James, L.R.C.S., 93 Talbot-street, Dublin.

STUDENT ASSOCIATES.

Drennan, C., Adelaide Hospital.
Hewitt, Miss E., Roskeen, Palmerston-road.
Moore, Maurice S., 40 Fitzwilliam-square.
Revington, Miss G., 32 Upper Leeson-street.
Roberts, Lewis W., 20 St. Alban's-road, S.C.R.
Smyly, Jocelyn, 58 Merrion-square.
Wigoder, Philip I., 33 Grove Park, Rathmines.
Woolcombe, Robert Lloyd, L.L.D., 14 Waterloo-road, Dublin.

ASSOCIATES.

Dr. C. Cooper, 4 Leeson-park.
Dr. V. Clifford, 4 Leeson-park.
RULES.

1. The name shall be, "Royal Academy of Medicine in Ireland." (1887.)

Constitution.

2. The Academy shall consist of Fellows, Honorary Fellows, Members, and Student Associates.

Management.

3. The affairs shall be managed by a Council, consisting of the President, Ex-Presidents (1893), Ex-General Secretaries (1905), the six Presidents of Sections, the General Secretary and Treasurer, the Secretary for Foreign Correspondence, six Secretaries of Sections, and eight Councillors, being two representatives from the Medical, Surgical, Obstetrical, and Pathological Sectional Councils respectively.

Meetings.

4. The Meetings shall be General and Ordinary.

Publication of "Transactions."

5. The "Transactions" shall be published by the Council, subject to the provisions hereinafter contained.

Original Fellows and Members.

6. All the Members of the present Societies (Medical, Surgical, Obstetrical, and Pathological) shall be Original Fellows or Members, without entrance fee, on payment of the annual subscription on or before 31st December, 1882.

Fellows.

7. Fellows of the Royal College of Physicians of Ireland, and of the Royal College of Surgeons in Ireland, shall be admitted, without ballot, on payment of the entrance fee and the subscription for the current year. All others, being Registered Medical Practitioners not directly or indirectly engaged in the sale of drugs, shall be proposed by two Fellows, and elected by ballot by the Council.

8. Candidates shall be proposed at one Meeting of the Council, and balloted for at the next—one black bean in four to reject.

8a. That all Rules referring to the admission of Fellows, Members, and Student Associates shall be interpreted as referring to Ladies as well as Gentlemen.

Privileges of Fellows.

9. Fellows only shall be eligible for office in the Academy. They shall have the privilege of attending all Meetings of the Academy, of making Communications, and of voting and speaking at such meetings. They shall also receive a copy of the "Transactions."

10. These privileges shall not be exercised by any Fellow in arrear with his subscription.

* Those who have paid a Life Subscription to any of the above Societies will be admitted to the privilege of Fellows on payment of Member's subscription.
11. Honorary Fellows, limited in number to 25, may be nominated by the Council, and elected, on motion at a General Meeting of the Academy by a majority of at least two-thirds of those present and voting.

Members.

12. Any Registered Medical Practitioner may be elected as a Member, the election to be conducted in the same manner as that of Fellows.

Privileges of Members.

13. Members shall have the privilege of attending the Ordinary Meetings of the Academy, of making Communications, and of taking part in debate. They can purchase the "Transactions" at cost price.

Associates.

14. Any Registered Medical Practitioner, temporarily resident in Dublin, may be elected an Associate for the period of one Session. The subscription must be paid before election, and the General Council may elect without notice of motion. Such Associates may attend and speak at the ordinary meetings of the Academy.

Student Associates.

15. Registered Medical Students may be elected Student Associates for the period of one year. The Subscription must be paid before election, and the Council may elect without notice of motion.

Student Associates shall have the privilege of attending the Ordinary Meetings of the Academy.

Annual Subscription.

16. Fellows shall pay £2 2s., and Members £1 1s. Associates and Student Associates shall pay 5s. The Subscription shall become due on the 1st of October in each year, and if the Subscription be not paid on or before the first Meeting in February, the defaulter shall cease to belong to the Academy, unless the delay shall be accounted for to the satisfaction of the Council. No Fellow shall vote at the Annual General Meeting who has not paid his subscription for the year. Registered Medical Practitioners not residing within 15 miles of Dublin are eligible as Fellows of the Academy on payment of the entrance fee, and an annual Subscription of £1 1s. Medical Officers on the active list of the Royal Navy and Army are eligible for election as "Temporary Fellows" of the Academy on payment of an annual Subscription of One Guinea. Such Temporary Fellows shall enjoy all the privileges of Fellows, except that of voting at General Meetings. No Fellow who has not paid his Subscription shall vote for any Candidate for Office at the Annual General Meeting, nor can the name of any Fellow be received by the General Secretary for insertion on the ballot paper as a Candidate for Office unless his Subscription shall have been paid for the current year.

Entrance Fee.

17. After admission of Original Fellows, all Fellows shall pay an entrance fee of £1 1s.

Council.

18. The Council shall meet on the last Friday in the month throughout the Session, or oftener should they see occasion—five to form a quorum.
19. Notice of all Extraordinary Meetings shall be transmitted by the Secretary to every Member of the Council. The President or any five Members of Council may call an Extraordinary Meeting of the Council. The Council shall determine questions by vote, or by division if so demanded, the President having a casting vote only. Any regulation of the Council shall have the force of a law, until submitted to the next General Meeting. The Council shall have the power of filling up any vacancies which may occur in the list of Officers of the Academy, except that of President, before the Annual General Meeting. If a vacancy in the office of President should occur, the General Council shall summon a Special General Meeting of the Academy to fill such vacancy. (1888.)

Sectional Councils.

20. There shall be six Sectional Councils elected by the Annual General Meeting in October, termed respectively—the Medical, the Surgical, the Obstetrical, the Pathological, the State Medicine, and the Anatomical and Physiological Councils.

21. No Fellow shall be eligible as a candidate for election on more than two Sectional Councils, but no Fellow shall be eligible as a candidate for election on both the Medical and Surgical Sectional Councils. (1888.)

22. Each Sectional Council shall consist of the President of the Section and ten Members, one of whom shall act as Secretary to the Section; except the State Medicine and Anatomical and Physiological Councils, which shall each consist of a President and six Members. (1888.)

Meetings of Sectional Councils.

23. Each Sectional Council shall meet on a fixed day at least one week before the Ordinary Meeting of their Section, three to form a quorum.

Powers.

24. Each Sectional Council shall have the power of making any such arrangements as it thinks necessary to carry on the work of the Ordinary Meetings which are under its charge, provided that such arrangements do not interfere with the general laws of the Academy; and any Rules laid down by such Council shall have the force of laws at the Ordinary Meetings under its charge until submitted to the General Council.

25. Each Sectional Council shall have the power of filling up any vacancies that may occur among its Members until the Annual General Meeting.

Committee of Reference.

26. The Council shall appoint a Committee of Reference to report upon morbid growths and other specimens exhibited before the Academy; of this Committee the Exhibitor shall, for the occasion, be a Member.

Officers.

27. A President, to be elected by the Annual General Meeting in October, and to hold office for three years.

28. The Presidents of all Sections shall be elected by the Fellows at the Annual General Meeting, and shall hold office for two years.
29. One General Secretary and Treasurer to be elected at the Annual General Meeting.

30. It is expedient that a fixed salary (of one hundred guineas) shall be paid yearly to the General Secretary in consideration of the fact that the editing of the "Transactions" is part of his duties.

31. One Honorary Secretary for Foreign Correspondence to be elected at the Annual General Meeting. (1888.)

32. The Councillors for each Section to be elected at the Annual General Meeting. Each Sectional Council shall elect two Members to act on the General Council, except in the case of the Sections of State Medicine and Anatomy and Physiology. (1888.)

33. Two Members in each Sectional Council shall retire annually, and be ineligible for re-election for one year, except in the Council of the Section of Anatomy and Physiology, in which only one shall retire. (1896.)

34. Six Secretaries, one for each Section, to be appointed by the Sectional Councils.

35. At all elections after the year 1882, any Fellow desirous of nominating a candidate for election shall, at least ten days before the Annual General Meeting, forward an application to the General Secretary to enter the name of such Fellow on the list of candidates for office, provided that the Fellow so nominated shall have consented to act, and shall have paid his subscription at the time of nomination. Should there be an insufficiency of regularly nominated candidates, the vacancies so created shall be filled up by the Sectional Councils at their first meeting after election. (1891 and 1904.)

36. That all elections shall be by ballot, but Fellows residing more than 15 miles from Dublin, and those incapacitated by illness (to be certified), may record their votes by ballot papers, sent to the presiding officer in sealed envelopes provided for that purpose. A Fellow cannot avail himself of this privilege unless his subscription for the current session has been paid. (1896 and 1904.)

37. That in all elections to the Sectional Councils there shall be affixed to the name of each candidate the number of meetings that he has attended of that particular Section of the Council for which he is now a candidate. (1898.)

Duties of Officers.

38. The President shall preside at the Annual and Special General Meetings and at General Council Meetings. In the absence of the President, the Chairman shall be appointed by the meeting. (1888.)

39. The Presidents of Sections shall preside at the Ordinary Meetings of the Academy, and shall also preside at the Sectional Council Meetings. In the absence of the President, the Chairman shall be appointed by the meeting. (1888.)

40. The General Secretary shall attend all General Meetings of the Academy and General Council. He shall take minutes of such meetings, to be read at the following meeting.

41. He shall receive and have charge of all papers intended for publication in the "Transactions" of the Academy, after they have been handed over to him by the Secretaries of the several Sections.
Rules.

42. He shall, on receiving notice from the Secretary of a Section, send out to all the Members notices of the title or titles of the paper or papers for the next Ordinary Meeting, with the name or names of the authors, and, so far as possible, of the subjects for Exhibition, with the names of the Exhibitors.

43. He shall arrange for the Exhibition of specimens and the reading of papers, which are to be forwarded to the Academy by those who are absent, or are not members.

44. The General Secretary and Treasurer shall receive all moneys, and lodge the same in bank to the account of the Academy, and all cheques shall be signed by the Treasurer and one other Councillor.

45. The Accounts shall be audited by two Fellows, not Members of Council, to be appointed by the President at some meeting previous to the Annual Meeting.

Duties of Secretaries of Sections.

46. To attend the Meetings of the Council of the Section and the Ordinary Meetings of the Academy, under the management of said Council, and to take minutes at such meetings, to be read at the next following meeting of that Section.

47. To keep such papers as the Sectional Councils recommend for publication, for the purpose of handing them over to the General Secretary.

48. To inform the Secretary of the Committee of Reference of any specimens referred to that Committee, and to transfer the specimens to that Secretary.

49. To give notice to the General Secretary, one week previously to the meeting, of the titles of papers for the evening, the names of the authors, and, so far as possible, the objects for Exhibition, with the names of Exhibitors, so that the General Secretary may inform the Members.

Meetings.

50. The Annual General Meeting to take place on the second Friday in October, for the election of Officers and Members of Council, and for the general business of the Academy.

51. Due notice of the meeting shall be given by the Secretary to all Members at least three weeks previously. (1891.)

52. No motion involving a change of these Rules shall be brought before this meeting except one week's notice thereof shall have been given by the Secretary to each Member.

53. The President may—and shall forthwith, on receiving a requisition signed by seven Fellows, at any time—on giving one week’s notice, summon a Special General Meeting, for the consideration of particular business, the nature of which must be specified in the letter of summons convening the meeting, and at such meeting no other business can be transacted. In the event of the President being unable, from any cause, or declining, to summon a Special General Meeting of the Academy, it shall be in the power of the General Council to summon such meeting. (1888.)
Ordinary Meetings.

54. The communications to be submitted to the Ordinary Meetings shall be grouped under the following heads:—Medicine, Surgery, Pathology, Obstetrics, State Medicine, and Anatomy and Physiology; and the conduct of such meetings shall be in the hands of the several Sectional Councils, each Sectional Council to have the management of the Ordinary Meeting in rotation, as arranged by the General Council. (1888.)

55. The Ordinary Meetings shall be held on every Friday evening, from the last Friday in October until the last Friday in May, inclusive, at eight o'clock, except during the Christmas and Easter recesses.

56. All Fellows, Members, and Student Associates attending the meetings shall write their names in the attendance book.

57. Any Fellow or Member may introduce two Visitors by cards obtained from the Sectional Secretaries.

58. Officers of the Army or Navy Medical Departments shall, on presenting their cards, be admitted to the Ordinary Meetings of the Academy.

59. No communication shall exceed twenty minutes in its delivery, nor any speech thereon ten minutes, except by permission of the Chairman. No one shall speak twice upon the same communication, except the author, who has the right of reply.

60. A paper by any other than a Fellow or Member of the Academy shall not be read before the Academy unless the author of such a communication has obtained permission to do so from the Council of the Section before which the communication is proposed to be read. (1892.)

Ordinary Meetings.—Order of Business.

61. (1.) Chair to be taken at 8 30 p.m.

(2.) Chairman to read list of specimens, &c., exhibited by card, together with the names of the Exhibitors.

(3.) No Pathological Specimen shall be exhibited at any Section other than the Pathological and Obstetrical, except by card. This Exhibition shall not exclude any subsequent communication regarding it at the Pathological Section.

(4.) There shall be no Exhibition of Specimens by card in the Pathological Section.

(5.) Any member shall have liberty to exhibit any recent specimen at any of the meetings of the Obstetrical Section, provided it illustrates any question in gynaecology.

(6.) At the meetings of the Obstetrical Section recent specimens may be exhibited, and the President may invite discussion thereon, provided that such exhibition of specimens or discussion, if any, thereon, must terminate at 9 o'clock, p.m., but that, if necessary, they may be resumed after the papers for the evening have been read and discussed.

(7.) Chairman to ask if any member has any observations to make or motion to propose relative to any living specimen on the List of Exhibition.
(8.) Chairman to call upon the author of the first paper on the list to read his paper.

(9.) Chairman to call upon members to discuss the paper, or, at his discretion, to take any other paper or papers on the list relating to the subject, and have the discussion subsequently on all such papers collectively.

(10.) When the last paper has been discussed, the Chairman to ask if any member desires to speak upon any of the specimens exhibited by card.

(11.) After the discussion upon any specimen, the Exhibitor has the right of reply.

Rules

Regulations regarding the Exhibition of Specimens by Card.

62. (1.) Any member may exhibit by card at any Ordinary Meeting, except at the meeting of the Pathological Section. At the meetings of the Pathological Section all specimens must be presented and described vivâ voce, and debate may be invited thereon.

(2.) Notice shall, if possible, be given to the General Secretary, or the Secretary of the Section, on or before the previous Ordinary Meeting.

(3.) Specimens must be in the room at 7 45 on the night of Exhibition.

(4.) Specimens for Exhibition by card shall be open for inspection at 8 p.m.

(5.) A card, containing all particulars for publication, shall be placed with the Specimen. Cards for this purpose are to be obtained from the Secretary.

(6.) The Exhibitor should be present, and he shall furnish further details if asked for.

(7.) Every Exhibitor shall submit the Specimen or Specimens on view to the Committee of Reference, if the meeting so decide.

Exhibition of Pathological Specimens.

63. No lengthened reference to treatment shall be allowed upon any Specimen, except by the express permission of the Chairman. Whenever it has been agreed that a Specimen exhibited at a Sectional Meeting of the Royal Academy of Medicine in Ireland shall be sent to the Reference Committee to report thereon as to its nature, the Exhibitor is to retain the custody of the specimen until he shall be summoned to a meeting of said Committee to be convened by its Secretary, on an early day, when he will attend and submit it for examination. (1889.)

By-laws concerning "Transactions."

64. The "Transactions" shall consist of such Communications made to the Academy by or through Fellows or Members as may be deemed by the General Council suitable for publication; also, of discussions of importance or interest arising out of such Communications.

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65. All Communications accepted by the Academy become the property of the Academy, but authors may also print their Communications, subsequent to the reading of the same before the Academy, in any publication in addition to the "Transactions." Papers shall be handed to the Secretary of the Section immediately after they have been read. (1891.)

66. The "Transactions" for the year shall be presented to all Fellows of the Academy who have paid their Annual Subscriptions.

67. The "Transactions" may be purchased by Members at cost price.

68. The Publication Committee of each Section shall meet not later than the Tuesday after each meeting of the Section, for the purpose of abstracting the proceedings—the abstract to be placed in the printer's hands on same evening, and forwarded to the editors of medical journals with the least possible delay. (1888.)

69. Contributors of papers may send their papers to the Academy printer early enough to allow of their being put in type before the meeting, provided the author be responsible for the cost of same should the General Council deem the communication not suitable for publication in the "Transactions."

70. That on the evening of the day of meeting of the Sectional Council when the papers for the next meeting have been decided upon, a circular be sent to each contributor by the Secretary of the Section informing him:

(1.) That he is expected to be ready or else take his place at the bottom of the list.

(2.) That he must have an abstract ready with his paper, otherwise he will be noted in the published proceedings in such form as the Publication Committee think fit.

71. The General Council is empowered to defray the expenses in whole or in part of any illustrations which it may consider advantageous to the elucidation of the papers published by the Academy.

72. An abstract (prepared by the author) of each communication made at the Academy, along with a report of the discussions thereon, shall be furnished to the editors of such medical journals as may desire to publish them, and the authors of such communications shall be empowered to publish their papers in extenso in any periodical or periodicals they may think fit, such communications also to appear in the "Transactions," provided the Council consider them worthy of insertion.

Expulsion of Fellow or Member.

73. Expulsion of a Fellow or Member can take place only at a General Meeting of the Academy, on the motion of the Council, if two-thirds of the Members present shall vote for the same by ballot. Of such ballot the Council must give at least fourteen days' notice in writing to every Fellow of the Academy.

New Laws.

74. New Laws, or alterations in existing Laws, can be proposed only at the Annual General Meeting. Any Fellow proposing such alteration shall give notice to the General Secretary at least ten days before the General Meeting in October.
REPORT

The General Council reports that for the Session 1909-10 the number of Fellows was 184, of Members 22, and Associates 9. The Fellows numbered exactly the same as for the two previous Sessions. The Members showed a decrease of 1, and the Associates an increase of 8.

In the matter of finances the credit balance to the Academy in the National Bank stands at £255 9s. 7d. as compared with £225 2s. 3d. of the previous Session.

The attendances at the Sectional Meetings during the past Session amounted to an aggregate of 672 as against 731 for the Session 1908-9. The last three meetings on the programme were abandoned owing to the death of His late Majesty King Edward VII.

Your Council had under consideration a letter from the Incorporated Society of Medical Officers of Health relative to the necessity for a more frequent enumeration of the population. The resolution relative to this matter, which was adopted by the State Medicine Section and approved by your Council, will come before the General Meeting for its consideration and adoption if thought desirable.

In the month of June your Council was asked by the President and Fellows of the Royal College of Physicians of Ireland to take part in a conference of representatives from the Universities, Colleges, Lying-in Hospitals, and several Medical Associations of Ireland to consider the advisibility of extending the Midwives Act, 1902, to Ireland. Sir William Smyly was nominated by the President to represent the Academy at this Conference.
The Council records with deep regret the loss the Academy has sustained by the death of Dr. Lombe Atthill, Dr. Patrick Letters, and Dr. Clarke Baylis. Dr. Atthill was President of the Section of Obstetrics in 1884-5, 1895-6, and was President of the Academy for the triennial period commencing October, 1900. In the earlier years of the existence of the Academy he was a regular attendant and a frequent contributor at the meetings of the Obstetrical Section.

24th September, 1910.

### RECEIPTS.

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Total: £633 19 6

The Capital is invested in the names of Sir William Thomson, Dr. Walter G. Smith, and Dr. James Craig.

We have examined the Accounts and Vouchers, and certify the same to be correct.

29th September, 1910.

Trevor N. Smith, F.R.C.S.I.

Henry Stokes, F.R.C.S.I.
Volume XXVIII. of the "Transactions" has been forwarded to the following:

IRELAND:

Queen's University - - - - Belfast.
University College - - - - Cork.
Do. - - - - Galway.
Medical Press - - - - Dublin.
National Library - - - - Do.
Royal College of Physicians - - - - Do.
Royal College of Surgeons - - - - Do.
Royal Irish Academy - - - - Do.
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National University - - - - Do.
Trinity College - - - - Do.

ENGLAND:

Birmingham Medical Review - - - - Birmingham.
Medical Institute - - - - Do.
Bristol Medico-Chirurgical Journal - - - - Bristol.
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Liverpool Medico-Chirurgical Journal - - - - Liverpool.
Journal of Obstetrics and Gynaecology, 60 Chandos-street, W.C. - - - - London.
King's College - - - - Do.
Lancet - - - - Do.
Library, British Medical Journal, 429 Strand - - - - Do.
Lister Institute of Preventive Medicine, Chelsea Gardens - - - - Do.
Medical Magazine, 44 Bedford-row, W.C. - - - - Do.
Medical Review, 66 Finsbury Pavement, E.C. - - - - Do.
Official Year Book of Scientific and Learned Societies, Exeter-street, Strand - - - - Do.
Public Health, 1 Upper Montague-street, Russell-sq., W.C. - - - - Do.
Royal College of Physicians - - - - Do.
Royal College of Surgeons - - - - Do.
Royal Society of Medicine, 20 Hanover-square - - - - Do.
University of London, South Kensington - - - - Do.
University College, Gower-street, W.C. - - - - Do.
The Manchester Medical Society, The Owen's College - - - - Manchester.
Victoria University - - - - Do.
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University - - - - - - - - - - Do.
Faculty of Physicians and Surgeons - - - - - - - - - - Glasgow.
University - - - - - - - - - - Do.
Do. - - - - - - - - - - St. Andrews.

EUROPE:

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Naturforschenede Gesellschaft - - - - - - - - - - Basel.
Kgl. University Library, Dorotheen Strasse - - - - - - - - - - Berlin.
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Académie Royale de Médecine de Belgique - - - - - - - - - - Brussels.
Société Belge de Chirurgie - - - - - - - - - - Do.
Université Libre - - - - - - - - - - Antwerp.
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La Grece Medicale, Syra - - - - - - - - - - Greece.
Institute Bacteriologico Camera Pestana - - - - - - - - - - Lisbon.
University College - - - - - - - - - - Madrid.
Archivio di Ortopedia - - - - - - - - - - Milan.
Académie de Médecine, Rue Bonaparte, 16 - - - - - - - - - - Paris.
Revue de Chirurgie - - - - - - - - - - Do.
University of Paris - - - - - - - - - - Do.
Imperial University - - - - - - - - - - St. Petersburg.
Karolinska Med. Khir. Institutet - - - - - - - - - - Stockholm.
University Library - - - - - - - - - - Strasbourg.
Archivio Italiano di Otologia - - - - - - - - - - Turin.
Medical Society, Royal University - - - - - - - - - - Upsala.
University - - - - - - - - - - Vienna.
Naturforschenede Gesellschaft - - - - - - - - - - Zurich.

AMERICA:

Johns Hopkins University, North Broadway - - - - - - - - - - Baltimore, Md.
Journal of Medical Research - - - - - - - - - - Boston, Mass.
McGill University - - - - - - - - - - Montreal.
Academy of Medicine, 17 West 43rd Street - - - - - - - - - - New York.
University - - - - - - - - - - Do.
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TRANSACTIONS

OF THE

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF MEDICINE.

SOME RECENT CLINICAL EXPERIENCES
(SECOND SERIES).

By SIR J. MOORE, M.A., M.D., M.Ch., D.P.H. Dubl.;
Senior Physician to the Meath Hospital.

[Delivered to the Section of Medicine, November 11, 1910].

At a meeting of this Section of the Royal Academy of Medicine in Ireland, held on January 23, 1893, I read a paper entitled "Some Recent Clinical Experiences." In that communication I embodied notes of a number of cases, perhaps of every-day clinical experience, but which, in my opinion, threw more or less light upon obscure features in diagnosis and pathology or illustrated some practical points in treatment.

The cases which I propose to bring under your notice in this second series of "Recent Clinical Experiences" are of a somewhat similar kind, as will appear in the sequel.

T.
I. Lobar Distribution of Pneumonia in Childhood.

Nothing is more remarkable in the epidemic history of Dublin during the last quarter of a century than the steady decline in prevalence of enteric fever, the all-but disappearance of typhus, and the ominous increase of acute pneumonia—a disease which is much more appropriately termed "pneumonic fever." This acute infection has in fact taken the place of the old classical continued fevers in the nosology of the Irish capital.

Many of our pneumonia patients in recent years have been children of quite tender age. According to the old teaching one would have expected to meet with a lobular rather than a lobar distribution of mischief in the lungs under such circumstances. But the reverse is the fact.

Case I.—On June 18, 1906, John C., aged three, was admitted to the Epidemic Wing of the Meath Hospital, on the fourth day of an attack of right basic pneumonia. Temperature rose to a maximum of 103.4° on the evening of the fifth day. Defervescence by crisis followed on the sixth day, and temperature remained subnormal thenceforward until he left hospital quite convalescent on July 1, the seventeenth day from the onset. During the pyrexial stage the pulse ranged between 112 and 132, the respirations from 56 to 42. The child took one grain of quinine in a teaspoonful of syrup of orange-peel three times a day for a few days, and was allowed to suck sugar-barley for his cough.

Case II.—John H. S., aged four, came into hospital from Malpas Street, on November 4, 1906, on the seventh day of a left pneumonia, which was quickly followed by pleural effusion on the same side of the chest. After an intermittent fever of four weeks' duration, the boy made a good recovery, and left hospital on December 7, 1906.

Case III.—A somewhat similar but much more severe attack occurred in Harry H., aged fourteen months, a post-
man's son, who was admitted to hospital on March 8, 1909, on the seventh day of the pneumonia, with consolidation of the base. Temperature fell below 98° on the evening of the ninth day, but rose to 102.8° on the evening of the thirteenth day, when an extensive broncho-pneumonia developed. It was not until April 20, that the temperature became permanently normal. The child was discharged quite well on May 22, 1909.

Case IV.—Ernest B., aged six months, was admitted on January 30, 1910, two days ill of a pneumonia, which terminated by crisis on the sixth day. The localisation was in the right base.

Case V.—Laurence F., aged nine months, son of a window-cleaner, came in on February 7, 1910, on the fourth day of a left basic pneumonia. The fever ran on to the tenth day, when it terminated by crisis. The respirations rose to 56 per minute on two evenings.

Case VI.—Christopher R., aged eighteen months, was carried into hospital on the evening of April 4, 1910, on the fourth day of a right apical pneumonia. His temperature on admission was 103°; pulse, 130; respirations, 34. He was discharged well on April 22.

Case VII.—Josephine M'C., aged eighteen months, was admitted to hospital on October 3, 1910, on the third day of her illness. Her pulse ranged from 110 to 114, her respirations from 64 to 70, and her axillary temperature from 101.8° to 102.2° on the day of her admission. Physical examination next morning revealed dulness over the right apex, marked tubular breathing and bronchophony, conduction of the heart's sounds, and posteriorly very fine crepitations. On the sixth day fever disappeared, only to return in a modified form on the evening of the ninth day. This secondary fever died out in three or four days, and, as no quickening of the breathing or increase of cough accompanied it, was presumably of toxemic origin alone.

Case VIII.—Patrick S., aged two and a half years, a labourer's child, was admitted to the West Wing from Charlemont Avenue, on Monday, October 31, 1910. He was
stated to have taken ill only the day before his admission, but the attack was almost certainly of longer standing. On admission his temperature was 102.4°, pulse 152, respirations 52. The child coughed frequently, but swallowed what seemed to be an abundant sputum. Physical examination revealed signs of a right basic pneumonia-tubular breathing intermixed with fine crepitations and vocal conduction. The fever movement ended by crisis within forty-eight hours, the temperature subsequently remaining subnormal until November 8.

The point I wish to make in quoting the headings of this series of cases is that pneumococcal infection—of which these cases presumably were examples—quite commonly—in fact usually—produces a lobar pneumonia in infancy and childhood. A lobular inflammation of the lung arises in an entirely different way—in measles, as a broncho-pneumonia, from an extension of infective inflammation from the bronchi and bronchioles into the adjoining pulmonary lobules; in whooping-cough, from a reduction of air-pressure in the lobules, consequent on paroxysms of violent expiratory efforts, for as such the fits of coughing may with propriety be described.

To the fifth volume of Allbutt & Rolleston's "System of Medicine," Dr. A. P. Beddard contributed an article on "Acute Lobular Pneumonia," and in the same volume he revised Dr. Pye-Smith's article on "Lobar Pneumonia."

Too hard and fast a line is drawn between lobular and lobar pneumonia in the sectional headings of those articles. In the letterpress Dr. Beddard is careful to avoid any such rigid classification. He writes:—"The clinical course of pneumonia depends upon the kind of micro-organism which is infecting the lungs, and not upon the distribution of the pathological changes which it produces there [i.e., in them]. It follows that when
the pneumococcus, apart from other bacteria, produces a pneumonia, the symptoms and course of the disease will be lobar or lobular in distribution. In adults pneumococcal pneumonia is always lobar; in children it may be either lobar or lobular. The younger a child is the more likely is the pneumonia to be lobular; and after about five years of age it will almost certainly be lobar.

The age of the child, however, is not a safe clinical guide to the distribution of the pneumonia, because even in the youngest infants the pneumonia may be entirely lobar.

Before passing from the subject of pneumonia I would like to recall a well-known fact that apical fibrinous pneumonia, when not of the migratory type, resolves slowly. The following case illustrates this:

Nora H., aged seventeen years, a "biscuit wrapper," was admitted to the Meath Hospital from Malpas Street, a notorious hotbed of pneumonia and enteric fevers, on June 26, 1906. She took ill a month previously, and suffered from the usual symptoms of an acute pneumonic attack. On admission her temperature was 99.6°, her pulse beat 132 per minute, and her respirations were 40. Physical examination next morning revealed an extensive consolidation in the upper lobe of the right lung. The temperature was 100°, pulse 102, respirations 28 to 32. Fearing that I had really to deal with a tubercular infection, I prescribed the chloride of calcium mixture which we find so useful in tuberculosis, and ordered a liberal and nourishing diet. Temperature quickly subsided, but the respirations remained quick, as did the pulse also. However, about July 6, a subcrepitus ("crepitus redux") was heard up to the right clavicle; resolution, once started, went forward, and the girl left hospital apparently quite convalescent on July 17, 1906, eight weeks or so from the date of the attack.

A very similar instance of pneumonic apical consolidation stimulating pulmonary phthisis came under my
observation in the spring of 1888, but the patient made a perfect recovery and is quite well at the present date.

II. LUMBAR PUNCTURE IN PNEUMONIA.

A case of pneumonic fever, with pronounced cerebral symptoms, has recently been under my care. The especial interest attaching to this case arises from the fact that lumbar puncture seemed to restore consciousness, which had been almost completely lost.

On October 7, 1910, Mrs. Elizabeth T., aged forty-six, complained of feeling unwell. Next morning she went to her work in the fields as usual, but about five o'clock in the afternoon she had a shivering fit. She felt so bad that she had to give up working, and she left the place of her work with the intention of going home. Some hours later she was found lying near the Grand Canal, absolutely unconscious. She was then brought into hospital as an emergency case. On admission her temperature was only 101.4°, but next morning (Sunday, October 9) it had risen to 104.2°. When admitted, also, the pulse-rate was only 80, and the respirations were 28 per minute. There was retention of urine, which lasted until Monday, the 10th. When I saw her on Sunday morning she was still quite unconscious, very dirty, her face congested as if she had been drinking heavily. Physical examination revealed a left basic pneumonia already in the stage of consolidation.

As the patient remained unconscious a lumbar puncture was done by Dr. Boxwell about midday on Monday, the fourth day of the attack. A fair quantity of clear cerebrospinal fluid was drawn off. On examination it proved to contain an excess of albumen, and its reducing substance (pyrocatechin or dextrose?) was absent. A sudden defervescence had occurred during the previous night, so that the morning temperature was only 99.6°, whereas on the previous evening (at 6 p.m.) it had been 102.3°. The pulse was 60; respirations 20-22. The urine was now examined. Its specific gravity was 1030; it was acid, and neither albumen nor sugar was present.
By Sir John Moore.

On Tuesday morning I examined the patient with the medical class. The woman was conscious, but quite elirious with delusions or hallucinations. I use both terms, or I do not know whether there was any substratum of truth or her fancies. In the evening her ravings increased, so hat by direction of the House Surgeon two doses (one-hundredth of a grain in each) of hyoscine hydrobromide were even at an interval of some hours. Some respite followed he second dose.

As the woman was sleepless and raving when visited on Wednesday morning I prescribed 30-grain doses of the combined bromides of ammonium, potassium and sodium. After ix such doses I had the satisfaction of finding her in a ranquil sleep on Thursday forenoon, October 13.

III. ATAXIC TYPHOID FEVER.

Of this dangerous form of enteric fever two typical examples have occurred in my hospital practice within recent years. Both patients presented many clinical features in common; both, happily, recovered after protracted illness and unusually active treatment. Emphasis should be laid on the last statement, for a wide-awake expectant treatment is that which we adopt in the ordinary run of enteric cases in the Meath Hospital.

Case I.—John M'D., aged twenty-three, a waiter, was admitted to the Epidemic Wing on January 14, 1905, which was also the fourteenth day of his illness. He complained of being "out-of-sorts," with pains in his limbs and a headache. He attributed his illness to an infection derived from stale fish bones which he was removing when his health was run down. He took to bed on January 7, having kept on his feet up to that time although he felt very ill. When admitted, he mentioned that the headache had disappeared, but that he did not sleep much. The abdomen was distended, and rose-spots were present. Owing to the tense state of the abdominal wall it was difficult to map out the spleen. Rhonchi were heard over the chest. The heart's
Some Recent Clinical Experiences.

action was weak. Its rate increased from 108 per minute on admission to 124 on the morning of the twenty-fourth day, the respirations in the same interval rising from 26 to 36. For a fortnight temperature hovered between 102° and 104°. There was moderate diarrhoea, the stools being characteristic of enteric fever. Albuminuria was present from January 19 to February 1. On the former day the urine was alkaline in reaction, with a strongly ammoniacal odour. It deposited pus, urate of ammonium, and ammoniomagnesian phosphate in abundance.

On January 20 the patient was ordered stimulants owing to increasing cardiac weakness. There was also some hypostatic pulmonary congestion, and a certain amount of tympanites was present. Two ounces of whisky daily were ordered, to be given in teaspoonful doses every second hour. A 5-minum capsule of turpentine was given every fourth hour, and a hypodermic injection of sulphate of strychnin (gr. 3\textsuperscript{1/10}) and digitalin (gr. 4\textsuperscript{1/10}) night and morning. The back of the chest was dry cupped, and ammoniated camphor liniment was rubbed in. Five grains of urotropin, dissolved in 8 or 10 ounces of water, were taken thrice in the twenty-four hours.

On January 22, there was extreme cardiac weakness, the first sound of the heart being inaudible. In addition to the former treatment, spirit of camphor in 15-minim doses was given in milk every fourth hour. Next day the patient was very ataxic. As opisthotonos was present the strychnin was omitted, and quinine and digitalis were substituted for it. At this time the heart used to sag over to whichever side the patient lay on. Cold affusion was practised on January 26.

About the 27th of January hypostatic consolidation was detected over the bases of both lungs. This was followed by a marked improvement in the patient’s condition, defervescence by lysis beginning on the twenty-eighth day and being completed by the forty-ninth day.

Case II.—Joseph T., aged forty-five, a commercial traveller, was admitted on Wednesday, July 6, 1910, on the sixth day of enteric fever. On admission his temperature
was 103.2°, pulse-rate was 116, and respirations were 38 per minute. The urine was turbid, acid in reaction; its specific gravity was 1020, and it contained albumen. The bowels were constipated. Much bronchial catarrh was present, cooing, wheezing sounds and moist râles being audible all over the chest, back and front. The heart already showed signs of failure, beating feebly and quickly, with a faint and murmurish first sound. For ten days the fever ran an even course between 102° and 103°. A pseudo-crisis on July 16 was followed by a fresh outburst of fever lasting till the twenty-sixth day, when a second pseudo-crisis occurred. Previously to this the fever was attended by the whole group of ataxic symptoms—sleeplessness, delirium, restlessness, subultus tendinum, carphology, myosis, injection of the conjunctival mucous membrane, incontinence of urine and faces. On July 21 he was given 20 minims of spirit of camphor in an ounce of milk every fourth hour, and to induce sleep half an ounce of the following mixture every second hour until effective, namely:

R Tincture Opii, 5i;
Tincture Digitalis, 5i;
Spiritus Ætheris Nitrosi, 5ii;
Aqua Camphorae, ad 5vi.

M. ft. mistura.

On July 28—also the twenty-eighth day of the attack—temperature began to rise again, and the patient entered upon a third period of fever more characteristic than ever of enteric fever, and not terminating, after a gradual, septicæmic-like defervescence, until the forty-ninth day. Up to the forty-eighth day albumen was almost constantly present in the urine, although in small quantity. From that date onward the abuminuria disappeared.

On September 3, an acute bedsore formed on the right heel, but quickly yielded to a compress kept moist with equal parts of hydrogen peroxide solution and water.

The treatment of this case was of a very active nature throughout, the principal drugs used being from time to time salicylate of quinine, turpentine, urotropin, strychnin and digitalin (hypodermically), and especially camphor. From July 12 to August 15 he had 2 ounces of whisky daily. From
August 16 to September 6 the allowance of whisky was one ounce daily. After the latter date this stimulant was discontinued.

In reporting these two cases, I desire to lay stress on the extreme therapeutic value of camphor as a stimulant, antiseptic, and sedative. In 1878 Eugene Wittich prescribed camphor as an excellent remedy for the sleeplessness of melancholia in female lunatics. After the subcutaneous injection of 0.1 to 0.2 gramme of camphor in sweet almond oil, he found that the patient quickly became drowsy, and soon went off into a sleep of several hours' duration. And so in the adynamia of ataxic state in fevers a solution of camphor in almond oil, of the strength of 1 in 10, may be injected subcutaneously through a rather wide hypodermic needle as a diffusible stimulant and at the same time it will be found to act as a calmative and hypnotic.

Connected with this subject of enteric fever, it may be interesting to allude to two cases which bear eloquent testimony to the diagnostic value of Widal's test.

Case I.—On July 23, 1910, Thomas G., aged twenty-six, married, a bricklayer, was admitted to the Epidemic Wing of the Meath Hospital under the impression that he was suffering from enteric fever of some days' duration. His temperature, however, was not high (99.8°), while the respirations were unduly rapid (28 to 32 per minute) compared with the pulse-rate (100 to 112 per minute). On July 26, a few scattered rose-spots were observed, the spleen was enlarged, and in the evening the temperature in the armpit rose to 101.8°. Clinically, the diagnosis of enteric fever was now confirmed. The urine was clear, acid, and of normal colour. Its specific gravity was 1016. Neither albumen nor sugar was present. Dr. Henry Stokes "did a Widal," 1 in 20 solution, with a negative result. The case ran on with only slight fever and irregularity of the bowels, which were sometimes loose, sometimes confined. On August 6, a Widal
1 in 20 was negative after thirty minutes. The man at this date began to waste quickly, a cough set in, and fine crepitations were heard over the left apex. A microscopic examination of the stained sputum now revealed the presence of tubercle bacilli. The pulmonary disease made rapid way, moist crepitating râles were heard over both sides of the chest, cavernous signs succeeded, and the patient sank exhausted on August 21, 1910, just four weeks after his admission.

A post-mortem examination was made by Dr. William Boxwell, who reports as to the findings as follows:

"The thorax contained about a pint of blood-stained fluid within each pleural cavity. The lungs were engorged, semisolid and friable; their pleural surfaces as well as their substance were studded with countless numbers of minute tubercles. There was a considerable amount of fibrinous pleurisy on both sides, and in each apex were small tubercular vomicae of old standing, and probably the primary source of the dissemination.

"The heart muscle was soft, but the organ was otherwise normal.

"There were a few miliary tubercles in the liver, spleen, and kidneys, while the ileum was furrowed with numerous deep circular ulcers, showing the characteristic tubercles on the serous surfaces."

Attention may be drawn to the dilution, 1 in 20, which was used in this case. The Clinical Assistants of the Meath Hospital inform me that the negative value of such low dilution is decided, whereas its positive value is less assured—a positive result with a dilution of 1 in 20 does not give such sure ground in favour of a diagnosis of enteric fever as a negative result gives against it.

Case II.—On Monday, September 26, 1910, Dr. Stokes sent into the Epidemic Wing from the Extern Dispensary of the Meath Hospital a man, James W., aged twenty-seven,
a shop assistant, residing at Harold’s Cross, who had walked to the Dispensary seeking advice after a fortnight’s illness. The patient looked, and was, extremely ill. Questioned as to his previous record, he stated that he had served in the army for eight years, but was at present employed in a shop. His family history was satisfactory, but he admitted that he had indulged in “drink” up to the commencement of his illness, which was stormy in its onset. He was suddenly seized with a violent occipital headache, pains in the shoulders, and across the back. On the third day a certain amount of bronchial and pulmonary trouble set in, but there was—so he said—no “spit” with it, and this condition was soon overshadowed by other symptoms, especially by diarrhoea, which was present and persisted to the extent of nine motions per diem. Mr. M’Kenny, the Clinical Clerk, reported a decrease in the amount of urine voided. Nevertheless, he found that its specific gravity was only 1012. Albumen was present.

When I first saw the patient he presented a very typhus-like aspect. His face was dusky, the eyes were injected, the pupils if anything contracted, but he was quite sensible. All over his body there was a subcuticular mottling, to which I drew the attention of any students who were present. There was no definite rash, however; nor were rose-spots visible. Examination of the chest showed a decided lesion in the base of the right lung. The percussion note over the right apex was hyper-resonant, over the base it was dull. Vocal fremitus was increased on the right side. Fine râles were occasionally audible in a small area in the right interscapular region, and rhonchi were heard in the bronchial tubes over both sides of the chest, top and bottom. Here we had evidence of a right basic pneumonia.

Russo’s methylene blue reaction gave a negative result, and so also did the Widal test, but after three days the Widal reaction became positive, and so the diagnosis of enteric fever was arrived at.

Apropos of this point, I may draw attention to a very important recently-published communication on the
...log of typhus fever by Dr. William James Wilson, D.P.H., Lecturer on Hygiene in the Queen's University of Belfast. This paper was published in *The Journal of Hygiene* for September 20, 1910.

While confirming the researches of Mott and Blore (1883), Thoinet and Calmette (1891), Love (1905), Slatinéano and Galesesco (1906), and Lucksch (1907), as to the general presence of a leucocytosis in typhus fever as compared with the leucopenia of ordinary uncomplicated enteric fever, Wilson makes the startling statement that the Widal test affords but little assistance in the differentiation of typhus from typhoid. In 35 cases of typhus examined by him, the blood serum of 19 patients gave a positive Widal reaction with the *B. typhosus*. Hence he concludes that "this reaction is of little or no value in differentiating typhus from typhoid." This statement, if confirmed, would bring us back to the days of William Stokes, Henry Kennedy, and other bygone physicians, who would not admit an essential distinction between these forms of Continued Fever.

But before such a revolutionary statement is accepted, evidence should be demanded relative to the past medical history of each typhus patient, whose blood gives a positive result in the Widal test. A typhus patient may, in the first place, be a "typhoid carrier." And, next, it

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*a* Vol. X. No. 2. Cambridge: At the University Press.


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is well known that the agglutinating power of the blood of an individual who has had enteric fever may persist for months and even years—for as many as four or five years.

Be that as it may, the patient seemed to be progressing tolerably well despite a spiking temperature range and a persistent needing diarrhoca, with small motions, until the night of October 7, when a rigor, or a succession of rigors, occurred. The man became collapsed, and died in a few hours of perforative peritonitis, thus confirming the diagnosis of enteric fever in the most dramatic and tragic of all ways at 1 a.m. of Saturday, October 8.

An autopsy was made by Dr. Boxwell seventeen hours after death, with the following result:—

"On the posterior surface of the right lung was found a patch of acute fibrinous pleurisy, with underlying pneumonia, corresponding in position to the physical signs above-mentioned. The peritoneum was the seat of widespread hæmorrhagic and purulent peritonitis, and some of the intestinal contents could be seen to exude from a small perforation about two inches above the ileo-caecal valve. The ulcers were few in number, but very deep. The spleen was not greatly enlarged. Cultures were obtained from the pneu-monic patch in the lung, but only cocci grew, among which the pneumococcus was easily recognised.

"A bacillus resembling in cultural characteristics the B. typhosus was recovered from the spleen and gall-bladder."

IV. AMYOTROPHIC LATERAL SCLEROSIS.

Among the many interesting cases which presented them-selves during the Session of 1909-1910 was that of a girl aged twenty-one, who was admitted from Naul, Co. Dublin, on March 3, 1910. Her complaint was of weakness and loss of flesh. She stated that she felt for the first time, about two years previously, a dull pain and numbness in her right hand and arm, with some loss of power. To it she paid little attention for nearly a year. Then the numbness attacked her left hand about nine months later, and continued for some
months. Eight months before admission a similar condition was noticed in one of her legs. She began to feel very tired after walking, and suffered from pain in her back. The abnormal sensations progressed until all her four limbs were involved. Up to the time of her admission to hospital she was able to walk about a little, but since coming in she has been confined constantly to bed.

On examination, the girl was found, in the first instance, to present the features of progressive muscular atrophy of the Aran-Duchenne type in no ordinary degree. Many of the trunk and limb muscles were extremely wasted. In the hands the thenar and hypothenar eminences had disappeared, the interossei and lumbricales had shrunk. Her hands presented the characteristic features of the main en griffe of Duchenne. In the shoulder, the deltoids and trapezi were much affected. On asking her to sit up in bed her head fell forward on her chest owing to the wasting of the recti capitis, splenii, and other muscles which support the head. Muscular atrophy was much less marked or advanced in the lower extremities, but the deep reflexes were extremely exaggerated and the muscles were thrown into a state of spasm on slight provocation. Fibrillary tremor was present in the tongue, thumb muscles, and other parts. Bulbar symptoms were well marked, so that the motor nuclei in the medulla oblongata were evidently involved.

This case, then, is a good example of a far-reaching progressive muscular atrophy due to a combined degeneration of the anterior horns of gray matter, of the antero-lateral white tracts, and of the nuclei in the medulla of the motor cerebral nerves. There is no disturbance of sensation of pain or heat, as in syringomyelia.

A notable feature in the case was a persistently subnormal body temperature. Only on two occasions during the girl's long stay of ten weeks in hospital did the axillary temperature touch 99°. The mean of the first four weeks was 97.6°, that of the second four weeks was 97°.
On May 23, the patient was transferred to the Royal City of Dublin Hospital under the care of Dr. T. Gillman Moorhead.

Under his care she remained until Monday, October 17, when she was re-admitted to the Meath Hospital, looking very well, but in the same crippled state as when she left my care in May.

Dr. Moorhead has very kindly supplied me with the following detailed account of her state on physical examination:

"Motor System. Lower Limbs.—Paralysis of a spastic type. Extreme extension of toes; no atrophy or history of spasms. Reflexes: Knee jerks exaggerated, rectus clonus well-marked; plantar reflexes; Babinski sign +; ankle jerks present; ankle clonus, marked.

"Upper limbs: Paralysis of a flaccid type. Atrophy marked: thenar and hypothenar eminences; extensors of forearm more than flexors; triceps, deltoid, lower two-thirds of trapezius, rhomboids, latissimus dorsi, serratus magnus. Pectorals rigid. No history of spasms.

"Facial muscles: No paralysis of muscles except the orbicularis oris, which is slightly affected. Lately, however (October 16, 1910), there is evidence of other facial muscles becoming affected. The face is very flushed.

"The tongue shows tremor and wasting. Indentation by the teeth is also well marked on it. There is no syllabic speech. Dysphagia is present.

"Sensory System: Tactile, thermal and pain senses are normal, in all extremities. No R. D. (reaction of degeneration). Ocular and auditory senses are unimpaired. There are no trophic lesions. There is no mental impairment. The thoracic and abdominal viscera are normal. No abnormal constituents are found in the urine."

V. A REMARKABLE STAPHYLOCOCCIC INFECTION.

I close this series of Recent Clinical Experiences with
By Sir John Moore.

the notes of a case which puzzled the different physicians who saw the patient a good deal.

Case.—On July 11, 1910, I visited, in consultation with Dr. J. Knox Denham, a lad of eighteen years, residing in Irishtown. He had been ill since the 1st of May with a fever, which showed no signs of yielding even after some ten weeks' duration, the temperature range being septicæmic in character, morning remissions and evening exacerbations being very marked.

The family history, so far as it could be ascertained, was good. At the age of nine the patient had an attack of enteric fever, from which (so far as he knew) he completely recovered. When about fifteen years of age he noticed every morning that his right ear had been discharging through the night. This continued for a month or thereabouts, but he suffered no pain, nor could he assign any cause for the otorrhœa. The discharge finally stopped, and he remained well until May 1, 1910, when he was attacked (in his own words) "with a wheezing, a sore throat, and a cough." Acting under Dr. Hugh G. Westropp's advice, he at once took to his bed.

About a fortnight afterwards the right shoulder and the left hip became very painful, and the shoulder swelled. Simultaneously the respiratory symptoms diminished in severity. This state of affairs lasted for about six weeks, by which time the pain in the shoulder and hip had subsided. The patient, however, felt very weak, and his right arm was in a semi-paralysed condition from muscular wasting.

Such was the state in which I found him on July 11. The opinion formed early in his illness was that he was suffering from acute rheumatism. Afterwards a suspicion that tuberculosis was present arose. His flat chest, lessened expansion over the left apex, a duller percussion-note on the left side, and diminished, breath-sounds on that side all lent countenance to that view. But there was very little cough and no expectoration. Hence the presence of tubercle bacilli could not be proved.

On admission, the pulse was fast but regular. No cardiac murmurs were to be heard, but the second sound was accen-
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tuated in both the aortic and the pulmonary areas. The
genito-urinary system was normal. The urine was free from
albumen and sugar, contained phosphates perhaps in slight
excess, was acid in reaction with a specific gravity of 1026.
The Clinical Clerk in charge, Mr. Charles William
M'Kenny, supplied me with the following notes:

"Since admission, the paralytic symptoms in the right
arm have, to a great extent, been overcome by faradisation
and massage; but there is still marked wasting in the muscle-
groups corresponding to the ulnar and the posterior inter-
ossseous nerves. Pain has been severe on only two occasions,
and on each of these the temperature, which has always been
' spiky,' went up in the evening to 103°. On the first occa-
sion [agonising] pain was felt in the head—especially in the
frontal region and in the right ear. It lasted for four days,
and was only partially overcome by various nerve sedatives
(e.g., phenazone and tincture of gelsemium). At the end of
four days the pain completely disappeared. An aural exami-
nation was negative."

A von Pirquet tuberculin reaction was also negative.

On the 16th of September pain was felt in the right
shoulder, and on the 18th a marked swelling was to be
felt on the outer aspect of that shoulder. An exploratory
puncture gave exit to a couple of drops of pus, and on the
22nd Dr. Henry Stokes made an incision into the deep
muscular tissues about the shoulder, when a quantity of pus
escaped. The abscess cavity did not lead into the shoulder-
joint, but seemed to stretch down the outer aspect of the arm
in the direction of the insertion of the deltoid, and up towards
the outer side of the greater tuberosity of the humerus.
Examined bacteriologically by Dr. Boxwell, the pus was
found to contain a practically pure culture of the Staphylo-
coccus pyogenes aureus. The temperature chart shows that
the opening of the abscess was followed quickly by a sub-
sidence of the fever which had become habitual, but the
thermometer readings remained very unstable, ranging
between 96° and 100°.

On October 6, a swelling was found to have suddenly
developed on the left forearm. This proved to be a new
abscess, which was at once opened and disinfected. Since
that date the patient's general state shows improvement, but an unstable temperature and quick pulse leads one to expect further pyæmic developments. On October 14, for a second time, the von Pirquet tuberculin test gave a negative result.

The abscess on the left forearm was reopened on October 20, the temperature falling as usual when exit was given to pus. On October 26, 10 cc.s. of antistaphyloococcic serum were injected, as a new pyogenic focus seemed to be in process of development near the right popliteal space. This was followed by a fall of temperature extending over two days. On November 3, however, it became necessary to open the popliteal abscess, and this was done. On November 6 an antistaphyloococcic vaccine prepared by Professor Arthur H. White was injected subcutaneously, and this has been followed by a defervescence by lysis, together with a general improvement and a sense of well-being on the part of a long suffering and most patient patient.

[Note.—December 15, 1910. Since the above was written another abscess has, unfortunately, formed, and a fresh fever movement was the result. The patient's general condition, however, improves slowly but steadily.]

By permission of the Section,

DR. BOXWELL showed a case of amyotrophic lateral sclerosis. The case was an early one, giving a history of weakness, and wasting in the hands and arms of only two months' standing. The patient was a woman, aged twenty, who on admission to hospital showed the typical wasting and paresis of the hands and forearms. Her legs were also partially paralysed, with well-marked "dropping" of her right foot. There was no wasting of the legs, however, and the jerks were increased in all four limbs. There was slight increase of the "jaw jerk," but no other evidence of bulbar involvement. When the patient came to hospital she could scarcely stand, and could not walk at all without assistance. She had, however, much improved, and could now walk pretty well, though the dropping of the right foot was still noticeable.
Dr. Moorhead said the case reported by the President was the most marked and youngest case of the kind he had ever come across. He thought it was rather the exception than the rule to find an increase in the reflexes in the lower extremities. He had seen only one case of what he could regard as pure progressive muscular atrophy, in which there was absolutely no increase of the reflexes in either the arms or lower extremities.
ANEURYSM OF ABDOMINAL AORTA TREATED BY OPERATION.

By J. LUMSDEN, M.D.,
Physician to Mercer's Hospital, Dublin;

AND

W. I. de C. WHEELER, M.D., F.R.C.S.,
Surgeon to Mercer's Hospital, Dublin.

[Read in the Section of Medicine, December 16, 1910.]

The patient, G. T., was aged thirty-eight. He was a brewery labourer. The family history was unimportant. His father died in the Richmond Asylum, aged sixty-four. As a boy he was quite healthy, and had no serious illness. He was in the army for sixteen years. He served in India for seven years, in South Africa for four years, and was through the war, only being off duty for ten days owing to an attack of dysentery. He entered the brewery service seven years ago, for the past four of which he was employed in the cooperage department piling empty barrels, a class of work causing a good deal of strain of a more or less heavy order. Sixteen years ago he contracted syphilis, and was treated by the R.A.M.C. Officers. He is married, and has three healthy children; his wife had one miscarriage. His general health was excellent until last January, when he began to complain of dyspepsia and constipation, which came on periodically, but generally reacted readily to treatment.

In June he came to see me at my dispensary, and was then suffering from nausea, occasional vomiting, flatulence, and discomfort, coming on an hour or so after meals, and often relieved by taking food. Couch examination revealed a somewhat dilated stomach and perhaps some undue pulsa-
tion in epigastrium, but at this time I did not suspect the presence of an aneurysm, but marked the case as a possible gastric or duodenal ulcer. An alkaline bismuth mixture appeared to relieve the symptoms.

He worked up to September, when, for the first time, a swelling was discovered by my assistant, Dr. Day, in the epigastrium. I admitted him to Mercer's Hospital at once. Condition then was noted as follows:

A spare man, about ten stone in weight, fairly well nourished. He has been losing weight somewhat. Heart sounds normal but for slightly accentuated aortic second sound, apex normally situated, radial pulse 60 regular, perhaps a trifle hard. Blood pressure of radial taken with Cruise's sphygmometer 110 millimetres of mercury. Sphygmographic tracing showed little difference from normal curve. Femoral pulses palpable and of fair volume. On inspection of abdomen a well-marked pulsation was visible in epigastrium, more marked to left of middle line. On palpation a distinct tumour was felt, extending upwards under the left costal arch. It was circumscribed, tense with forcible impulse of a distinctly expansile character. It did not descend with inspiration; the percussion note over it was dull. A loud bruit, systolic in time, was to be heard, not over but below the lump, and this could be traced down the aorta and into both femoral arteries.

The patient complained of no pain in the back or elsewhere, and while in bed appeared comfortable and with few complaints, except slight gastric discomfort at times. An X-ray photograph was taken, but owing to the situation of the growth little shadow was shown or assistance given as to the extent of the growth.

The diagnosis of saccular aneurysm of aorta probably about origin of celiac axis appeared to be the only satisfactory explanation. He was kept absolutely at rest in recumbent position, placed on a modified Tufnell's diet, and given a course of potassium iodide, the latter in daily doses of 30 grains, increased later to 90 grains, and a morning dose of sodium sulphate. I cannot say that any improvement came about; if anything the aneurysm became larger, extending downwards to a lower level, and the impulse grew more forcible and tumultuous.
Under these circumstances, and as little could be hoped for from medical treatment, and certain death only a matter of time, I asked my colleague, Mr. Wheeler, to see the case with me, and after much discussion I transferred the man to the surgical ward under his care, and he will now inform you of the operation performed.

The success so far obtained since the operation, which took place over six weeks ago, is, I think, as satisfactory as one could reasonably expect. The tumour is still readily seen and felt, but the impulse is not so forcible, and even discounting the inflammatory thickening underlying the cicatrix the aneurysm feels harder and undoubtedly somewhat smaller in size I believe. He is at present taking 20 grains of potassium iodide thrice daily, and his fluid intake reduced to a minimum compatible with comfort.

Mr. W. I. de C. Wheeler described the evolution of the surgery of abdominal aneurysm. The case exhibited resembled the vast majority in being a male, having a specific history, and having the aneurysm springing from the region of the celiac axis. The operation took place seven weeks ago, and 150 inches of gilded wire in the form of a cage by the method of Colt and D'Arcy Power was introduced into the sac. For the first few days the aneurysmal pulsation was more tumultuous than before the operation, but since then there has been a distinct diminution of pulsation and hardening of the tumour.

The operation was performed with the strictest aseptic precautions, and was facilitated by placing a sand bag under the patient's back and tilting the table so that the pelvis and feet were low and the intestines fell away into the pelvis (Mayo Robson's gall-bladder position). There was no haemorrhage.

Statistics demonstrated a small percentage of cures in the cases operated upon, but the prognosis was hopeless when
operation was not possible, Osler and other authorities never having seen a cure under medical treatment. Post-mortem examinations of cases which died even a short time after operation revealed a firm laminated clot in which the wire was imbedded.

Electrolysis was not employed in this case, as there is not sufficient experimental evidence of its value in inducing coagulation. The risk of sepsis is increased owing to the prolongation of the operation and the difficulty of sterilisation of insulated instruments and electrical apparatus.

Colt's instrument makes the operation very easy and very safe.

In conclusion, Mr. Wheeler referred to the differential diagnosis and the causes of failure in many of the early operations. His was the first patient exhibited in Dublin after operation for abdominal aneurysm.

Dr. Walter Smith said the case was, as far as he knew, the first demonstrated in Dublin. The main subject for congratulation was that the patient had survived, though living after an operation was no proof that it prolonged life, and patients had lived with an untreated aneurysm. He hoped none of his friends would ever introduce wire into his aorta, as he considered the operation both unpathological and unscientific. The only chance of cure was by nature laying down tough, laminated fibrin. A foreign body might induce embolism, and was very dangerous.

Dr. Parsons recalled a case in which the symptoms began in 1896, and the patient did laborious work until within two years of his death in 1906. He thought the chances of repeating such a successful result as Mr. Wheeler's were very small.

Dr. Kirkpatrick said he believed the patient to be in a much safer position than before the operation. He did not see why, because clotting was induced by a foreign body, it should be a soft clot and remain so. He thought the clot, if it completely filled the aneurysm, would become hard. The results had shown firm clotting, with no liability to the production of emboli. Operative technique had greatly improved, and there was good reason to hope that such
cases could be operated on without sepsis. If the surgeon could make sepsis a rarity, instead of a common occurrence, the operation would probably be attended with a very much smaller mortality, and possibly with a very much greater number of cures.

Dr. H. Stokes inquired as to the collateral circulation set up.

Dr. Lumsden, in reply, said that medical treatment of aneurysm in the past had been distinctly unsatisfactory. He had himself had four cases under his care—three men and one woman. The woman died suddenly six months after diagnosis, and no cause of death was discovered. One of the men died suddenly three months after diagnosis. There was no post-mortem, but he believed the aneurysm had burst. The third case had been operated on six years ago by Mr. Maunsell, who introduced twenty-four feet of wire, and performed electrolysis, but the aneurysm perforated through to the stomach, and the patient died about the fifth day. The post-mortem gave a beautiful picture of a laminated clot, showing the process of healing going on. The present patient had been getting worse before the surgeon took him over, and now he was much better, and he thought there was fair hope for the future.

Mr. Wheeler, in reply, said that death was the result in nearly every case without operative treatment. The post-mortem, in cases where operation had been done, showed not a soft clot, but a laminated clot, sometimes consolidated altogether, so that he did not see how the operation could be regarded as unscientific. Collateral circulation was well established, though by what means he did not know. No cases published, without operation, showed any cures; while there had been cures in every series with operation, so that he thought the operation was undoubtedly justifiable.
A CASE OF THROMBOSIS OF THE SUPERIOR MESENTERIC VEIN.

By JOHN BURGESS, F.R.C.S., L.R.C.P.I.; Assistant Surgeon to the Royal Irish Constabulary.

[Read in the Section of Medicine, December 16, 1910.]

In addition to its rarity the interesting points in the case which I have the honour of submitting to you in this paper are—(1) The vagueness and mildness of the early symptoms; (2) The superimposition of a second group which completely masked the preceding; (3) The rapid course to its fatal termination in a few days from a condition of health.

Case.—In the forenoon, 21st July, on board the Allan R.M.S. "Corsican," a gentleman passenger, Mr. J. S., complained to me that on the previous day he had suffered from diarrhea with griping pains in his abdomen. The former had ceased, but the pains had not altogether disappeared. He seemed in no way ill. On the previous evening he had presided at a concert in the second cabin, and during the voyage I might describe him as the life and soul of the ship. He was a stout, florid man, about five feet six inches, aged sixty-five, and, as far as I could judge from a short acquaintance, he was not otherwise than temperate. He informed me that a year previously he had suffered from a similar attack in his home in England, which had yielded to simple remedies.

I prescribed a carminative for him and saw no cause to apprehend any further trouble.

The ship was then nearing Quebec. The weather up the Gulf had been rather warm for this part of Canada, the shade temperature in Quebec registering 88° F. I did not
By Dr. John Burgess.

see Mr. S. until late in the evening. He told me that the pain, although not severe, was continuous, and that he had passed no motion or flatus during the day; that he had retched bile (sic) three times.

At this time his temperature was normal, his pulse 112, very high tension, heart sounds distinct, no murmurs present. The pain was referred to the left hypochondrium. There was no tympanites, and, although suffering, he made light of his condition. His urine was high-coloured, but contained neither albumen nor sugar.

A symptom which puzzled me at the time was a hyperesthesia of the rectum. On my introducing my finger he said it gave him great pain, which seemed to run up to the higher area of tenderness in the splenic region. As there was a considerable interval since the last act of vomiting had occurred I gave him 2 ozs. of castor oil with 20 m. tinct. opii.

22nd.—He had some sleep during the night. The pain was less; otherwise he was no better. His temperature was sub-normal, pulse 120, irregular. There had been one attack of vomiting in the early morning. No motion or flatus had passed. There was absolutely no rigidity, tympanites, or pain on deep pressure of the abdomen. The symptoms present were the continuous pain (by no means severe), the quick pulse, and the rectal tenderness. The vomiting occurred on such few occasions that I do not feel justified in giving it prominence.

At 9 a.m. he was given a turpentine enema, which produced no effect. During the morning he had been restless, shifting his position constantly, and sometimes getting out of his berth to the settee and back again. At 11 a.m. a second turpentine enema was given, with the result he passed a large motion, and at once stated he felt very much better. His tongue at the time was thickly coated, and his breath fetid. I saw him several times during the afternoon, and as we were in Montreal he had several callers during the day, and was able to transact some business, but all the time he was drowsy and inclined to drop asleep, which at the time I attributed to the opium given on the preceding night. Late that evening his temperature was sub-normal, 98°; pulse 120, similar in character; and from his description the pain had become more of the nature of a soreness. He
begged me to give him some opium, but seeing no necessity I declined.

I should add fomentations with india-rubber bottles filled with hot water had been all along applied to the painful area.

23rd.—He had a restless night, the pain being sufficient to keep him awake. Otherwise he stated he felt much better. His temperature and pulse were unchanged. He got up, dressed without my knowledge, and left the ship to proceed to the company's office, where he had some business to finish before proceeding on his way to Western Canada. He had not returned by the afternoon, when I left Montreal for a few days' holidays in the country, so I am indebted to Dr. Widdup, of London, who took charge in my absence, for the next phase of the case. Mr. S. returned to the ship in the afternoon, partook of a light lunch, and, feeling sleepy, went to his berth. He complained of the pain now more in the lumbar region than laterally.

24th.—The steward who attended noticed it took some time to rouse him, and his answers were not intelligible. As he showed no signs of improvement—rather the contrary—as the day progressed, Dr. Widdup was called in, who found him semi-comatose, and had him removed by the ambulance to the Montreal General Hospital, where he was detained.

25th and 26th.—His condition on admission and on the two following days was—Temperature normal, pulse 120, respirations 24; was semi-comatose; could be aroused to answer questions, but his replies were erratic. There was no paralysis; the pupils acted normally. There was no vomiting. The bowels had acted after an enema had been given. There was absence of rigidity of the abdominal muscles. No complaint now of pain. A blood-count was made with negative results as to leucocytosis. Like negative results attended a lumbar puncture. The urine, except showing a slight trace of bile, was normal.

27th.—On this day a change for the better occurred. The comatose condition had disappeared. He could now answer questions intelligibly, and his medical attendants considered him fifty per cent. better. He complained of no pain. Dr. Howard considered the liver dulness slightly pushed up, but his temperature was now 101°; pulse 120.

28th.—I was asked to see him early with Drs. Howard
and Hale, of Montreal, whose courtesy to me on every occasion could not be exceeded, as they treated me as a personal colleague.

Another change had taken place. We found the patient deeply comatose; face suffused; pupils equally dilated. His breathing was stertorous, without any Cheyne-Stokes character. He was passing urine involuntarily, and his temperature was now 103°. He was restless, rolling from side to side, perspiring freely; at times trying to get out of bed. There was no paralysis of any muscle group. The pulmonary signs were loud rhonchi over both lungs. This was probably due to transferred sound from the character of the breathing already referred to.

28th.—Dr. Howard thought he noticed a systolic basal murmur which was not there the preceding day. The pulse had become softer, and was 128. His abdomen was very slightly, if at all, distended. The liver dulness was normal in position. We could make out no enlargement of the spleen; but, being a fat subject, a satisfactory examination was difficult. There was no rigidity of the muscles.

We discussed the diagnosis under the following heads:

1. Ptomain Poisoning.—Against this view I pointed out that fifty-two people had been living under the same conditions as the patient for a week, none of whom had showed any symptoms of food disagreeing with them.

2. Typhoid Fever, of which there was at the time an epidemic in Montreal, was next considered. The symptoms to me were unusual, but both Drs. Howard and Hale had seen cases beginning like this.

3. Cerebro-spinal Fever.—As I mentioned, a lumbar puncture brought off a clear fluid which microscopically was found not to contain any organism, and there was absence throughout of Kernig's sign.

4. Uraemic and diabetic coma were for obvious reasons eliminated.
On being asked to give an opinion, and bearing in mind the condition for which he was sent to hospital, differing so much from his early symptoms, I said that to me the case looked like either a cerebral haemorrhage which did not implicate the motor area or the result of sunstroke, and if left to myself to treat I would take ten ounces of blood from his arm.

This was done, but was not of the smallest benefit; the coma deepened, and he died the following morning at 4 a.m.

I insert Dr. Hale’s account of the autopsy:

"The liver showed a marked grade of atrophic cirrhosis, the typical hob-nailed, alcoholic variety, with thrombosis of the superior mesenteric vein, as high up as the junction with the splenic; two loops of small intestine were ecchymosed, partly gangrenous, were adherent to each other and to the mesentery of the sigmoid; there was no perforation of the bowel, and there were about 150 c.c. of free fluid in the peritoneum. Other findings, including the head, negative.

"The conclusion arrived at is that the coma was due to cholæmia, and that, together with the products of gangrenous bowel, caused death. The cause of the mesenteric thrombosis is obscure in any case, but here was probably predisposed to by the cirrhosis."

It would be outside the scope of such a paper as this to go into the various causes of clots in the portal system, opinion being divided as to whether the cirrhosis produces the clot or vice versa.

Langdon Brown maintains that cirrhosis may set up thrombosis by a state of the blood by which the endothelium of the veins is injured; but he also states that both these conditions may be caused by an altered condition of the blood itself.
Bohr and Delayentel state that in the healthy portal system the power of the blood to coagulate is at its lowest.

Wooldridge showed by experiment that an artificial thrombosis of the portal system could be produced by the injection of tissue fibrinogens.

Osler stated that he saw no cause whereby an obstruction in the portal system should set up cirrhosis of the liver.

I merely mention the above to bring out my own view as to the cause of the clot in the superior mesenteric vein, in which I think the part played by the diseased liver was remote.

In Langdon Brown's series of forty-one cases of pylephlebitis I can find only two instances where the superior mesenteric vein was directly affected. In the records of Rolleston and others on thrombi in the portal area I discovered one other.

Those cases where the portal veins and principal branches—the splenic and mesenteric—were occluded are of course outside the present subject.

Welch has collected thirty-two cases of thrombosis of this vein, and has pointed out, from the anatomical situation of the superior mesenteric artery and vein, which receive no accessory supply from the parietal vessels, that the occlusion of either is followed by extensive gangrene of the jejunum.

In Taylor's case this occurred from a fibrous band constricting the duodenum and obliterating the superior mesenteric vessels.

In Fagge's case ("Trans. Path. Society, London, 1876"), there had been previous thrombosis of the iliac

*St. Bartholomew's Hospital Reports. 1891

b Diseases of Gall Bladder and Ducts.

c System of Medicine. Allbutt and Rolleston. 1899
veins following pregnancy. In both these cases the onset was sudden with violent abdominal pain, vomiting and collapse, death taking place in forty-eight hours.

In Dr. Rose Bradford's* patient the symptoms came on similarly, followed by diarrhœa on the third day, then an improvement, to be followed by stercoraceous vomiting and death on the fourteenth day.

In two cases operations had been performed—the omentum being fastened to the parietal peritoneum—which were of no avail.

A coincidence noticed by two of the aforenamed observers was the absence of rigidity of the abdominal muscle and of tympanites as in my case, conditions which one would expect to be in evidence in so severe a lesion as the present.

In this case the onset was acute, and although there was at no time either hæmatemesis or intestinal hæmorrhage, and the symptoms might be described as milder than the classical variety, yet the progress to the fatal issue was throughout rapid.

If we follow the symptoms by the light of the autopsy I submit this is what took place. The condition of hepatic cirrhosis was of old standing; although not interfering with the patient's general health, it was significant of an altered state of alimentary absorption. On the top of this an acute enteritis occurs; as a result, the epithelium of the small intestine is further impaired, so that absorption of bacteria or other products sets up thrombosis, which extends to the trunk of the superior mesenteric vein. At this point symptoms of intestinal obstruction with pain, quick pulse, and subnormal temperature present themselves.

Parenthetically, here I may be permitted to point to the

* British Medical Journal. 1898.
four symptoms attributed by Welch to thrombosis of this vein:

1. Sudden colicky pain in the abdomen not localised
2. Vomiting, possibly of blood.
3. Constant and bloody diarrhoea.
4. Subnormal temperature and rapid collapse.

To continue. The result of this was hæmorrhagic infarction and gangrene of the portion of the small intestine mentioned. This, according to Dr. Hale, would cause the rectal tenderness, which otherwise we could not account for.

The nervous symptoms (coma, &c.) could be accounted for by the well-known experiment of Schiff, who found that after tying the portal vein in animals, substances such as small quantities of nicotine and hyoscyamine, otherwise harmless, produced fatal coma. Of course, against this may be argued there was no portal obstruction. Still the blood from the affected area did not flow through the liver, and in its unfiltered condition got into the general circulation by one of the several anastomoses. By this means, added to the cholæmia, was a direct absorption from a gangrenous intestine.

The late rise of temperature was due to peritonitis.

In conclusion, perhaps to justify myself, let me point out there was a case of severe and rapidly fatal abdominal disease with what might be called paradoxical symptoms. There were undoubtedly pain, vomiting, and constipation, but unaccompanied by tenderness on deep pressure, tympanites, or rigidity of the muscles.

The pain, to one accustomed to see patients with abdominal symptoms, was never severe; it was nagging in character. The vomiting occurred only four times. An enema relieved the constipation. On the other hand there was the marked drowsiness on the second and third day,
the coma followed his being out for some time under a hot sun. The general appearance of the patient when I saw him in the hospital, especially the late rise in temperature, made me believe we should find the cause of death within the skull—not in the abdominal cavity.

Dr. DRURY said it was only once in a lifetime that such cases were met with, and the paper should enable them to come to a reasonable conclusion if a similar case should happen to present itself.

Dr. WALTER SMITH said he had seen one or two cases of the condition, though not quite the same—the symptoms were more acute. In one case a correct diagnosis was made ante-mortem, relying on sudden abdominal pain and bloody stools. In Dr. Burgess's case the difficulties of correct diagnosis were almost insuperable. Thrombosis occurred in both mesenteric vessels, but there was a curious clinical difference between them—arterial mesenteric thrombosis was much more acute, and venous much more chronic in nature. The condition was rare, and it was very difficult to make out a cause for the thrombosis. The subject would, he thought, always remain one of difficulty, though possibly there might be a few cases in which an early diagnosis might be made, and surgical aid be called in.

The President said that about three years ago he saw, in consultation, a very stout, elderly lady, who had been suddenly attacked by vomiting, intense abdominal pain, and bloody diarrhoea, and they ventured on a diagnosis of thrombosis of the superior mesenteric artery. After death it was difficult to get a post-mortem, but the lady's medical attendant was able to make an incision with the ostensible object of relieving very extreme tympanites, and in this way he investigated the abdominal viscera, and found a very extensive gangrene of the intestine.
Dr. T. G. Moorhead. — "Myasthenia Gravis."

Note the bilateral ptosis, the drooping of the lower lip and of the lower jaw.
NOTES ON A CASE OF MYASTHENIA GRAVIS.

By T. GILLMAN MOORHEAD, M.D., F.R.C.P., D.P.H.;
Physician to the Royal City of Dublin Hospital.

[Read in the Section of Medicine, February 10, 1911.]

A case of the obscure and rather unusual disease, myasthenia gravis, in which a fatal result occurred, and in which a complete post-mortem examination was obtained, having recently been under my observation, I have thought it might be of interest to bring before you the notes of the case, although unfortunately it throws no fresh light on the aetiology or treatment of the disease.

Although an isolated case of the disease was recorded as long ago as 1685 by Willis, it was not until nearly two centuries later, in 1878, that Erb drew attention to its main features as constituting a distinct symptom group. Wilks, in the previous year, had reported a case of apparent bulbar paralysis without discoverable lesion in the medulla, which was undoubtedly a case of true myasthenia, but neither his paper nor that of Erb attracted much attention in this country until an elaborate monograph on the subject was published by Campbell and Bramwell in 1900. Since then numerous cases have been observed in all parts of the world, and in 1907 Palmer was able to collect the records of 124 cases which had been published in the interval between that date and the appearance of Campbell and Bramwell’s paper. Since 1907 many other cases have been reported, but with the exception of one or two scattered observations, very little
additional information concerning the disease in any of its aspects has been gained.

The essential symptoms of myasthenia gravis consist of paralysis of the voluntary muscles, more especially those supplied by the cranial nerves, varying in intensity and persistence, but usually more marked after muscular effort, and accompanied by a peculiar myasthenic reaction when the muscles are stimulated by the faradic current. Amongst the most common paralyses are those of the ocular muscles, including the orbicularis palpebrarum and the levator of the upper eyelid, the lip muscles, those of the tongue, and those of the neck; but in severe cases, amongst which must be grouped the case which I am about to describe, almost all the muscles of the body may be involved. The paralysis almost invariably tends to increase when the affected muscles are used, so that, for example, you may find that at the beginning of a conversation the lip and tongue muscles may be used fairly well, but after a few minutes they become weakened, and soon may become so completely paralysed as to be hardly capable of being made to contract at all. The appearance presented by the patient is strongly suggestive of the existence of some lesion of the nervous system, but up to the present, in spite of numerous careful examinations, none but the most insignificant changes in the nervous system have been discovered, and even these infrequently, so that the description originally applied by Wilks still holds good. Some few pathological changes in the muscles and viscera have of late years been described, notably by Weigert and Buzzard, to which I will refer after reading the notes of my case.

The patient, a married woman, aged twenty-five, came to see me first on September 9, 1910, complaining of nervousness and menorrhagia. She had just previously been
examined by a gynaecologist who sent me word that the pelvic organs were normal.

Previous history.—With the exception of the present sickness the patient stated that she had never been ill before. She had been trained as a nurse in a New York hospital, and had got married in 1907. She had no children, and was deserted by her husband about a year after marriage, and some months after the development of the first symptoms of her present illness.

Family history of no importance.

History of present illness.—About March, 1908, the first symptoms were noticed. The patient found that her legs felt weak after slight exertion, and once or twice she fell in the street. The weakness later spread to the arms, neck, and jaw, and some difficulty in speaking was felt. All the symptoms rapidly increased during 1908, but during the last eighteen months remained stationary. For six weeks prior to my seeing her she was treated in a hospital for hysteria.

Condition on examination.—The most striking feature in examining the patient was her facial appearance, which is well shown in the accompanying illustration. There was well-marked bilateral ptosis, the lower lip drooped from the teeth, and the lower jaw hung down. The patient was quite unable to wrinkle her forehead. When asked to close her eyes one or two ineffectual contractions of the orbicularis palpebrarum were made, and then the muscle refused to contract altogether. Similarly the lips could be approximated two or three times, but could never be kept in apposition, and fatigue of the muscles soon became complete. In trying to speak the lower jaw moved a little, but after a few words it became necessary to support the jaw with the hand. There was almost complete external ophthalmoplegia, the only possible ocular movement being one in a downward and inward direction, but even this was very slight. The pupils re-acted normally but slowly; there was no nystagmus and no retinal change, but diplopia was troublesome.

The neck muscles were very weak, so that on attempting to move the head backwards it fell completely back as soon as a position beyond the vertical was reached. A similar but less marked loss of power was present in the muscles
that move the head forwards. The muscles of the trunk were also weak, causing difficulty in sitting up or turning in bed.

*Arm muscles.*—The deltoid on each side was weak and atrophied, as were also the trapezius: the flexors and extensors of the elbow joint were fairly normal; the muscles of the fore-arm were all weak, and the power of grasp was very slight and could not be maintained. A slight supinator and triceps reflex was obtained on each side.

*Leg muscles.*—There was sufficient general weakness of the leg muscles to prevent the patient from standing without support, but in bed the most marked weakness noted was in the flexors of the hip joint. The gluteals also were weak and much atrophied. There was moderate power of flexion and extension at the ankle and knee joints. The patellar and ankle reflexes were brisk on both sides, but neither rectus nor ankle clonus was present. The plantar reflex was normal. The power of the sphincters was considerably impaired, and on some days there was complete loss of control over these muscles.

*Speech.*—This was much impaired, apparently due to the weakness of the face and jaw muscles and of the tongue. The tongue was tremulous, and could be protruded only with difficulty; it was much atrophied. There was no paralysis of the soft palate or vocal cords. At times difficulty in swallowing was experienced.

No sensory disturbance of any kind was noted, and with the exception of slight persistent menorrhagia no visceral abnormality was found. The blood pressure was 120 m.m. Hg; the urine was normal, except for the presence of a small trace of albumen. The blood count showed 3,700,000 red cells, 70 per cent. Hb, and white cells 7,200, with 76.5 neutrophiles and 23.5 lymphocytes. Neither hyaline nor eosinophile cells were found in any of the three counts that were made.

*Electrical reactions.*—The face and arm muscles were tested with the galvanic current and contracted normally, the kathodal closure contraction being stronger than the anodal closure contraction. A distinct myasthenic re-action was obtained with the faradics current in the face muscles of
the right side, and in the flexor sublimis digitorum. In the latter muscle failure of response occurred after 25 separate stimuli with the faradic current; after an interval of a few minutes the muscle again responded, but was again rapidly fatigued.

Progress of case.—The patient remained in much the same condition as I have described for ten days, occasional slight remissions in the degree of paralysis being observed. On the eleventh day she was attacked with sudden dyspnoea and cardiac failure, became quite unable to speak or swallow, and died in a couple of hours.

Comment on the symptoms exhibited by this patient is unnecessary, as in almost every detail the case was typical. It may, however, be worth while emphasising the fact that there was marked atrophy of the gluteal muscles, the deltoids, and of the tongue, inasmuch as absence of atrophy was at one time regarded as an important diagnostic sign. The mode of death with dyspnoea and cardiac failure is that most often met with. Nothing need be said regarding differential diagnosis, as to one familiar with the disease mistake would be almost an impossibility. Hysteria is the condition with which myasthenia gravis has most often been confounded, and, as already stated, the mistake had been made in the present case previous to my seeing her. The well-defined ophthalmoplegia should, however, be enough to make the distinction, although it may be admitted that many of the symptoms are suggestive of a neurosis.

Pathology.—Morbid anatomists in seeking for a cause for the striking phenomena exhibited by a case of myasthenia gravis, or for the cause of death have hitherto been as a rule disappointed by the paucity of pathological changes in the body. The nervous system has been diligently investigated, but no striking or constant changes have been found either in the cerebral cortex, the
cranial nerve nuclei, the spinal cord, or the peripheral nerves. The first pathological finding of importance was made by Weigert in 1901, who recorded a case of myasthenia in which he had found a sarcoma of the thymus gland, and since then about a dozen other cases have been reported in which thymic abnormalities were present. In some cases there has been simple hypertrophy of the gland, and in others malignant tumours. Such changes have, however, been found in about 20 per cent. of investigated cases only, and cannot be regarded as a constant lesion. More constant are slight changes in the muscles. In addition to the sarcoma of the thymus Weigert found in his case small areas of cellular infiltration in the perimysium and between the fibres of the muscles which he examined, and to these accumulations Buzzard, who regards them as constant features of the disease, subsequently gave the name of lymphorrhages. They consist of groups of lymphocyte-like cells scattered here and there between the muscle fibres, and occasionally similar cell groups are found in the viscera. In addition to the lymphorrhages proliferation of the sarcolemmal nuclei and simple atrophy of some of the muscle fibres may also be present. Various isolated abnormalities of the viscera have been reported, but no constant change in any of them has been found.

The findings in the present case were as follows:—The thymus gland was persistent, and possessed two well-defined lobes extending down over the pericardium; microscopically it was normal, but, as in other cases, contained no eosinophile cells. The thyroid gland was somewhat enlarged, and microscopically was more cellular than normal. The kidney was slightly congested and showed parenchymatous changes; both ovaries were enlarged and cystic. The other viscera, including the red marrow and
the pituitary body, were normal microscopically and macroscopically. Dr. Wigham kindly examined the spinal cord, the medulla, the pons, the central nuclei, and the cortex in the Rolandic region of the brain and reported them as normal. Macroscopically the brain and spinal cord were quite normal. As regards the muscles, sections were made from the levator palpebrae superioris, the masseter and the pectoralis major, and in all I examined over 400 sections. The masseter and pectoralis major appeared to be normal, with the exception of one doubtful lymphorrhage in the pectoralis. The collection of cells, however, in this particular instance was found not between the muscle fibres but in the interstitial connective tissue. In the levator palpebrae muscle some atrophy of muscle fibres was noted, marked proliferation of sarcolemmal nuclei was present, and in many of the sections scattered uninuclear cells with rounded nuclei were found between the muscle fibres. Nothing at all approaching in appearance, however, to the lymphorrhages as figured by Buzzard were found, and after a most careful search in three of the muscles of a very typical case I feel inclined to throw doubt on the universal presence of lymphorrhages in the muscles of myasthenic cases. I submitted some of my sections to Dr. Farquhar Buzzard, who very kindly examined them, and agreed that no typical lymphorrhages were to be seen, and on his advice I subsequently had serial sections cut from the remaining available muscle tissue with the results I have stated.

Aetiology and Pathogenesis.—Practically nothing is known regarding the causation or pathogenesis of the disease. Statistical collections of cases show that women are rather more liable to be attacked than men, and that most cases occur between twenty and forty years of age. In many, emotional disturbance, overwork, or infections
diseases are mentioned as preceding events, but as similar events are not uncommon in the lives of a majority of the race their further consideration here is, to say the least, uncalled for. A distinct history of menstrual irregularities is frequently to be obtained, as in the case recorded, but here again the trouble is so common as to be probably void of etiological significance in connection with myasthenia; nor can one place much importance on observed variations in the disease during the course of pregnancy, inasmuch as the physiological changes during pregnancy are well known to exert a modifying influence on any concomitant disease.

More interest attaches to the observed changes in the thymus gland and muscles. The whole aspect of the disease recalls the symptoms met with in Addison's disease or in acidosis, and in consequence it is often assumed that the cause is to be found either in the presence of some unknown toxin in the body or in the absence of some internal secretion, possibly that of the thymus gland. So little, however, is known concerning the physiological functions of the thymus, and so infrequent are obvious lesions of it present in myasthenia, that for the present it seems unprofitable to further discuss the theory, nor does the mental evolvement of a hypothetical toxin solve the difficulty. It is possible that wider researches in the domain of bio-chemistry and internal secretions will throw light on the problem, the solution of which is all important, as hitherto treatment has for the most part been more harmless than curative, and it is unlikely that any advance in therapeutics will be made on empirical lines.

The constant presence of changes in the muscles seems only what one would expect from the clinical symptoms, and from analogy with other diseases might
be regarded rather as secondary than primary phenomena. Those who regard the lymphorrhages as all-important pathological concomitants have thought that their existence might mechanically interfere with the lymphatic drain of the metabolic products resulting from muscular fatigue, thereby establishing a condition of muscular toxæmia. Such a theory, however, can only be deemed fantastic, having regard to the number of available lymph paths and the scarcity of the lymphorrhages in a majority of cases.

Of the numerous other suggestions I will refer only to two. In exophthalmic goitre a persistent thymus is often found in association with the enlarged thyroid and nervous symptoms predominate. So also in myasthenia unusual conditions in both thyroid and thymus may be found. A consideration of the facts appears to me to point to the conclusion that in the future physiologists and pathologists should seek for an explanation of both normal and abnormal metabolic changes more in a study of the inter-relationships of organs and of the effects which the products of one produce upon the functions of another than in the study of the individual organs as isolated structures. The changes in the thyroid have produced the unproductive and unsatisfactory theory that some change in its secretion may account for the symptoms of myasthenia. To my mind they should suggest rather a series of investigations into the effect produced by the thyroid and other secretions on all the other glands of the body, in the hope that during such a course of investigations collateral light might be thrown on the ætiology of many obscure diseases.

Lastly, Chvostek, contrasting the symptoms of tetany with those of myasthenia, and assuming that the former symptoms are caused by a defective supply of the
secretion of the parathyroid bodies, has lately advanced the further assumption that an over-supply of the same secretion is the cause of the latter symptoms. Such ill-based theorising deserves scant attention, but that it gives the opportunity of a protest against the prevailing tendency to lay the onus of producing a group of serious but ætiologically unsolved diseases on the probably harmless parathyroid glands. In making these few remarks my criticism has, I fear, been of the destructive type, but to my mind nothing is gained by wild theorising on insufficient ground, and sooner than accept an unproved and unlikely theory I prefer to frankly admit our ætiological ignorance.

Dr. Crofton said he was much interested in Dr. Moorhead's paper, especially as regards the question of ætiology raised by the condition of the thymus gland and the infiltration of the muscles with small round cells. He referred to a report which had been made of two cases of thymic asthma, in which there had been extremely flabby muscles and general muscular exhaustion. The interest attached to these cases was the way in which they had been treated. Their blood condition was different to that which Dr. Moorhead described. There were less than 5 per cent. of mononuclear cells. These two patients were treated by X-rays, and they got perfectly well; they lost their thymic asthma and their blood condition was restored to normal. Animals which had been injected with extract of thymus, causing toxic symptoms, died in the condition of asphyxia. He also referred to the effect of giving extracts of the sexual glands. The two lines of treatment might throw light on the condition of myasthenia gravis. First of all, X-ray treatment of the thymus might be tried, then extracts of the testis might be given. In many cases of neurasthenia testicular extract had produced marked improvement. Patients who complained greatly of tiredness improved in a remarkable way.

Dr. Moorhead said that in his case of myasthenia gravis
By Dr. T. Gillman Moorhead.

he had hopes of being able to find an enlarged thymus, but there was no enlargement of the area of dullness on percussion, so he did not think X-rays would be of use in that particular case. As to the thymus extracts producing toxic symptoms, he believed this was incorrect. He had repeatedly injected thymus extracts into animals, and never found any toxic symptoms whatever. The toxic symptoms in Dr. Crofton's case were probably due to sepsis. Dr. Henderson's researches had impressed him with the idea of working out the inter-relations between organs as regards the effect of certain obscure metabolic products. It might throw light on this case, in which he had found, so far, no single extract to be efficacious.
THE DIFFERENCE BETWEEN THE MANIFESTATIONS OF RHEUMATISM IN CHILDHOOD AND ADULT LIFE.

By J. BOYD BARRETT, M.B., B.Ch., R.U.I.;
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[Read in the Section of Medicine, February 10, 1911.]

"Rheumatism," says Dr. Still, "is one of the many diseases which illustrate the considerable difference which may exist between the manifestations of one and the same disease when it occurs in an adult and when it occurs in a child."

Almost the same words are used by Dr. C. H. Dunne, of Boston, when he says that there is no disease in which the clinical pictures are more widely different in childhood and in adult life. That these remarkably similar statements are true is quite evident to any one who has experience of the characteristics of rheumatic attacks in early life. The rare occurrence of joint complications in children, the frequency of chorea, and the presence of rheumatic tonsillitis and rheumatic nodules, with their grave significance, alone prove how great this difference may be.

(1) Manifestations.—The chief manifestations of rheumatism in children have been given as follows:—Articular inflammations; muscular rheumatism; rheumatic nodules; endocarditis, myocarditis, and pericarditis; erythematous eruptions of various sorts, including erythema nodosum; chorea; pleurisy; and, lastly, tonsillitis.

These manifestations are not mentioned in the order of their frequency or importance. They emphasise, how-
ever, in what various ways rheumatic infection shows in the child.

It will be noticed that hyperpyrexia with acute polyarthritis of adults is omitted, while many forms are mentioned which are confined to early life.

Dr. C. H. Dunne, writing in the *American Journal of Medical Science*, July, 1908, about the peculiarities of the symptomatology of rheumatism in children, calls special attention to the frequency with which rheumatism in children may make its onset with cardiac symptoms alone. He says that it begins with arthritic symptoms in only 40 per cent. of all cases, and gives the following interesting clinical classification:—

(a) The mild arthritic; (b) the severe arthritic of older children; (c) latent type, beginning with fever; (d) mild primary endocarditis; (e) severe primary endocarditis with fever and incompetency; (f) mild pericarditis; (g) severe pericarditis, always with effusion.

Most, I think, will have had experience of all these clinical types of the disease, and many will agree that the mild arthritic and the mild primary with endocarditis are the most important to recognise. In these cases the absence of symptoms of urgency renders them liable to be overlooked, and the diagnosis may not be made until the cardiac lesions are obtrusive and irreparable, where early rest might have been of advantage. Anaemia of a mild type is generally present.

(2) *Rheumatic facies*.—Efforts have been made to associate with rheumatism in children a typical facies. While this may not have been entirely successful, most are agreed upon the frequent presence of a nervous temperament. The rheumatic child is often of a restless and excitable disposition.

I will quote the description of the rheumatic child, given
by Dr. Hutchison. It is of great interest and importance, but I am inclined to think it is of more advantage in dealing with the community amongst whom Dr. Hutchison's labours are spent.

"These children," writes Dr. Hutchison, "are dark rather than fair; their hair is dark, their eyes are dark, and they have long, dark eyelashes. At the same time they have a peculiar white skin and a very good complexion; they have a clear bluish-white sclerotic, and they have often well-formed teeth and large, square, central upper incisors." On the other hand, Dr. Still emphasises the association of red hair with rheumatism. "Out of eighty children with red hair," he states, "there was rheumatism either in the child or in the family in forty-seven."

(3) Wasting.—One of the causes of wasting in children which should not be overlooked is advanced cardiac disease subsequent to rheumatic endocarditis, often without any history of inflammation of the joints.

(4) Anæmia.—The occurrence of anæmia as a complication or associate of rheumatism is more frequent in the child than in the adult. It is more marked in the severe cases with advanced cardiac lesions. The blood is characterised by a diminution in the number of red corpuscles and greater reduction in the percentage of hæmoglobin. There is usually a leucocytosis.

(5) Rheumatic nodules.—The occurrence of rheumatic nodules in children further increases the difference between the adult form and that common to children. These nodules are found in young adults, and have been recorded lately by Dr. H. D. Rolleston as occurring on the external ears. They are also doubtless found late in life, but more rarely. They are associated with, and diagnostic of, the disease in children.
These nodules are round or almond-shaped, quite hard, and freely movable. They occur under the skin, and usually over bony prominences, such as the olecranon or patella. Many may be present, or there may be only one. I have lately observed two cases, each showing one nodule. In one the nodule was on the outer and posterior parts of the pinna of the external ear, and in the other a large one was found over the olecranon.

In structure they are fibrous, the fibres being arranged concentrically around a core of fibrin. They are associated with endocarditis, and, according to Dr. Cheadle, when really large are equivalent to a sentence of death.

(6) Tonsillitis.—Of rheumatic tonsillitis it is difficult to speak with certainty. The diagnosis is often provisional, and may remain always doubtful unless the unfortunate occurrence of sequelæ or complications, such as endocarditis, prove confirmatory. In such cases the inflammation extends to the soft palate. I have seen it in association with erythema when the diagnosis had to be made from a typical scarlet fever. That, however, was not a difficult matter. The rash was not punctiform, the symptoms were mild, and sweating was profuse. To lay stress on the frequency and importance of rheumatic tonsillitis in children I have tabulated the following remarks:—

(i) Tonsillitis followed by polyarthritis.—At the Philadelphia Pediatric Society, May, 1909, Dr. Newlin showed a boy with polyarthritis, which developed after an attack of tonsillitis lasting one week. There was an increased area of cardiac dulness and a blowing systolic murmur at the apex, transmitted to the axilla. The attack of tonsillitis occurred in 1908, and two weeks afterwards the knee-joints became swollen, stiff, and painful.

(ii) Endocarditis and pericarditis following tonsillitis.—
(a) At the Philadelphia Pediatric Society recently Dr. T.
Simonis exhibited the heart of a girl aged six years. She had had frequent attacks of follicular tonsillitis. Autopsy showed adherent pericardium and a large vegetation, cylindrical in shape, half filling the left auricle and ventricle, and attached to the papillary muscle in the ventricle (British Journal of Children's Diseases, June, 1910, p. 268).

(b) Dr. Wachenheim ("Pediatrics," 1908, p. 466) states, as a result of examination of 113 cases of rheumatism in children, that 60 per cent. of the cases had undoubted cardiac lesions, that the joints were not involved to any extent until after the fourth or fifth year, and that tonsillitis was a very frequent complication.

(iii) Frequency of tonsillitis.—McCrae gives 3.7 per cent. of cases of rheumatism showing tonsillitis, while Hammerschmidt gives 50 per cent., and says that all his cases showed some pharyngeal irritation. Other observers range between these two.

Gurich has reported that certain cases of rheumatism show a reaction when the tonsil is operated upon, and he believes that there is a tonsillar type of rheumatism in which the removal of the tonsillar tissue cures the disease.

(7) "Growing pains."—The seriousness of "growing pains" in children has frequently been urged by many who believe in their relation to rheumatism, and grave disasters have been attributed to the neglect of rest and anti-rheumatic remedies in these cases. The question will always remain unsettled, because a history of "growing pains" can so often be elicited. Much can be gained by the discussion of this interesting point if it prevents us overlooking what may appear trivial, and yet may be an indication of a serious condition or of danger ahead.

Dr. Coudray, writing recently in the Gazette Médicale de Paris, states that these pains have nothing to do with
growth, and are observed in children or young adults who present a defective balance of nutrition and are the offspring of arthritic parents.

(8) Chorea.—It is not intended to refer to chorea at any length. Although confined to childhood, it is amply treated in the usual medical text-books.

The relationship of this condition to rheumatism resolves itself into the investigation of the statistics of clinical and pathological reports of the last sixty years, characterised by a remarkable preponderance of opinion in favour of the nearness of their connection and ending in the researches of Poynton and Paine.

It is only necessary in this instance to state that if chorea be undoubtedly a manifestation of rheumatism it further emphasises the difference between the character of that disease in the child and in the adult.

(9) Cardiac rheumatism.—“It is very easy,” according to Dr. Lees, Consulting Physician to the Children’s Hospital, Great Ormond Street, in an article on this subject in the British Journal of Children’s Diseases, March, 1909, “to overlook a cardiac rheumatism in a child unless the physical examination is promptly and thoroughly carried out, for the cardiac muscle may be grievously affected though no murmur is to be heard on auscultation and the external evidence of rheumatism afforded by arthritis, so abundant in the adult, may be almost or even entirely lacking in the child.”

The earliest rheumatic cardiac phenomenon in the child is, in most cases, an acute dilatation of the left ventricle. Affection of the cardiac muscle precedes endocarditis or pericarditis, and the first evidence of an attack is obtained by careful percussion in addition to the other signs to be mentioned.

The cardiac dulness to the left almost always reaches
the nipple line, and later may extend beyond it by one or sometimes two finger-breadths. Along with this evidence of dilatation there will be a diffuse or weakened cardiac impulse, a weak pulse-wave in the arteries, an enfeebled first sound at the apex, and an accentuated pulmonary and sometimes aortic second sound. The pulse-rate is abnormally frequent, and is increased after slight exertion.

It may be added that clinical experience goes to prove that the acute dilatation of the left ventricle above described is present in even the mildest attacks of "sub-acute rheumatism."

(10) Treatment.—The treatment of rheumatic attacks in childhood differs only from that necessary in adults in the great importance of early and prolonged rest. And, as Dr. Lee has pointed out, in all cases where a suspicion of rheumatism exists, where an unexplained pyrexia and rapid action of the heart are found in association with nodules, erythema, tonsillitis, choreic movements, and other signs, much may be gained and no loss incurred by insistence on rest in bed until the symptoms have subsided. Full doses of the salicylate are given with double the quantity of bicarbonate of soda. The latter is supposed to lessen the danger of acid intoxication, but it seems too presumptuous to expect that such a profound constitutional disturbance, often ending fatally, whether it be a question of idiosyncrasy or consequent on the existence of a fatty liver, can be averted, as it seldom can be cured, by doses, however large, of bicarbonate of soda.

This problem is yet unsolved, and the possibility, though remote, of averting such a catastrophe as acid-intoxication will gladly be accepted by any one who has had experience of such a misfortune. The inclusion, therefore, of bicar-
bonate of soda in the drug treatment of rheumatism in children may be considered justifiable.

The administration of digitalis in suitable doses is, with certain restrictions, as much a part of the treatment of rheumatism in children with cardiac complications as in adults.

(11) *As a sequela of scarlet fever.*—Rheumatism may appear at the end of the first week or during the second week of an attack of scarlet fever, after which it is rare. The onset is insidious, and endocarditis is frequently present.

(12) *Age-incidence.*—Rheumatism is very rare in any form in children under two years. It may even be said to be rare under three years. It is most frequent in its onset between the ages of six and nine years.

(13) *Stiff neck and affection of hip-joint.*—These conditions (the latter by Sir Thomas Barlow) have been associated with rheumatism in children. While it may be difficult to prove the connection, none will object to regard such indications as suspicious and worthy of observation and treatment, especially when found in those with an hereditary history of rheumatism and not due to other apparent causes.

While some of the many characteristics of rheumatism in children have been mentioned, it is impossible to conclude without referring to two conditions, one of which is entirely associated with the adult form, the other rarely found in childhood. I refer to hyperpyrexia and acute polyarthritis. Of the former, one case with delirium has been reported by Dr. Gee as occurring in a boy, aged six and a half years, and ending fatally.

Acute polyarthritis is characteristic of the young adult form. It is found in childhood. I have seen one case in a girl in her fourth year; but this form is not very frequent
at such a youthful period, and is certainly not the most usual.

In conclusion, I would say that rheumatism in childhood differs from the adult form (1) in the variety of its manifestations, (2) in its insidious onset, (3) in the mildness of the arthritic symptoms and the corresponding severity of the cardiac trouble.
PARATYPHOID FEVER.

By GEORGE PEACOCKE, M.D., Vice-Pres., R.C.P.I.;
Physician, Adelaide Hospital, Dublin.

[Read in the Section of Medicine, March, 10, 1911.]

It is only within the last ten years that a widespread form of infection possessing clinical features closely resembling those due to the *Bacillus typhosus* has been recognised.

Supposed cases of enteric fever were submitted to bacteriological examination, and as a result the discovery was made that the bacillus causing the fever was not the *Bacillus typhosus*, but one of the colon group.

The agglutinating action of the serum was further found not to be that which occurs as the result of typhoid infection.

The number of cases now on record is something over 160, but in all probability a much larger number of cases have occurred which have escaped recognition and have been labelled enteric fever, owing to the close resemblance between the symptoms of the two diseases.

In Allbutt and Rolleston's "System of Medicine," the following account of the clinical symptoms is given:—

"The patient during the first three days suffers from vague symptoms of malaise and lassitude. On the fifth day the symptoms reach their height, and the patient passes into a typhoid, stupid condition with blunted sensibility. The cheeks are flushed, the eyes dull and sunken, and the conjunctiva injected. Herpes labialis is sometimes present. The tongue is generally moist and
covered with a white coat. The abdomen at this time is rigid and slightly distended. The spleen is enlarged, but its free edge is rarely palpable. Often there is an eruption of red lenticular spots which sometimes become confluent. Constipation is the rule. The temperature is between $102^\circ$ and $103^\circ$ F. in the evening, and falls about a degree in the morning. This continued fever is sometimes present from the outset, but is rarely maintained for more than a few days, and on the tenth to the twelfth day of the illness the fever has disappeared. There is, as a rule, a fairly sudden onset of fever which runs a continuous course at a moderate height for several days; the temperature then becomes irregular and rapidly falls. The loss of flesh is very marked. The disease lasts for a period varying between ten and twenty-four days. Relapses occur in 10 per cent. of the cases, but they are less severe and last for a shorter time than the primary attack.

Whether the majority of cases of paratyphoid fever agree with this description, unusual forms, as in typhoid fever, occasionally occur. One, a severe form, in which the clinical symptoms resemble those of pyæmia, and another so mild that it has been called ambulatory paratyphoid. The prognosis is favourable, only between 3 and 4 per cent. of the recorded cases having proved fatal.

In these latter swollen Peyer's patches have been found post-mortem, but a few instances of intestinal ulceration have been described. Complications may arise and form a fairly formidable list, including bronchitis, pleurisy, intestinal haemorrhage, cystitis, pyelonephritis and nephritis, furuncles, arthritis, osteomyelitis, suppurating osteitis, otitis, orchitis, cholecystitis and hepatitis.

The following is a short account of three cases of this
disease which occurred recently amongst the nursing staff of the Adelaide Hospital:—

Case I.—Nurse T. was in her usual health, except for a small septic focus in her thumb, until Sunday, October 30th, 1910, when she complained of slight headache, chilliness, and a general feeling of lassitude and malaise. She was able to continue at her work until the afternoon of Thursday, November 3rd, when she felt very ill, and her temperature was found to be 102° F. I saw her the following morning, November 4th, and found her looking ill, temperature 103°. She had a severe frontal headache, pain and stiffness in her neck, and pain in the back, with complete loss of appetite and constipation.

She soon passed into a typhoid, stupid condition. Her temperature ranged between 102° and 104°. The abdomen became distended, and rose-coloured spots like those of enteric fever appeared on her back and abdomen. Her tongue became more coated and her pulse markedly dicrotic. She had a distressing cough, and rhonchi could be heard over her chest and back. The spleen was not palpably enlarged. She rapidly lost flesh. No further symptoms developed, and at the end of the second week her temperature became normal, having been intermittent during the last few days of fever. Convalescence was slow but uneventful.

Case II.—On November 5th, the day after I had seen the previous cases, I was asked to see Nurse D., who had complained the previous night of shivering, pain, and stiffness in her neck, severe frontal headache, and a general feeling of malaise. She also had a septic finger. When I saw her she was perspiring freely, dull and heavy, complaining of the pain in her head and neck; temperature 103° F., tongue coated. She rapidly passed into a typhoid condition; her temperature remained elevated 102° to 104°, and her abdomen became moderately distended. A few enteric-like spots appeared on its surface. Her pulse was dicrotic, and loss of flesh was very marked. On November 8th she complained of severe pain over the lower part of the left side of her chest, which caught her
Case I.

Paratyphoid Fever.
breath, but physical examination failed to reveal any cause for this. During her illness she frequently complained of this pain. Her bowels were constipated.

This case was more severe than the former one, and at one time I feared it was a case of septic infection. The septic focus in one finger, profuse sweating, cyanotic appearance of her face, with the presence of a mitral systolic murmur and some outward displacement of the apex-beat, did not tend to allay one's fears. She had also albuminuria. Her cough became very troublesome, and bronchitic signs through her chest were well marked.

She suffered greatly from sleeplessness, and depression was a prominent feature throughout her illness. At the end of the second week her temperature, which had been continuously high, began to fall, and her general condition became gradually better, and by the end of the third week convalescence was becoming established. This was, however, retarded by an attack of phlebitis, with thrombosis in the veins of her left leg, which necessitated her remaining in bed for some weeks longer.

Case III.—Nurse I. first complained of feeling sick on November 12th. Headache, pain and stiffness in her neck, with a general feeling of malaise, were her symptoms. She had not a septic finger, but her fingers were cracked, and some septic fluid had accidentally got on them a few days previously in the operating theatre. I saw her on November 14th, and her condition was similar to that of the previous cases. Temperature 102.6°.

She rapidly passed into a typhoid condition, suffered from sleeplessness and cough, constipation and sweating. She had no eruption of rose spots on her abdomen. At the end of the second week she had a distinct relapse, or, rather, recrudescence of fever, which lasted about ten days, and at the end of the fourth week another and shorter one, lasting only a few days. Convalescence was prolonged and complicated by three attacks of biliary colic. Shortly after her return home she had another severe attack of gall stones, and I advised her to return to hospital. A week ago Mr. Gordon removed several small stones from her gall-bladder.
At the operation I obtained some bile from the gall-bladder, and from it a bacillus very similar to that described further on has been isolated. Cultures have been made, but further time is necessary before the organism can be accurately identified.

There are many points of similarity in these three cases. In each a septic finger was present for some days before the onset of symptoms. The onset was abrupt, with fever, headache, pain in the side of the neck, and great lassitude. Constipation, bronchitis, rapid loss of flesh, marked depression, and dicrotic pulse were present in all. In two rose-coloured lenticular spots resembling the eruption of enteric fever were present, and in two complications occurred, in one phlebitis, in another gall-stones. In none of the cases was the spleen palpable.

Owing to the early and markedly intermittent defervescence in Case I., the possibility of an infection other than that of the *Bacillus typhosus* as causing the fever occurred to me, and I asked Professor Scott to submit Cases I. and II. to the agglutination test. He first tried the serum with a strain of Eberth's bacillus, but failed to get any clumping with a dilution of 1 in 20. With Gärtner's bacillus clumping occurred with a dilution of 1 in 40 in both cases.

The infective organism appeared, then, to be this bacillus, but on applying the test to Case II. no clumping occurred.

It was evident, therefore, that if these three cases, so similar in their symptoms, were due to the same infection, the infective agent was an organism other than the bacillus of Eberth or that of Gärtner.

—aThe bacilli obtained from the gall-bladder of case 3 have been proved by cultures to be paratyphoid A. Further serum from case 1 (taken four months after subsidence of fever) produced clumping of these bacilli with a dilution of 1 in 50.
Accordingly, I obtained a specimen of urine from Case III., drawn off by a catheter into a sterilised bottle, and asked Professor Scott to try to isolate from it the required organism. He found numerous bacilli apparently belonging to the coli group, and made a pure culture of them.

Fresh blood was then taken from all three cases, and the agglutination test produced clumping in each case with a dilution of 1 in 40. This bacillus was, then, the probable cause of the fever. The next step was to ascertain its exact nature.

Two varieties of the paratyphoid bacillus, called A and B, are now recognised by the majority of those who have investigated the disease. Variety B, according to Lorrain Smith, is found in 80 per cent. of the cases, and its characteristics are, on the whole, more like *Bacillus coli*, while variety A is more allied to *Bacillus typhosus*.

Our investigations were carried out on four of the media mentioned by Lorrain Smith—i.e., agar, gelatine, potato, and litmus milk. On agar, gelatine and potato there was a close resemblance to the growth produced by *Bacillus typhosus*. On litmus milk little change was noticed for some days, but subsequently small red clots appeared in the liquid quite unlike the red, thick clotting which rapidly occurs with *Bacillus coli*. This production of acid does not occur with *Bacillus typhosus*, the litmus milk remaining blue without any clotting. In all cases parallel cultures were made with *B. typhosus*, *B. enteriditis* (Gärtnner), and *B. coli*.

These results are similar to those obtained with paratyphoid A, the bacillus which, as already mentioned, is less frequently associated with the disease than paratyphoid B. M. Netter, however, in a short note in *La Semaine Médicale*, of last December, states that, contrary
to the opinion generally held, he has found paratyphoid A more frequently than B in cases of paratyphoid fever.

The epidemic remained strictly limited to the three cases I have described, and I am quite at a loss to discover the source of the infection. At the time of the commencement of their illness the three nurses were at work on different landings in the hospital. Two were on day duty and one was on night duty. Two of them occupied cubicles in a large room where other nurses also slept; the third had a separate room in a different part of the nurses' home. They had not been out anywhere together for weeks previously.

Water contaminated by surface pollution has been found to be the source of infection in a certain number of recorded cases, but if any article of diet acted as the carrier in the present cases, it is difficult to understand why no other cases occurred either among the other members of the nursing staff or among the patients in the hospital.

Dr. Scott said his attention was drawn to the fact that he failed to get the Widal reaction. He had an opportunity of examining a similar case in which he failed to get a reaction with typhoid bacilli. There is a peculiar condition in which the clumps consist only of two or three bacilli, and in which he always felt in doubt as to whether he should call the reaction positive or negative. When such clumping with typhoid bacilli occurred further investigation often proved the case to be one of paratyphoid fever.

Dr. Day said on making an examination of the blood in the mild cases which first seemed to be typhoid one often eventually found them to be paratyphoid. He did not think that paratyphoid was necessarily a mild disease, and mentioned the case of a man who went from bad to worse, and finally died from this disease.
Dr. O'Kelly said he had a case of paratyphoid in which Peyer's patches were inflamed but not ulcerated; but on the ileo-caecal valve there were very deep ulcers.

Dr. Bewley mentioned three cases in young men who were brought into hospital. In one of these there was profuse haemorrhage. He said that paratyphoid was much commoner than it was thought to be.
THE ÄTIOLOGY AND TREATMENT OF DIABETES MELLITUS.

By W. M. CROFTON, M.B.;

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[Read in the Section of Medicine, March 10, 1911.]

Since there is at present no unanimity of opinion as to the ætiology of diabetes mellitus—the disease characterised by the appearance of dextrose in the urine over weeks, months, or years, accompanied by increase in the amount of urine, increased thirst, abnormal appetite, and, as a rule, by wasting and exhaustion—I propose first to discuss the ætiology of the disease and then the treatment employed which follows logically from the ætiological conclusions arrived at.

Glycosuria is an essential feature of the disease, but there can be no doubt that, besides carbohydrate, protein and fat metabolism are also frequently deranged, and in the worst cases derangement of the metabolism of all three classes of metabolites is present.

The sugar found in the blood and tissue juices is dextrose, in which form it is absorbed from the intestine. It occurs in any quantity up to 0.2 per cent. If it rises above this it is excreted by the kidneys, and glycosuria results. When during digestion a large amount of dextrose is being absorbed from the intestines the amount in the arterial blood does not normally rise above .2 per cent., because the liver and tissue cells (e.g., the muscle cells) take up the surplus and store it in the form of
glycogen, which is reconverted into dextrose to keep up the normal percentage of dextrose in the blood during fasting. Cohnheim and others have demonstrated experimentally that the oxidation of the dextrose molecule by the tissue cells depends on the interaction of two substances forming a compound ferment, one part produced by the tissue cells is heat-labile being of the nature of complement, the other part is heat-stable is of the nature of immune-body, and is produced by the pancreas. The absence of either element of the compound ferment would prevent the oxidation of the dextrose, and so lead to the excretion of the unmetabolised sugar.

Fat is also metabolised in a similar way by the tissue cells by the interaction of the heat-labile and heat-stable elements of a compound ferment, the complement-like part being produced by the tissue cells, the immune-body-like part by the pancreas. These facts have been recently demonstrated by Shaw-Mackenzie and Rosenheim, who call the heat-stable part "co-ferment."

Practically nothing definite is known as to the form in which protein food substances are passed into the blood from the alimentary canal. We know that the intestinal cells take them up as amino-acids, but whether they build them up into large protein molecules such as serum-globulin and serum-albumin, and secrete these into the blood, and the tissue cells break these large molecules down again into amino-acids, before using them as food, or whether the amino-acids are passed into the blood stream as such and the tissue cells absorb them direct, is not known. We do know from the facts of haemolysis and bacteriolysis that the tissues can break down a large protein molecule. As is well known, haemolysis and bacteriolysis are brought about by the interaction of two substances, one heat-labile, complement, the other heat-

T.
stable, immune-body or co-ferment; so that the breakdown of the large protein molecules of which the stroma of red corpuscles and the body of microbes is composed is similar to the process by which the molecule of fat and carbohydrate is broken down, and the pancreas alone has been shown to produce the immune body or co-ferment part of these compound ferments. It seems to me, therefore, quite likely that the pancreas produces the immune body for protein metabolism, and is at any rate the chief source of these essential factors in anti-bacterial immunity.

Certain clinical observations point in this direction. (1) It is well known that diabetics have a much lowered resistance to microbial invasion, which may be due to the patient's pancreas having a reduced capacity for turning out immune bodies.

And (2) in a diabetic the "negative phase" after an injection of vaccine is almost invariably accompanied by an increase of the amount of urine and sugar excreted. I think it is quite possible to explain this by supposing that the cells that produce the carbohydrate co-ferment also produce the protein co-ferment, and that the lowering of their vitality by the injection of a foreign protein which they are not able to digest, and which, therefore, interferes with their metabolism, causes a reduction of the output of carbohydrate co-ferment, which, of course, leads to a reduction of the amount of dextrose metabolised, and, therefore, to increased glycosuria.

The pancreas is stimulated to secrete both its intestinal and tissue ferments by means of a hormone, "secretin," formed in the mucous membrane of the upper part of the intestine from a precursor prosecretin under the influence of the acid gastric content when it passes into the intestine from the stomach.

From the above considerations of tissue metabolism it
is easy to understand the profound derangement of it that must take place when the co-ferments are suddenly and completely withdrawn, as they are when the pancreas is entirely removed under experimental conditions in dogs. The animal soon develops a complete picture of an acute severe case of diabetes mellitus; sugar appears in the urine within twenty-four hours, the animal becomes abnormally hungry and thirsty; there is increase in the amount of urine; later \( \beta \)-oxybutyric acid, &c., appears in the urine, and there is a large increase in the ammonium-urea ratio.

Glycosuria has also been produced experimentally by puncturing the floor of the fourth ventricle between the nuclei of the eighth and tenth nerves. This glycosuria lasts only as long as there is glycogen in the liver, and does not occur if the vagi have been previously cut.

Phloridzin and phloretin cause glycosuria. They act on the kidney cells, most probably stimulating their dextrose excreting powers. Another view is that they dissociate the dextrose from a normal combination with a protein, and that the kidneys excrete the uncombined sugar. At any rate they produce a hypoglycæmia, and the glycogen from the liver, muscles, &c., is converted into dextrose to keep up the normal percentage in the blood. When the glycogen is exhausted sugar continues to be excreted, being formed from the proteins of the body as it frequently is in diabetes.

Another drug that produces glycosuria is adrenin, both when injected into circulation and when painted over the pancreas. It thus seems to act directly on the co-ferment forming cells of the pancreas. It is important to note that oral administration is less likely to produce glycosuria.

Glycosuria sometimes appears after ether narcosis, and it is interesting to note that ether precipitates the carbo-
hydrate co-ferment from its solutions. Many other drugs produce glycosuria, but I need not mention them here.

Lastly, dextrose may appear in the urine as a result of too large an ingestion of carbohydrate; the amount that can be given to a healthy animal without the appearance of glycosuria varies somewhat with the individual, and no doubt varies in the individual at different times.

This so-called alimentary glycosuria is probably due to the liver being able to store only a certain quantity of glycogen at a certain rate, a sudden flooding of it with an excess of dextrose leads to a greater amount than normal passing into the circulation, and so to glycosuria.

Turning now to the clinical aspect, it thus appears that glucose may appear in the patient's urine as a consequence of—

(1) An overdose of carbohydrate. The upper limit of the amount that can be given without sugar appearing lies between 150 and 200 grammes. If a dose under 150 grammes produces glycosuria something is wrong. It is subnormal in certain diseases of the liver, such as cirrhosis.

(2) A condition corresponding to puncture-diabetes has been associated with brain lesions, such as tumours and hydatid disease in the neighbourhood of the medulla.

The transitory glycosuria in individuals who are suffering from neurasthenia from overwork may be due to a nervous cause.

(3) That glycosuria may be caused by adrenin is of interest, because Rogers suggests that the diabetes, which sometimes occurs as a terminal event in exophthalmic goitre, when the thyroid becomes sclerotic and the patient myxœdematous, may be due to the unbalanced action of the adrenals. It is interesting in this connec-
tion to note that manipulation of the adrenals has produced glycosuria.

It is possible that in the later stages of diabetes the kidneys, owing to fatty degeneration, &c., may have a reduced power of keeping back sugar just as they have in phloridzin glycosuria.

(4) Failure of the tissue cells to produce the heat-labile part of the co-ferment. There is no experimental evidence that this occurs, but there is some evidence that it does not, for Baumgarten has shown that certain partly oxidised carbohydrates can be completely oxidised in the tissues of pancreatectomised dogs. Such a carbohydrate is d. glycuronic acid, which represents the first stage in the oxidation of dextrose. The difficulty that the tissues of diabetics seem to have, therefore, is the breaking of the long hexose chain. Another point against the glycosuria in pancreatectomised dogs being due to absence of complement is that it is only the source of co-ferment that has been removed, and that, therefore, in experimental diabetes the complement is intact, at any rate in the early stages of the condition. Very possibly in the later stages, owing to malnutrition of the cells, the complement may be diminished. It ought not to be difficult to devise experiments to determine this point.

(5) Lastly, the glycosuria may be due to functional or organic disease of the pancreas with its consequent diminution or absence of the co-ferment.

Taking the organic diseases first—

Pancreatic lesions have been frequently found in diabetes. They are various, such as interstitial fibrosis—that is, the fibrosis is intralobular and interacinar; various degenerations of the islands of Langerhans, such as round-celled infiltration, sclerosis, hyaline degeneration, &c. I do not propose to go into the vexed question as to
what relation the islands of Langerhans bear to the rest of the secreting epithelium, or whether they alone furnish the co-ferment. I will mention only the following facts:—

In 90 cases of diabetes Cecil, of the Presbyterian Hospital, New York, found sclerosis or degeneration of the "islands," plus interstitial fibrosis, in 67. In these arterial sclerosis was common. The parenchyma normal, and lesions of the "islands" alone in 12, while the pancreas was normal in 11. Of these 11, five had marked diminution in number of the islands, while in two others the pancreas was abnormally small.

Others have found interstitial fibrosis in 50 per cent. of cases.

Cecil found also that in some diabetic pancreases, while the islands were for the most part degenerate, some had undergone enormous adenomatous hypertrophy. He suggests that this was compensatory.

Now, what is the origin of the interstitial inflammation that occurs in the pancreas? It is probably two-fold; firstly, it may spread up from the ducts, and secondly, it may begin in the connective tissue of the gland. In the first class the inflammation may be due to obstruction by a gall-stone or by calculi in the duct of Wirsung, or to infection with micro-organisms from the intestine or bile ducts. The diabetes in these cases is a terminal event in chronic pancreatitis.

When the inflammation is intralobular it is very probably due to infection through the blood stream.

When the islands alone are diseased it may be due to a microbial infection by way of the blood-stream; to toxæmia, just as the kidneys undergo amyloid degeneration in chronic suppuration (the removal of a gangrenous limb has been known to diminish the amount of sugar
excreted), or the islands may undergo disuse-atrophy owing to the absence of sufficient stimulus.

This brings me to the consideration of those cases in which no lesion of the pancreas has been found.

In Cecil's series they are in the minority, in others they are in the majority, while in others again the numbers are about equal. I do not think it is difficult to account for these cases, for in an absence or diminution of secretin the pancreas would be without its normal stimulant, co-ferment would not be produced, and glycosuria would result. It may be asked is the secretion of co-ferment dependent, like the external ferments of the pancreas, on a hormone from the intestine; the successful treatment of some cases of diabetes with secretin would strongly tend to prove that it is, for in no other way than the stimulation causing the pancreatic cells to produce a larger amount of co-ferment could this substance produce improvement.

Further, in some cases of diabetes dead from coma, prosecretin was found absent, while in other cases dead from other causes it was present. Long-continued absence of secretin may account for the small size of the pancreas, which is otherwise normal—in some cases of diabetes the small size being due to atrophy of the cells of the parenchyma and a diminution of the cell-islets in size and number owing to disuse.

Hypoplasia of the pancreas has also been said to be congenital in some cases, and may be a reason why children of diabetics sometimes develop the disease.

I am not aware that any observations have been made on the intestinal mucous membrane in diabetes; I know enteritis was present in one case that I examined in which there was no marked lesion of the pancreas except that it was smaller, darker, and firmer than normal, and
there was some interlobular fibrosis. This patient had fatty stools with no obstruction of the duct of Wirsung post-mortem. Stomatitis and gastritis are common in the disease, and so enteritis may be also, but, of course, the inflammation may be secondary not primary.

It has long been suspected by some that many cases of the disease were due to infection by micro-organisms, the occurrence of the disease in husband and wife, or in several members of the same family, lending support to this view. It seems to be more common in some places than others; for instance, it was quite common in Sutton Bridge, where I practised, while my medical neighbours saw comparatively few cases. The drinking water in Sutton Bridge was particularly liable to sewage contamination.

Wright mentions a case of diabetes whose symptoms varied with the opsonic index to a coliform organism isolated from the patient’s stools. As already mentioned, I always find that the negative phase after an inoculation is reflected in the urine. McWaters has observed great improvement in several cases suffering from furunculosis which he treated with vaccines made with staphylococci isolated from the boils.

Three of my cases were peculiarly liable to sore throat, and always had increased excretion of urine and sugar during the attacks.

I always look for a source of infection, and find one of the commonest is severe pyorrhoea alveolaris. This disease offers easy opportunities for blood infection, and the constant swallowing of virulent organisms is undoubtedly a common cause of gastritis and enteritis.

I think some of these facts are very suggestive that the enteritis and pancreatitis are due to micro-organisms—in some cases at any rate.
By Dr. W. M. Crofton.

There is one other possible cause of the non-production of secretin, and that is that there may not be sufficient acid in the gastric content when it passes into the duodenum to convert the prosecretin into secretin.

Diagnosis of the exact cause of glycosuria in a given case must always present difficulties.

If it is due to an overdose of carbohydrates it will be only transitory, and the diagnosis can be confirmed by giving the patient 150 grammes of dextrose. If no sugar appears in his urine his glycolytic apparatus is probably normal.

The form which is hypothetically due to a temporary diminution of the glycogenic functions of the liver would also be only temporary, and would disappear with a reduction in the amount of carbohydrate ingested. I do not see, however, how it is possible at present to distinguish such a form from one due to a diminution in the co-ferment production by the pancreas, the condition of the patient corresponding to that of a partially pancreatetectomised dog. I think there is some statistical evidence that some of these cases develop typical diabetes later on. These cases ought to have their urine tested at fixed intervals.

Cases of glycosuria associated with brain lesions ought to present little difficulty owing to collateral symptoms.

While the small number which may be due to neurasthenia present a picture like the glycogenic ones—viz., a temporary diminution of carbohydrates producing a restoration of glycolytic functions.

There remain the patients in whom a strict non-carbohydrate diet produces a freedom from glycosuria, but in which any attempt to give them sugar again produces the glycosuria, and those who excrete sugar on the strictest diet.

These cases I believe are always due to functional or
organic disease of the pancreas, or perhaps to both—that is, there is diminution of the production of secretin and a lesion of the pancreas as well.

A symptom that is sometimes present, and which suggests a lesion of the pancreas, is pain and tenderness on pressure over the region of the gland.

Fatty stools suggest obstruction of the duct of Wirsung, and so are of localising significance.

Cammidge's reaction may also help in the diagnosis.

The improvement of the patient under secretin may suggest that the lesion is chiefly intestinal.

While if the lesion is solely pancreatic the patient does not improve under secretin, but does under the co-ferment extract.

Diagnosis will be difficult until we can test accurately the amount of co-ferments circulating in the blood.

Treatment.—I need not refer further to the treatment of those cases of glycosuria which clear up with a temporary restriction of carbohydrates, or of those connected with a gross nervous lesion. While the treatment of those cases occurring as a terminal event in exophthalmic goitre would be the same as that of a typical case of diabetes plus the exhibition of thyroid-globulin.

The above-mentioned considerations of aetiology give two lines of treatment which are complementary to each other—the first specific, the second symptomatic.

By specific I mean the removal of the cause of the inflammation, which may be present in the intestine or pancreas.

In every case an exhaustive examination for a source of infection should be made. As before mentioned, pyorrhœa is very commonly present, and should be cleared up with a vaccine. If furunculosis is present it should be cleared up in a similar way, also carbuncle. I have seen
By Dr. W. M. Crofton.

most marked improvement in a case with severe pruritus vulvae after inoculations with a staphylococcus vaccine, the organism being isolated from the lesion. So, too, any chronic tonsillitis or nasopharyngeal catarrh should be cleared up. I believe the swallowing of mucopurulent matter from the nasopharynx is a common cause for chronic gastro-enteritis. Lastly, if no other source of infection can be found, a bacteriological examination of the faeces ought to be made, and the patient's opsonic index tested against the organisms isolated, and if this indicates the infectivity of any of them a vaccine should be prepared.

Several observers have obtained good results with this line of treatment, and I have also obtained improvement in several cases. At any rate, nothing but good can result to the patient from ridding him of micro-organisms which are infecting him, although they may not be the source of the specific disease from which he is suffering. I have found it very difficult to clear up pyorrhoea in a case with well-marked acidosis, owing probably to the fact that antibodies do not act well in an acid medium.

There is another class of diabetics which also require removal of the cause, and they are those with fatty stools. The majority of these cases have, I think, obstruction of the pancreatic duct either by a gall-stone in the ampulla of, or pancreatic calculi in, the duct itself. Cammidge and Robson have published cases in which the former had made the diagnosis of obstruction by means of his reaction and a careful examination of the stools, and in which the glycosuria disappeared after suitable operative interference. I believe there are certain cases with fatty stools which have no obstruction of the duct, the fatty stools being due to complete absence of secretin or to its diminution to such an extent that very little of the pan-
creatic external ferments are formed. I think such cases are exceptional, however.

Turning now to the other line of treatment. It is an attempt to replace the absent or supplement the diminished co-ferments.

I begin by giving the patient secretin.

Clinical evidence and experimental evidence seem to be at variance as to the efficacy of giving this substance by the mouth. Starling positively declares that this substance is not absorbed when given in this way. A few cases of complete disappearance of sugar and of complete recovery from diabetes have been recorded which could be accounted for in no other way than that they were due to the exhibition of secretin. I myself have had no case of this kind, but I have undoubtedly seen improvement occur, and many observers have had cases in which they have seen improvement with secretin.

If the patient does not improve markedly with the secretin I give a pancreatic extract.

The first extract I used was an extract containing all the pancreatic products. With this I obtained a very marked improvement. The patient was a child of twelve, in a very bad condition when I saw her first—emaciated and cyanosed, and passing at least fifteen pints of urine in the twenty-four hours, containing about 10 per cent. of sugar. At the end of a year she was passing two and a half to three pints of urine, containing 3.5 per cent. of sugar. After treatment commenced she soon lost her thirst and abnormal hunger, and began to feel well, and played about like an ordinary child. She had several relapses during the year with some return of symptoms, and these were always preceded by a sore throat, and accompanied by pain and tenderness over the pancreatic region. After the year, treatment was stopped
owing to expense, and much against my will. She remained in the condition stated with no symptoms of the disease except the sugar in her urine. She then suddenly relapsed, and died without treatment, in spite of my emphasising to her parents the probability of relapse. From start to finish no alteration was made in her diet.

Being convinced that such marked improvement in such a severe case in a child must be due to the treatment adopted, I was anxious to find out what substance in the whole extract produced the improvement. I, therefore, had a pancreatic extract made, from which all the coagulable proteins and external ferments were removed, and this extract is the one I now use.

It is made up as follows:—The proteins are precipitated from the press-juice of pigs' pancreas by keeping it at 80° C. for three hours. The coagulated proteins are filtered off, and the filtrate is mixed with 20 per cent. of glycerine. The extract, which is made by Messrs. Fairchild Brothers and Foster, to whom I am much indebted, is to be obtained commercially under the name of "hormonadin."

The dose for an adult is 5i, and the number of doses in the twenty-four hours must be worked out for each case, for I find that there is an optimum dose just as Cohnheim found that there was an optimum amount of pancreatic extract in his experiments—too much of this producing diminished glycolysis as well as too little.

Now, as to the results obtained. I have not yet had a sufficient number of cases to enable me to dogmatise, but I have seen a sufficient number, which were going to the bad on the ordinary lines of treatment, improve and resume their ordinary mode of life, and this on an ordinary full diet, to encourage me in the idea that I am working on the right lines.
The patients soon begin to lose their abnormal thirst and hunger, and the wretched feeling of weakness and illness. In some cases the amount of sugar and of urine decrease rapidly, but I have never succeeded yet in entirely getting rid of the sugar, although the patient has declared himself feeling well and strong and able for his full quantum of arduous work. I do not know if the extract would cause the sugar to disappear in a mild case, because, so far, I have not had such a case to treat.

I believe in one case, not treated by myself, diacetic acid has disappeared under the treatment.

The cases that have done least well in my hands have been cases with a large amount of acidosis, which could not be materially reduced by alkaline citrates and carbonates given in large doses. The extract seems to improve these cases to a certain extent; at any rate they seem to maintain their weight and not be so liable to coma. In fact I have had one case recover from coma by giving the extract intramuscularly, and giving large quantities of water and citrates by the mouth, and another case which, owing to inadvertence, had not been having the extract and began to develop the symptoms of the onset of coma, rapidly lost them under similar treatment.

I believe the treatment can be improved, for the giving of a dose of co-ferment three or four times a day is a poor substitute for the continuous secretion of the normal ferment. I, therefore, think the oftener a small quantity of the co-ferment is given the better the results ought to be. The makers, at my request, are, therefore, trying to obtain the substance in a dry form, so that the patient can carry it about in his pocket in the form of a tablet or pill, and take one every half hour or so.

I find that many patients do best if they take both secretin and co-ferment, and so I am having a tablet con-
taining both made. In cases with fatty stools the whole extract should be used.

In conclusion, I do not think it possible in the majority of cases to cure diabetes, because when the patient comes under treatment the cells producing the essential substances are so far damaged that they cannot be restored, but I do think it possible to prevent, at any rate in many cases, the disease getting worse, and by means of giving the affected substance to enable the patient to live an ordinary life on an ordinary diet.

It seems the cases which can recover completely are those acute cases in young people whose glycolytic mechanism can be restored if tided over the acute phase, just as acute nephritis can be completely recovered from.

Dr. Moorhead said the treatment of diabetes mentioned by Dr. Crofton was built up by hypothesis based upon hypothesis. He asked what proof existed that Dr. Crofton's extract contained a co-ferment in this fluid. The only proof that he could find was that this fluid contained any active principle was the statement published in a paper by Dr. Crofton last year, that this fluid enables the body to burn up its carbohydrates better, but that was an obvious petitio principii which no scientific man can accept. As regards secretin, he mentioned Dr. Starling's statement that this substance cannot be absorbed from the intestine, and he (the speaker) said that his experience was that this drug was valueless in pancreatic diabetes. Dr. Crofton had stated that he had seen cases of improvement follow which could not be attributed to anything else, but you will find variations in the amount of sugar and the absence of diacetic acid in diabetics without any treatment at all. He had given the drug a fair trial, and did not believe it to be of any use. As regards the combined action of pancreatic extract and muscle on carbohydrates, Cohnheim's experiments were still the subject of controversy. If they were not confirmed a great deal of Dr.
Crofton's paper falls to the ground. Cohnheim's theory is first assumed to be true, and secondly it is assumed that quite likely the pancreas produces an immune body which takes part in metabolism. Another assumption is that there is a liability to bacterial infection—a liability which he quite admits—but when he comes to the explanation that it is due to the absence of an immune body he finds merely unproved assumption based upon unproved assumption. As regards lesions in the pancreas it depended on whether one was looking for them or not. One person says that the islands of Langerhans are positively destroyed, while another says that the islands have nothing to do with diabetes. Dr. Crofton laid special stress on the fact that his patients improved on the extracts, and that with giving a full diet. He (the speaker) could not see where was the improvement considering the so-called improved patients passed more water with a greater percentage of sugar. A mere statement by a patient that he felt better was worthless, and until Dr. Crofton could adduce definite proof of improvement in his cases he (the speaker) thought that the less said about his method of treatment the better.

Professor Collingwood said as regards Cohnheim's experiments it is possible that they were due to bacterial invasion. There is a further action of secretin which has been neglected. If pancreatic ferments are mixed with secretin these ferments are activated by the fact that secretin has come in contact with them.

Dr. Kirkpatrick said he had tried secretin in several cases, and he could not say there was any satisfactory result. He mentioned the case of one patient who continued to lose weight under secretin, but increased in weight by 5 lbs. with Dr. Crofton's extract, and no longer complained of thirst or hunger. His experience of the drug in other cases justified his continuing its use.

Sir John Moore referred to the uses of codein and liquid extract of cascara sagrada. The former he regarded as more useful than any ferment in the treatment of diabetes mellitus.

Dr. Crofton said his extract differed in no way from Cohnheim's. He made his extract from pure pancreas. He did not see how this could affect the co-ferment. He referred
to the improvement which his patients have had when taking this extract, and he laid emphasis on the fact that he did not pretend to cure, but to render his patients' lives more comfortable. As regards Cohnheim's theory that the malady was due to micro-organisms, this could be put out of court at once, for it was proved that microbic action was entirely absent. As to the metabolism of fat, it is no hypothesis, but an established fact. It is certain that if you inject into the body foreign protein you will get these co-ferments. There was no great anatomical change in the pancreas. In some there was an interlobular fibrosis, atrophy of its secret- ing epithelium, and the cell islands seemed to be diminished. It looks like a pancreas which was undergoing atrophy. As regards mental influences he did not think the improvement could be put down to that, as the patients were very sceptical about the drugs they were getting. As regards the treatment by codein, he thought it very useful. It may act by blocking the messages sent to the brain asking for more sugar, or, by combining with dextrose, it in some way renders it easier for oxidation than it was before.
When you honoured me with an invitation to give you an address on some medical topic, I had a somewhat similar invitation from the Canadian Medical Association, and so I selected a subject which I hoped, with some modifications, would suit both occasions. I am very pleased to be again among many old friends, and I must claim your indulgence while I make a brief survey of a subject which should interest an even wider circle than that of the medical profession.

On such an occasion as this it is customary for one to magnify his office, to say pleasant things, to paint the glories of the past, and depict in glowing terms, for the benefit of the public, what medicine has done for humanity. On the other hand, it has been said that the art of pleasing is the art of deceiving; hence I have no wish that we should hoist a high standard of righteousness, or pose as the only benefactors of the race. There can be no doubt that the great advances of medical science have been of enormous advantage to individuals, and have enabled innumerable persons to survive who would otherwise have succumbed to the stress of circumstances, but how far this has been an advantage to the evolution of the human race as a whole is a disputable point.
Karl Pearson says:—"The very existence of human society depends upon a strong gregarious instinct having been evolved among men. Our highest human product—sympathy with our fellow men—is as much a product of evolution as the gregarious instinct of a herd of deer, or the combined action of a pack of wolves. Only it is more completely developed, and with increasing knowledge we have lost more and more touch with its instinctive gratification. The sympathy is there, ready to run riot in a thousand ways, which sober reflection may not show to be for the ultimate advantage of the herd. It is easy to give a shilling to a beggar, to subscribe a pound to a charity, or to found stipends for the blind or the deaf and dumb. Our strong instinct of sympathy with suffering has been gratified, but shall we really have contributed to the total enjoyment of the race? May be, and may be not—the pedigrees of general, mental, and physical degeneracy, which I place before you, may help you to a judgment. Of one thing, however, I feel sure—that no judgment will lead to lasting social gain which is reached by appeal to the emotions, which is based on inadequate knowledge of facts, or which collects data with the view of supporting any preconceived opinion."

The Scriptures say that it is more blessed to give than to receive, and I think I can claim on behalf of our profession that, whether we have always been right or not, we have been ever actuated by a spirit of altruism. The process of vicarious charity, at the expense of the medical profession, has gradually grown so that in the present day at least a fourth of the population of England receives free medical advice. Why should all this charity be necessary? Why should such a large proportion of the population be pauperised? It would seem that it is because we are producing an inferior
breed, because we are not raising up a healthy independent race. The struggle for existence is not merely an individual question, but it is becoming more and more a national question, and the nation which produces the finest race is sure to win in the long run. As Professor Arthur Thomson says—What children usually die of is their parents, and what a nation dies of is lack of men.

In future, medical men must not be content with treating the diseases of the community. They must point out the lines along which the nation is to be improved by encouraging the multiplication of the fit, and controlling the increase of the unfit. The public must be taught that the health of the nation is its most valuable asset, and that the maintenance of health is of much more importance than the treatment of disease. This departure in placing physiological processes before pathology involves a higher form of medical education than that prevalent in our medical schools of to-day—an education in which only men of the highest intelligence should take part.

Prevention is better than cure is one of those half-truths which readily command public acceptance as axioms which cannot be gainsaid; but it is not Nature's method, and medical men are incessantly talking about following the laws of Nature. The prevention of disease is very important to the individual, but when it enables undesirables to go on generation after generation propagating their species it can be of no advantage to the race.

In an address on preventive medicine which I gave four years ago I stated that if the public were only alive to their own interests they would pay medical men liberally for directing them in the paths of truth and in the ways of health, rather than for treating their diseases. If the money which is spent in the treatment of disease were devoted to the preservation of health our huge hospitals
would not be half filled, purveyors of synthetic remedies and artificial foods might find a suitable place in a home for the destitute, the necessity for surgeons and specialists would largely disappear, and physicians would be fully occupied in advising their cliente on the preservation of health, and in looking after the aged. I am afraid we are still a long way off those halcyon days when our hospital buildings will be pointed out as relics of a decadent age, but still we should at least aim at transmitting high ideals to our successors. We can best attain those ideals by improving the stock; no environment will ever produce a genius.

Hitherto medical men have been devoting all their energies to the environment, adapting the environment to the individual, not the individual to the environment, thus not assisting the race to take care of itself. Attention, however, to the environment is absolutely essential in the prevention of disease. Although disease is Nature's method of killing off the unfit, it often severely damages those who survive, and is thus a slow and crude method of improving the race. Man has now risen superior to natural selection, and insists on living when all natural forces are against him. Medical science has succeeded in suspending the natural selective death-rate, and sentimentality renders the existence and rapid multiplication of the undesirables an easy matter. In the old countries the undesirables are increasing at a much more rapid rate than the mentally and physically fit. Those countries which have to a large extent suspended a selective death-rate, but are not wise enough to establish a selective birth-rate, are certain to decay, and go the way of all the ancient nations who disappeared and made way for more vigorous races.

The crude birth-rate for 1,000 persons living in Ireland,
the Province of Ontario, England and Wales and Scotland in 1909 was respectively 23.5, 24.9, 25.6, and 26.4. On the other hand, if we take the fertility of 1,000 wives between the ages of fifteen and forty-five, we find that the Irish wives head the list, the numbers being—Ireland, 289.4; Scotland, 271.8; England and Wales, 235.5; and France, 157.5.

Now, when we come to the corrected death-rates at all ages for 1,000 living in 1909, we find the rate in Scotland, males 18.56, females 16.73; England and Wales, males 18.37, females 16.04; Ireland, males 16.25, females 16.90. In Ireland, Norway, Sweden, and Australia the infantile mortality is very low. In Ireland the death-rate for children under ten years of age is very much lower than in England and Scotland, but it is rather higher among individuals from ten to thirty-five years, and then there is a decided fall till the age of seventy-five. Above that age the death-rate in Ireland rises rapidly, and it might look as if Ireland was a dangerous place for old people to live in, but it is simply due to the proportionately greater number of old people in Ireland. There is no evidence to show that the high mortality is due to the old age pensions.

The higher death-rate in Ireland from ten to thirty-five years is almost entirely due to tuberculosis, and the lower death-rate at all other ages, except extreme old age, points indubitably to the fact that tuberculosis is one of Nature's methods of getting rid of the unfit. The wave of enthusiasm over the conquest of consumption is so overwhelming in the present day that it requires a very bold man to say a word in favour of the tubercle bacillus. Dr. D. W. Hunter, of the Royal Albert Asylum for Idiots, in criticising a recent work on "The Conquest of Consumption," said, inter alia:—"Many an imbecile owes his existence to the fact that his parents failed to die of tuberculosis...
Again, as regards insanity, the authors themselves estimate that, roughly, one in every eight consumptives is likewise insane. This tendency to consumption among the insane they explain by the lowered resistance of the soil during the attack of insanity. This may be so, but it is certainly not the whole story. While, during the last fifty or sixty years, the death-rate from tuberculosis has steadily diminished, we are, on the other hand, faced with a very ugly rise in our insane rate. Since the insane show such a marked tendency to tuberculosis, it is not improbable that the diminishing death-rate from tuberculosis has played a considerable part in the increase of insanity."

And again:—"Let us take the case of the idiot. The death-rate among idiots is about ten times that of the normal population at the same age. Further, of deaths of idiots about 80 per cent. are due to tuberculosis. Now, an idiot has not even the resisting power necessary to die of phthisis. He dies of acute tuberculosis, death taking place from three to six weeks from the onset of the illness. Surely here there is some inherited lowering of the soil. There are some 150,000 (estimated) of these defectives in England and Wales, and for every defective there are from six to a dozen of his relatives only a shade better than himself. Practically the same holds for insanity, yet we are asked to believe that a man cannot inherit a soil which will remain during his lifetime permanently below the average in resisting power."

Further—"Until we have some restriction in the marriage of undesirables the elimination of the tubercle bacillus is not worth aiming at. It forms a rough, but, on the whole, a very serviceable check on the survival and propagation of the unfit. This world is not a hot-house, and a race which owed its survival to the fact that the tubercle bacillus had ceased to exist would, on the whole,
be a race hardly worth surviving. Personally I am of opinion—and I think such opinion will be shared by most medical men who have been behind the scenes and have not allowed their sentiments to blind them—that if tomorrow the tubercle bacillus were non-existent, it would be nothing short of a national calamity. We are not yet ready for its disappearance."

These are wise and weighty words, but it would be too much to expect that they would command public acceptance, because there is nothing in the present day which people hate so much as the truth when it conflicts with popular sentiment.

Dr. Osler, in a recent lecture in Dublin on the fight against tuberculosis, said:—"And, lastly, for our great consolation we know that the disease is not hereditary, and for this let us be thankful." We know nothing of the kind, although we are constantly having it dinned into our ears by medical men who ought to know better. We know that the tubercle bacillus, which is a necessary element in the production of tuberculosis, is not transmitted in the germ plasma, but the long, narrow, flat chest, delicate lungs, and feeble resisting power to the tubercle bacillus and to many other germs are undoubtedly inherited, just as much so as the shape of your nose or the colour of your hair. Medical men who are shutting their eyes to the truth, and encouraging matrimony and the propagation of the species by mental and physical weaklings, are incurring a fearful racial responsibility, and their action should be condemned in no uncertain language.

I am in favour of the abolition of tuberculosis, because I advocate artificial to assist natural selection. Moreover, tuberculosis is a poor method of a selective death-rate compared with typhus fever, which we have practically
abolished. The latter disease cleared off the weaklings without doing any permanent injury to the survivors, but tuberculosis seriously damages the survivors, is a very slow and expensive disease to combat, and many an individual succumbs who would be a worthy citizen in a better environment. By all means improve the environment, improve your sanitary conditions which will be beneficial in preventing tuberculosis and many other diseases. As far as possible destroy the tubercle bacillus—both human and bovine—and see that the milk supply is free from such organisms. Above all, both for the prevention of insanity and consumption, discourage and prevent the propagation of the species by the mental and physical weaklings. Raise up a race which will not be catching tuberculosis or anything else.

The medical officers of health are doing an enormous amount of good work in attacking the sources of supply of the tubercle bacilli, in preventing their dissemination, in looking after the milk supply, and in improving the sanitary conditions under which we live, but your blatant propagandist must see the disease before he begins to stamp it out with tuberculin dispensaries and sanatoria.

Dr. Barendt has reckoned that in the middle ages there were over one hundred leper houses in England when the population was less than four millions. There were also a few such houses in Scotland and Ireland. Leprosy was stamped out not so much by the leper houses as by improvements in the habits of the people, and by a holy abhorrence of the disease, so that the lepers took little or no part in adding to the population. It was laid down as a rule that the attendants or nurses at the leper houses should be discreet women of mature age.

During the last fifty years there has been a steady decline in the incidence of tuberculosis in England and
Scotland, while in Ireland it has remained about stationary. On the other hand, during the same period, the insane population of England and Wales has increased 250 per cent., while the whole population has only increased 81.6 per cent., and in Ireland, with a falling population, the increase has been about 100 per cent. The ratio of the insane to the general population is in England and Wales 1 in 278; in Ireland 1 in 158, and in Scotland 1 in 266. This is not all, as there is an even greater number of mental defectives in the three countries.

If you abolish the tubercle bacillus in Ireland, then it will certainly become a question of "God save Ireland." Are the insane and defective-minded to be allowed to go on multiplying at the present rate? I would advise you, while showing all possible kindness to the insane and mentally defective, not to allow them to indulge in the pastime of procreation, and give them clearly to understand that with them their breed must come to an end. Insanity and mental deficiency are largely questions of inheritance, and, unfortunately, owing to cross-breeding into impure stocks, there is a latent strain of insanity and other nervous affections in a great many families, so, no matter how careful you are in your selection, it will take some generations before you eliminate this latent strain from the impure dominants; but the sooner you begin such a selective birth-rate and the elimination of the undesirables the sooner you will attain a more or less perfect race. With the insane, the imbecile, the idiot, the mentally defective, the criminal, the ordinary wastrel, the loafer, the professional pauper, the tramp, the foot-pad, the drunkard, and other mental and physical degenerates, prevention is certainly better than cure; but you will never succeed either in prevention or cure by maudlin sentimentality.
In England and Wales there has been a great reduction in the infantile mortality during the last ten years, due to the falling birth-rate, more favourable climatic conditions, and greater care of the infants, but there has been practically no reduction in the deaths from developmental and wasting diseases which cause 61 per cent. of the total deaths during the first three months of life. It is, perhaps, best that this should be so, as the reduction in the birth-rate has been entirely among the better stocks, and if these 61 per cent. of defectives at birth survived the only advantage that could possibly accrue would be in finding more work for the medical profession, and more scope for the charitably disposed. Prevention in these cases implies breeding from better stocks.

Of recent years there has been a considerable increase in the death-rate from pneumonia, and this, no doubt, is partly due, as pointed out by the Registrar-General of England, to a more correct certification of deaths. Many of those formerly labelled bronchitis, especially among children, being now correctly designated pneumonia. But whatever the cause of the apparent increase, there can be no doubt that the death-rate from this disease is somewhat fearful. In 1909, in England and Wales it caused more deaths than any other form of disease, with the single exception of all forms of tuberculosis. The deaths from it considerably exceeded those from phthisis—the numbers being, per 1,000 deaths, pneumonia 89, phthisis 74.6; and the rate per 100,000 living, pneumonia 129, phthisis 108. Yet we have a great outcry about the conquest of consumption, but not a word about the conquest of pneumonia. It would seem as if the ordinary individual was incapable of getting more than one idea into his head at the same time.

Pneumonia is an infective process, due to infective
organisms, the pneumococcus in the vast majority of cases, though many other organisms play an important rôle in individual cases. The pneumococcus is very widely spread, even more so than the tubercle bacillus, and I feel confident a bacteriologist would find it in the mouth of every one here present. Therefore, it is, as a rule, a harmless saprophyte, but in a dirty mouth it may assume a virulent character, and when the resisting power of the individual is depressed from any cause, such as undue exposure, especially during sleep, when the control of the nervous system is largely in abeyance, alcohol, nervous prostration, the pneumococcus readily finds its way into the lungs or blood and sets up pneumonia, or general pneumococcal infection. Pneumonia is a common disease at the extremes of life, and in the aged it is often a terminal disease—the old die as easily from pneumonia as from anything else. Like typhus fever, it is a good racial disease, it kills the weaklings, and, as a rule, causes no permanent injury to the survivors. The mortality is greater among males than females, and, therefore, in the old countries it increases the disparity between the sexes. Unfortunately, it cuts off a large number of both sexes in the prime of life. The disease is short, and, therefore, inexpensive, so that no one makes much out of it except the undertakers, who grow fat on the misery of others. The case mortality is high, but yet no serious attempt has been made to curtail its incidence. The good lives cut short are soon forgotten. "The evil that men do lives after them; the good is oft interred with their bones." This disease is more prevalent in cities than in the country, and among those who lead unhealthy, indoor lives rather than among those who work in the open.

Alcohol is a strong predisposing factor—a factor which
not only increases the incidence of the disease, but also immeasurably lowers the resisting power of the individual, and so increases the mortality-rate. On the other hand, an excessive amount of lime salts in the blood greatly increases the resisting power of the individual, and so both lessens the incidence and the mortality. Any septic condition of the mouth increases the virulence of the organisms, and so a foul-mouthed individual is usually a greater danger to himself than to others. By way of prevention the mouth should always be kept perfectly clean and as aseptic as possible. The nasal passages and throat should be kept clean with some simple oily preparation, such as pure liquid paraffin, as they are frequently the paths of infection, not only for pneumonia, rheumatic fever, influenza and diphtheria, but also for cerebro-spinal fever and poliomyelitis.

Sir Almroth Wright has introduced vaccines for the prevention and cure of many infectious diseases, and among the most valuable are the pneumococcal and influenzal vaccines, which, when judiciously used, are most valuable remedies in the prevention and treatment of these diseases. In apoplexy and hemiplegia the patient frequently succumbs to an attack of pneumonia, and this can be obviated by a proper vaccine. Operations on the mouth are frequently followed by a fatal septic pneumonia, and in such cases it is not sufficient to use antiseptic mouth washes, but previous to operation the pathogenic organisms in the mouth should be isolated, and a corresponding vaccine prepared. Anti-streptococcal serum administered before operation is also a valuable adjunct.

Another common cause of the high mortality from pneumonia arises from lack of proper early treatment—often owing to the fact that some medical men take two or three days to diagnose the disease, and then call it con-
gestion of the lungs, and treat it cavalierly as a matter of no great importance for fear of frightening the patient until the unfortunate individual is too ill to be frightened by anything. In my opinion, if pneumonia were early recognised and properly treated the mortality would be greatly lessened.

In Ireland, in 1909, the death-rate from pneumonia was lower than in England, being 60 per 1,000 deaths and 99 in every 100,000 of the population.

In Scotland they move very slowly, even in the way of recording their deaths, as even now I have only been able to obtain the records of the eight principal towns for 1909. The death-rate from pneumonia was much higher than in England and Ireland, and this makes me wonder how much the national beverage has to do with the issue. The death-rate per 100,000 inhabitants was 177, varying from 217 in Glasgow to 92 in Perth; the rate per 1,000 deaths was 107, while that from phthisis was 77.

Bronchitis holds the second place as a cause of death in England and Wales, the numbers in 1909 per million persons living being 1,142, against 1,290 for pneumonia, and 1,081 for phthisis. There has been a considerable diminution in the apparent incidence of the disease partly owing to proper transference to the pneumonia list. Bronchitis is still very prevalent and fatal at the extremes of life, consequently the young and the old should be well protected against atmospheric changes. Some persons are much more susceptible to bronchial catarrh than others; this susceptibility is much lessened by a fair amount of lime salts in the blood, and increased by the salts of sodium and potassium, but in cases of true asthma the very reverse appertains. Alcohol and tobacco are injurious to the throat and bronchial mucous membrane; and the chronic cough thus induced is a frequent source of emphysema. A suit-
able vaccine is often highly beneficial in acute and chronic bronchitis, but there is no vaccine to counteract the effects of alcohol and tobacco. All destructive processes of the lung tissue cause emphysema. Senile emphysema is an atrophic process due to want of exercise of the lungs associated with ossified costal cartilages; this can often be obviated by decalcifying agents and breathing exercises.

Pleurisy, again, is largely an infective, but not a specific, disease, as it may be associated with tubercle bacilli, rheumatism, pneumococcus, pyogenic organisms, typhoid and colon bacilli, &c. In its prevention and treatment we must avoid undue exposure and all depressing influences, and consider the infective organisms.

Since 1870 there has been a marked fall in the death-rate from small-pox, typhus and enteric fevers. Every person can be protected against small-pox at a very small cost, sanitarians have practically abolished typhus fever, and the incidence of enteric fever is, and has been, steadily diminishing, but we have still got to deal with some of its associated causes. The ordinary household scavenger, the domestic fly, is still a troublesome pest, and the human carrier usually causes a good deal of mischief before discovery, and when discovered is difficult to control. The milk supply is still a frequent source of local epidemics, but the water supply is generally above reproach except in rural districts. A few epidemics have been traced to ice-cream vendors. The erroneous dread of sewer gas as a direct cause of the disease is now a matter of ancient history, except in the law courts, where it still does duty.

In the army Sir Almroth Wright has been fairly successful in lessening both the incidence and mortality of this disease by his vaccine, but in all campaigns thorough sterilisation of the water is the most important method of pre-
Prevention. Other matters must not be neglected, such as the disposal of the excreta and the protection of the food from infection by flies.

In diseases which largely affect children, such as measles, whooping cough, diphtheria, and diarrhoea, the improvement has not been so marked, except in diarrhoea, in which, during the last few years, the incidence has fallen owing to favourable climatic influences. In scarlet fever, where isolation is pretty universally adopted, there has been a great fall both in the incidence and mortality. Although there has been quite a revolution in the treatment of diphtheria, and, consequently, in the case-fatality, I am afraid sanitarians have not done their share in lessening the incidence of the disease. It will be very difficult to prevent the spread of infectious diseases among children so long as we have overcrowding, defective ventilation, dust, and want of cleanliness in the homes, schools, and public conveyances. However, a great deal can be done for local conditions by looking after the children's teeth, by seeing that their teeth and jaws get plenty of exercise in chewing food, by keeping their mouths and nasal passages as aseptic as possible, and by removing any obstructions, such as adenoids and large tonsils.

During the last forty years in England and Wales the number of deaths due to venereal diseases has fallen from 92.6 to 48 in the million population. So far as these statistics are reliable they seem to me to point to a great improvement in the treatment, as there is no reason to believe that there has been any diminution in the incidence. These diseases, from their deteriorating effects on the race, merit the attention of a statesman. A determined effort should be made to stamp them out notwithstanding the pharisaical hypocrisy of the unctuous and righteous who compound for sins they are inclined to by
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damning those they have no mind to. The suffering caused to innocent wives and children by those diseases call aloud for their elimination. With a combined international effort they might be stamped out.

What can be done by well-directed legislative measures in stamping out disease is well exemplified by the muzzling order of Mr. Walter Long (to whom the country has never shown sufficient gratitude), as there has not been a case of hydrophobia in Great Britain or Ireland for the last fifteen years.

In England and Wales, in 1909, there were 914,472 children born alive, and there were 1,429 mothers died from septic diseases associated with parturition; there were also 3,171 women died from diseases caused by or associated with pregnancy and child-bearing, but who had not produced viable children. The net result is that one woman died for every 199 children born alive. A large number of these women should never have been pregnant, and many died from preventable diseases which were not prevented. There is plenty of scope here for prevention, not only in advising women not to undertake risks which will prove their death-blow, but also by saving valuable mothers from septic infection. This can be easily accomplished by a little trouble before parturition in attending to the health of the mother, and if any pathogenic organisms are found in the via naturalis an appropriate vaccine should be administered previous to parturition. I know an ophthalmic surgeon who will not do a cataract operation until the conjunctival sac has been prepared, and a bacteriologist pronounces it free from microbes. Why do gynaecologists not undertake somewhat similar precautions in the case of the parturient woman? The vaunted aseptic gynaecology, of which we hear so much, is not sufficient, there may be a breakdown in the tech-
nique, and, moreover, the germs may be there before the arrival of the asepsis.

The practical disappearance of erysipelas from hospital wards must largely account for the lessened death-rate from this disease. We must give the surgeons due credit for this diminution. In fact, I would like to give them the whole credit, as, so far as preventive medicine is concerned, very little can be placed to their credit. About the only diseases which they attempt to prevent are those which spoil their operations—erysipelas, pyæmia, and septicæmia. The surgeons largely live on the failures of the physicians and general practitioners, and I hope they will not take any umbrage at what I say here and in other parts of this address. They can, if they choose, put down my remarks to envy, jealousy, and all uncharitableness, but I shall not acknowledge any malice. I intensely admire their work, and envy their fees, which are, like the Falls of Niagara, magnificent.

In regard to rheumatic fever, there has been, during the last forty years, a marked fall in the death-rate, which appears to me to be more due to improved methods of treatment than to any lessened incidence of the disease. Although rheumatic fever is not very fatal, yet when we take into account that it is the chief cause of heart disease in the young, it must be looked upon as a terrible disease. Every child with rheumatic hereditary tendency should be well protected against wet and cold; every affection of the nose and throat, and in fact the whole digestive tract should receive immediate medical attention, as it is through these pathways that the rheumatic poison or organism is introduced. Immediately on the slightest appearance of this disease, the milk and carbohydrates, which are apt to undergo acid fermentation, should be cut off and red meat, which supplies ammonia to neutralise the
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Sarcolactic acid in the muscles, should be freely given. For flushing out the system there is nothing better than hot water, but the water should not contain much lime. In order to save the valves of the heart, the citrates of sodium and potassium should be freely administered. As specific treatment the salicylates still hold their sway; the vaccine treatment being still in its infancy. Parents who transmit a hereditary tendency to rheumatism to their offspring have a serious responsibility which they cannot honestly transfer to Providence, and, therefore, they should themselves exercise a provident care over their children. There is no necessity for coddling, but the children should be adapted or rendered adaptive to the environment, cold sponging every morning, sufficient to induce healthy reaction, has a good protective influence. Fresh air, exercise, sufficient clothing, moderate diet, especially in carbohydrates, and general attention to the digestive tract are all necessary.

Diseases of the blood vessels, heart, and kidneys are on the increase, no doubt largely due to greater wear and tear, more worry and anxiety in life. From these three diseases, including cerebral haemorrhage, the death-rate per million living in 1909 was in England and Wales 2,708.4, in Ireland 3,170, and in the eight principal towns in Scotland 3,234. If these deaths occurred among the wastrels it would, perhaps, not matter much, but this mortality to a large extent occurs among the most hard-working and most energetic men and women in the prime of life from thirty-five to sixty-five years of age. One often hears patients say that they have never been ill a day in their lives, when an examination of the heart, kidneys, and blood vessels shows disease of fifteen to twenty years' standing, and the tenure of life reduced to a few years at most, and yet many of these conditions
were preventable. Of course many a man may prefer to lead a very active and short, but to him enjoyable life, rather than drag it out to an inordinate length. It is only with healthy blood vessels that any one can hope to retain his mental and bodily vigour, and expect to attain to a green old age. I know that there is another view of life, and that many men do not consider old age desirable—when man has ceased to be a productive agent, intellectually or physically, they look upon him as a mere cumberer of the ground—an obstacle in the path of progress which should be removed.

Diseases of the heart, in the vast majority of cases, arise from causes acting on the periphery, and by preserving healthy blood vessels—an end very easily attained if people were content to be intelligently directed—one can prolong a healthy and vigorous existence for many years. I have delivered several addresses on arteriosclerosis and allied subjects dealing with the prolongation of life, but I cannot enter into these matters here, as they would require several hours for their exposition. However, I may say that the lime salts play a very important rôle in these diseases, and some excellent work on calcium metabolism and diseases of the blood vessels has been done in Montreal by Oskar Klots, Professor Adami, and others.

With many authorities it is not the popular method to anticipate disease. They prefer to get hold of a case of heart-block, cardiac arrhythmia, or angina pectoris, and then they can make something out of their cases in more senses than one, but I want to educate the public into the habit of taking an interest in their own health. We have here got a large field for preventive medicine, but it is very difficult for a practitioner to prevent disease when he is not consulted. To my mind it is very deplorable to
find many of the ablest men of the day cut off in the prime of life and vigour of manhood from disorders of the circulation which are much more easily prevented than some of the so-called preventable diseases. The distinguished man who coined the expression "If preventable, why not prevented," himself died of preventable disease.

In England and Wales the mortality from all forms of malignant disease has steadily risen from 1860 to 1909, in the male population from 210 to 826, and in the female population from 480 to 1,071 in the million living. In Ireland the earlier statistics were not very reliable, but in 1909 the death-rate to the million living was only among males 750, and among females 850. In the eight principal towns of Scotland the rate for both sexes was 1,073, and, therefore, higher than either England or Ireland. In England, where tuberculosis is steadily declining, cancer is just as rapidly increasing, and in Ireland both diseases are rather stationary, but the cancer death-rate is 9 per cent. lower among males, and 11 per cent. among females than in England and Wales. So the higher tuberculosis death-rate in Ireland has its compensations. There have been in recent years great improvements in the surgical treatment of malignant disease, and we are getting a little nearer the solution of the problem of their nature and prevention, but not quite so near as some would have us believe. Even now a great deal can be done towards their prevention. If all sources of constant irritation, internally and externally, were removed, the occurrence of these diseases would be frequently obviated. Metchnikoff says:—"Stagnation is a familiar cause of disease, and is the probable cause of the frequency of cancer of the stomach." Its selective sites in the large bowel are those where there is stagnation and
irritation. In cancer there is increased alkalinity of the blood, with a diminution in the amount of free lime; the same condition may appertain in the tissues, but not, as a rule in the same degree as the lime taken up by the blood from the intestinal mucosa may be partly discharged into the tissues in the process of elimination. Recently Professor Benjamin Moore and his coadjutors have shown that a deficiency of free HCl. in the stomach occurs no matter where the cancer is situated.

**Myositis ossificans traumatica** is a comparatively rare affection, and I should scarcely have considered it worthy of attention here only for two papers in a recent issue of the *Lancet* by two eminent London surgeons. These gentlemen have a good many conjectures as to the nature and causes of this affection, and largely on the strength of skiagrams these calcareous masses are spoken of as "bony," and microscopically said to be of the nature of cancellous tissue.

They have not a single word about the amount of lime salts in the blood, and surely in the present day there is no justification for ignorance on this subject. When there is an excess of lime in the blood there is no more mystery about its deposition in an injured muscle than there is in a damaged artery. As in the artery, so in the muscle, the lime is deposited in the form of a calcium soap, and afterwards the fatty acid is replaced by carbonic and phosphoric acids. We then get a hard calcareous plate. These masses often disappear spontaneously when the calcium content of the blood falls. The proper preventive and curative treatment is to see that there is no excessive amount of lime in the blood by regulating the diet, and the use of decalcifying agents. Massage and exercise of the injured part prevent the deposit, and hasten the elimination of lime from that
region. It is less difficult to hasten the absorption of lime deposited in a muscle than to get rid of that in rigid costal cartilages; yet the latter feat can be accomplished with a little patience and trouble.

The failures of physicians and practitioners in the prevention and treatment of diseases of the digestive tract have provided a rich harvest for the surgeons who, buoyed up with their successes, would now like to appropriate the whole region to themselves. I would advise them to make hay while the sun shines, for fear that the millenium should arrive sooner than they expect. Already the dawn of a new era is breaking forth, and under prevention there will not be much necessity for surgical interference.

I need not say anything about septic diseases of the mouth, which are well recognised by our profession, but unfortunately the public do not often recognise their danger, otherwise we should not see so many cases of pernicious anæmia.

A comparatively simple affection which occasionally occurs during the first few weeks of extra-uterine life has been dubbed with the high-sounding title of congenital hypertrophic stenosis of the pylorus. There have been a great many learned disquisitions as to its nature and treatment by physicians and surgeons attached to children's hospitals, and now they are busily engaged trying to settle the question as to whether the treatment should be medical or surgical. This would be very amusing were it not for the fearful mortality which accompanies the efforts of both. The explanation is too simple to have attracted the attention of those gentlemen, and the explanation is simply that it is not congenital, but is due to an excessive amount of calcium in the stomach walls, and especially in that portion of the walls, the
pylorus, which contains relatively the most muscular fibres.

If it were more generally recognised that even a minute trace of a soluble calcium salt produces a marked physiological effect on involuntary muscular fibre, not only would pyloric spasm, but a good many enterospasms be more readily explained. No doubt a growing infant requires a good deal of lime, but even it can have too much of a good thing, and when a series of overdoses are concentrated in a particular organ the result is not what could be desired. The amount of lime in human milk varies considerably, and is apt to be greatest in the early period of lactation. Moreover, the mother may be unnecessarily fortifying this secretion by herself drinking large quantities of milk, and taking other articles of diet containing lime.

In an unpublished thesis G. Claude Scott has shown that cows' milk contains five to six times as much lime as human, but in cows' milk, of the total lime 72 per cent. is combined with the protein and 28 per cent. free; while in human milk only 44 per cent. is combined and 56 per cent. free. Moreover, the combined calcium in human milk is much less stable than in cows' milk.

In such cases, when the infant is being fed on cows' milk, the milk should be stopped for a time, or, at least, it should be well diluted, citrated, and boiled some time before using. It is even better to add to the diluted milk a small amount of the citrate, and about double the quantity of the bicarbonate of sodium, a mixture which not only splits off some of the fixed lime, but renders the free lime more insoluble. The value of the mixture is further enhanced by the addition of a minute quantity of an active potassium salt, such as the chloride, which hastens the relaxation of unstriped muscular fibre. The milk should
always be boiled. When the infant is being fed at the breast we must get rid of the excess of lime by decalcifying the mother. This can be readily accomplished by cutting off for a necessary time all articles of diet containing lime, and by giving her a liberal allowance of such drugs as citrate and phosphate of sodium, lemon squash, &c. A teaspoonful of olive oil to the infant will have a more soothing effect on its stomach than a surgical operation. An opiate is often necessary to relax the spasm of the pylorus. Perhaps these cases would be much more common than they are only for the fact that infants vomit very readily without much apparent cause.

Gastric ulcer frequently occurs in young women after the establishment of the menstrual function; they become anaemic, suffer from constipation, and there is not only a deficiency of iron, but also of lime in their blood. By the way of prevention the calcium and magnesium salts are highly beneficial.

You do not often find a surgeon foolish enough to contract the fashionable disease, appendicitis. I believe in the United States you are not considered respectable if you have not had it. Personally I have never qualified for that mark of respectability, and I do not intend to do so. I am of opinion that if people were not so fond of keeping a cesspool in their interior the bacillus coli and other organisms would not become virulent, and appendicitis would be a comparatively rare disease. A lady of a religious turn of mind once told me that she quite agreed with me on this point, "as man is a veritable sink of iniquity." A bacillus coli vaccine is often useful in treatment.

I know a physician who considers himself a great authority on mucous colitis, and who freely prescribes milk—he might as well prescribe sand-paper. In these cases
the insoluble lime soaps, especially those of stearin and palmitin, are very irritating to the large bowel. In such cases the blood often becomes deficient in lime because it is being rapidly excreted by the bowel. However, all insoluble lime preparations must be strictly avoided, also saturated fats, such as beef and mutton fats. Unsaturated fats, such as olive oil, cod liver oil, butter, cream, and bacon gravy, can be freely used. Whatever lime is given must be administered in a very soluble form, such as the iodide or the glycerophosphate. In obstinate cases an examination of the flora of the intestine and the administration of a suitable vaccine will prove useful. This disease is fairly amenable to judicious treatment, even without the assistance of the surgeon, and it is one which can be prevented. Some years ago there appeared in the *Lancet* a paper entitled "The Cause of Colitis, with Special Reference to its Surgical Treatment." This is the surgical and business way of looking at the subject. A less astute individual might have studied causation with a view to its removal and the prevention of disease. However, in the present day the public only pay for treatment, and have no right to any choice.

It should be worthy of the attention of surgeons and general practitioners to try and find out the cause of enlargement of the prostate gland which not infrequently renders the lives of old men miserable. The surgeon may say remove it, but I would say find out and remove the cause, so that the necessity for the removal of the gland may disappear. This affection is not much in my line of work, but recently it has appeared to me to be at least associated with an excessive amount of lime in the blood and tissues. This is probably not the sole cause; there is likely some local irritation or some interference with functional involution, but I feel fairly confident that an
excessive amount of calcium is an associated condition—a condition which has sufficient determining effect in stimulating hyperplasia to merit its removal. I have noticed the occurrence of this affection in men who have led exemplary lives, who have not considered wine the milk for old age, but who have preferred that from the cow. In these men I have found an over-supply of lime with deficient calcium metabolism, rigid costal cartilages, and calcareous deposits in the arteries.

The presence of lime is necessary in most glands of the body for the proper exercise of their respective functions, but when such glands as the female breast and the prostate in the male should cease to functionate and take on a process of involution it is not unreasonable to suppose that an excessive, and then unnecessary, amount of lime, especially when the blood is very alkaline, may play some part in the ademomatous growth or inflammatory hyperplasia, which then occasionally takes place. Chronic mastitis, perhaps, most frequently occurs in single women, the function of whose breasts has not been potential, but it is not the lime which is excreted either in milk or in the prostate fluid that can work any mischief. In fact, the excretion of lime into the tissue of a disused gland may serve as a cure. Moreover, the exercise of the function of the prostate is often protracted, and its involution delayed. I have seen a large prostate and lively spermatozoa in a man over eighty. If these suppositions be found correct then the lines of prevention become more obvious.

Before concluding I should like to say a few words on the last phase of life—old age. In 1909 the number of persons dying from old age per million persons living was in England and Wales 948, in the eight chief towns of Scotland 411, and in Ireland 2,029. In the latter
country there were 192 males and 231 females who died at the age of ninety-five years and upwards. This does not speak badly for Irish longevity notwithstanding tuberculosis.

I am not going to tell you how to prevent old age—most people are fairly successful on that score. I only propose to do a little soliloquising. I do not know that I have ever met any one who really considered himself old. I once knew a physician of about eighty who was called in to see a professional brother about twenty years younger. At the consultation the old physician said about his younger colleague and patient, "After all, you know he is getting an old man." Age is a very relative term, like heat and cold, and its importance somewhat depends on how the popular breeze is blowing. We do not exactly know in the present day what to do with our old people. We have not put Metchnikoff's idea as to their employment into practice, neither have we established Professor Osler's lethal chamber. There are some people who live too long for their reputations' sake. As I said on a previous occasion, a man cut off in his prime may be handed down to posterity as an intellectual giant, whereas if he had existed till his cerebral arteries became sclerosed, and he became slow of thought and speech, or tended towards drivelling dementia, much of his former glory would have waned, and the memory of him would pass quickly into oblivion.

I am not now so much concerned with the prolongation of life as with the preservation of health—a sound mind is a sound body, the former can hardly exist without the latter. We are not concerned with any useless attainment of longevity, but with the prolongation and efficiency of life. We are concerned with the efficiency and manhood of the nation. When a life ceases to be efficient it
can retire into obscurity, or be withdrawn from circulation, and receive an old age pension. Paul Bert said about the aged:—"They deserve congratulations, care, and consideration, but the prolongation of their lives does not demand any special solicitude from society." Paul Bert died comparatively young; perhaps if he had lived longer he would have modified his opinion. Since then we have humanely and, I think, wisely become more solicitous for the well-being of every one.

"Ill fares the land, to hastening ills a prey,
Where wealth accumulates and men decay."

"Whatsoever thine hand findeth to do, do it with thy might; for there is no work, nor device, nor knowledge, nor wisdom in the grave, whither thou goest."
ABSTRACTS.

SECTION OF MEDICINE.

Friday, November 11, 1910.

The President (Sir John Moore) in the Chair.

Some Recent Clinical Experiences.

The President gave an address on this subject. See page 1, ante.

Three Cases of Locomotor Ataxy.

(1) Dr. O'Carroll said the odd thing about his case was that up to two months ago the man was driving a post-car. While still driving he noticed himself staggering a little in his walk about the 1st of August. His sight had been failing since the beginning of September, and he could now see practically nothing. He had a primary atrophy of both optic discs. He had well marked myosis, and there was no accommodation for distance other than the slightest in the right eye. He had anaesthesia and slow perception of sensory stimuli. Now and again there had been some slight incontinence of urine, which he was able to stop when he perceived it. He had had a good deal of constipation, and when he had a purgative his bowel prolapsed six or eight inches with little or no distress. He was also insensitive to retained urine, as fifteen ounces had been taken away after he thought he had finished passing water. He was insensitive in the middle division of the fifth nerve to pain and touch. He had no history of lightning pains, but spoke of pains like rheumatism. He had a healthy family. There were two initial miscarriages. Eight children were alive, three died in childhood. He had no knowledge of having
had syphilis, but he acknowledged that he had been in the way of contracting it.

(2) Dr. Coleman showed a case of six or seven years' standing, the ataxy being badly marked. There was a history of lightning pains. There was Argyll-Robertson pupils, loss of knee-jerk and Romberg's sign. He had perforating ulcer of the foot. The ulcer began in a corn, which he cut. About six months ago a small sore appeared, which had gradually deepened. There was some suppuration but little or no pain. The ulcer was on the ball of the little toe.

(3) Dr. Dempsey exhibited a case in a man forty-one years of age. Twenty years ago he had contracted some venereal disease, followed by a slight rash on the skin. About four years ago he became dizzy, and had to take to bed. As long as he was in bed he felt he had good power over his limbs, but he was unsteady when out of bed. Shortly afterwards his external rectus became paralysed. When he looked towards the right he saw two images. This was operated on, and relieved to some extent. He had suffered from pains, which he described as boring in character, below the knee, not shooting but stationary. The pupil dilated when the neck was pinched. One was a little eccentric. His sensory phenomena were moderately marked. He had a little subjective anaesthesia. The fluid from a lumbar puncture taken that day showed a lymphocytosis. He had loss of heel-jerk and knee-jerk. His epigastric reflex was well marked, so was the umbilical.

Friday, December 16, 1910.

The President in the Chair.

Cardiac Axis Aneurysm Healed by Operation; Introduction of Wire Tent.

Dr. Lumsden and Mr. Wheeler read a paper on above. See page 21, ante.

A Case of Thrombosis of the Mesenteric Vein.

Dr. Burgess read a paper on above. See page 26, ante.
Dr. O'Carroll showed two cases illustrating these conditions.

(a) The first case was that of a schoolgirl, aged nine. The patient's right hand had been for four or five years unmanageable for action. The thumb was fixed in a position of adduction, but otherwise there was no noticeable difference between the hands when at rest. Once movements were attempted slow, spastic movements were noted in the right hand and fingers. The child had had severe whooping-cough before the affection was noticed, and Dr. O'Carroll considered this had led to a cortical hemorrhage into the right hand area, the athetosis resulting therefrom. When left to herself the child, who had learned to write with her left hand, exhibited perfect "mirror writing." The condition was improving.

(b) The second case was that of a barber. This patient exhibited weakness and choreiform movements in his right hand. His trouble had begun some ten months previously. At first there were malaise and difficulty in hair-cutting and shaving. These actions gradually became impossible. The patient was of a neurotic temperament. His work had kept him busy from early morning till late at night for many years. Dr. O'Carroll considered the movements in the patient's hand were fatigue phenomena, due to excessive use.

Dr. Crofton discussed the share of toxins in producing the neuro-muscular condition in the second case, noting that the patient suffered from pyorrhea alveolaris.

The Differences in the Manifestations of Rheumatism in Childhood and in Adult Life.

Dr. Boyd Barrett read a paper on the above. See page 46, ante.
A Case of Cerebral Tumour.

Drs. Parsons, Benson, and Wigham and Mr. Johnston brought forward a case of intra-cranial tumour which was successfully localised and removed. The patient, aged thirty-six years, was admitted to the Royal City of Dublin Hospital suffering from severe and continuous headache of about five months' duration. On examination he was found to have double optic neuritis, more marked in the right eye than in the left, slight paresis of lower half of face on the left side, and slight deflection of the tongue, when protruded to the left. He positively denied any history of syphilis. He was given iodide of potassium, fifteen grains daily, for the following month, but the progress of his disease was definitely downward. He became odd in his manner, stupid, passed under him, and developed marked ataxy of the lower extremities. A diagnosis of a tumour in the right frontal lobe in the neighbourhood of the face and tongue centres was made. Mr. Johnston trephined over this region, and removed a hardened mass in three portions, which was handed to Dr. Wigham, who reported that the mass was syphilitic. The operation was followed by complete loss of power in left arm and leg. The latter soon recovered, and later on he gained free power in both arm and leg. The optic neuritis rapidly subsided, and vision was almost normal when he was discharged. There was a marked improvement in his mental condition, and all ataxy had disappeared. His blood, tested by Wassermann's reaction, gave a positive result. He was discharged from hospital a little over two months after the operation, in full possession of his mental and physical faculties, except slight traces of optic neuritis, which was, however, in process of subsidence.

Mr. A. H. Benson said the case was the only one in which he had observed absolutely unequivocal signs of improvement in the optic neuritis after a decompression operation.

Mr. G. Jameson Johnston described the technique of the operation.

Dr. Wigham stated he had diagnosticated the specimen he had received as syphilitic. He had tried the Wassermann
reaction on the same patient without knowing it was the same patient, and had found it positive.

Dr. Donnelly described two cases of a similar nature to that described by Dr. Parsons. In both cure seemed to follow the liberal administration of iodide of potassium.

Dr. Meldon believed that potassium iodide acted only in those cases which had been well treated with mercury. He said also that he had administered the anaesthetic in this case, giving ether and oxygen, and that it was extremely satisfactory, there being no vomiting.

Dr. Parsons, in his reply, said the patient had been given over 400 grains of iodide of potassium, but that, despite this, his condition had got steadily worse.

Friday, March 10, 1911.

The President in the Chair.

Notes on Three Cases of Paratyphoid Fever.

Dr. Peacocke read the above. See page 55, ante.

Etiology and Treatment of Diabetes Mellitus.

Dr. Crofton read a paper on this subject. See page 64, ante.

Friday, May 5, 1911.

The President in the Chair.

"Prevention is Better than Cure."

Sir James Barr read a paper with above title. See page 82, ante.
SECTION OF SURGERY.

TRANSPERITONEAL CYSTOTOMY FOR TUMOUR OF THE BLADDER, WITH REPORT OF A CASE.

By SETON PRINGLE, M.B. Dub., F.R.C.S.I.; Surgeon to Mercer's Hospital, Dublin.

[Read in the Section of Surgery, November 18, 1910.]

It has long been recognised that the operative treatment of tumours of the urinary bladder is, to put it mildly, disappointing and unsatisfactory; indeed, such a well-known authority as Caspar in his book on "Genito-Urinary Diseases" states that "patients do better and live longer without than with operation."

In considering this subject, we must remember that the vast majority of bladder tumours are epithelial in origin, that the majority of these are carcinomata, and that even the pathologically innocent tumours, the so-called benign papillomata, are often clinically malignant, inasmuch as they recur both in situ and as implantation tumours. We must also, however, remember that the bladder is poorly supplied with lymphatics, so that the growth of cancerous tumours is slow and that metastases are rarely formed.

At present the surgeon generally chooses the suprapubic route in attacking these tumours, as it is more satisfactory than the intrapubic, perineal, or vaginal route, and does not require the special skill and practice which enable a limited number of operators successfully to use the urethral route in selected cases. The suprapubic is,
and probably will be, the operation of choice in dealing with tumours placed near the apex of the bladder; but, unfortunately, the great majority are situated in the base, and in dealing with these the disadvantages of this route are many and obvious. It is difficult to obtain a proper view of the growth. The hæmorrhage is difficult to control and further obscures the view. In the cases of malignant growths it is almost impossible to define their limits; and if the orifice of either ureter is involved, as it frequently is, the very greatest trouble is found in dealing satisfactorily with the severed ureter. There is also the danger of infecting the prevesical space.

The results also of the suprapubic operations have been most disappointing. Watson has compiled statistics of the result of 662 suprapubic operations for tumour. He found that in 278 performed for benign papilloma there was an immediate mortality of 10 per cent. and a recurrence of 20 per cent. inside three years. In 375 performed for malignant growths the operative mortality was 27 per cent. and the rate of recurrence 63 per cent. inside three years.

The operation of intra- or trans-peritoneal cystotomy, to which I wish to call attention, obviates all the difficulties of technique which I have enumerated above. At the same time it lessens the immediate mortality, and will certainly improve our end-results as it enables us to deal much more radically with the growth. This operation was first performed by Harrington for an intractable case of hæmorrhagic cystitis. He described the operative technique in detail, and is entitled to all the credit of proposing and carrying out an original procedure. As far as one can judge from a study of the literature, this operation was not again performed until March, 1907, when C. H. Mayo employed the technique of Harrington in dealing
with a cancer of the base of the bladder. Up to the present, as far as I have been able to ascertain from a fairly extensive study of the literature, some 21 cases of tumour attacked by this route have been reported. C. H. Mayo in 1908 published reports of 5 cases; and Judd has since reported 10 further cases from the Mayo clinic. Of these 15 cases were carcinomata and 6 benign papillomata. There was only one death, and that occurred in a man of seventy-one, who had half his bladder removed for cancer, and who died from uræmia a week later: at the post-mortem examination his kidneys were found extensively diseased. Scudder and Davis in 1908 published four cases, three of papillomata and one of benign papillary cystadenoma of the prostate. All these cases recovered. Primrose and Cabot in 1909 reported one case each of cancer successfully dealt with by this route.

On analysing these 21 cases we find that a large part of the bladder was resected several times, a ureter had to be transplanted at least on four occasions, and twice the prostate was also enucleated. In spite of these radical procedures the mortality was less than 5 per cent., which compares with a 10 per cent. mortality in the series of cases collected by Watson, in which the suprapubic route was used and the tumour only removed without any resection of the bladder wall. As regards the frequency of recurrence, it is yet too early to speak. Up to the time of publication of Judd's paper there had been three recurrences in Mayo's cases, on two of which he successfully re-operated. If we take these two operations and the case now reported, we find the operative mortality further reduced, as there was only one death in 24 operations—i.e., a mortality of 4.1 per cent.

Operation.—After the bladder had been washed out and emptied the patient is placed in the Trendelenburg
position. The peritoneum is opened by a long median incision extending for six inches or more up from the pubis. In malignant cases the interior of the abdomen is then carefully inspected, to eliminate the presence of metastases before proceeding further. If these are absent, as they usually are, or if the case is of a benign nature, the intestines are now carefully packed off with gauze. The superior peritoneally covered surface of the bladder is now seized with two forceps and a short median incision made into it. The interior is carefully swabbed out and the incision lengthened as much as necessary. In this way an excellent view is obtained. (Fig. 1.) If the tumour is pedunculated, it is grasped in forceps and removed with the knife or scissors, so that some of the normal mucous and submucous coats is also taken. The raw surface left should then be cauterised with the Pacquelin cautery, or, if preferred, the whole removal may be performed with the cautery. (Fig. 2.) Sutures will not, as a rule, be required, as the cautery controls the bleeding, and the raw surface may be left to granulate up. In malignant cases the whole thickness of the involved part of the bladder wall, whether covered by peritoneum or not, must be removed, the section being made through normal tissue. In some cases as much as half of the bladder wall has been removed, and in others the floor of the space left after removing the tumour has been formed by the fibres of the levator ani. If the ureter is involved in the growth, its orifice is removed, en masse with the tumour, and it is divided above the involved portion. Its distal end is then re-implanted into the bladder, either through a separate puncture (Fig. 3) or through the original incision, and fixed there with catgut sutures. On completing the intravesical part of the operation the bladder wall is completely closed by a double row of
Mr. Pringle—"Cystotomy for Tumour of the Bladder."

Note the long abdominal incision well retracted, intestines protected by gauze, low posterior incision into bladder, internal meatus, ureteral orifices, tumour, and traction suture. (Scudder, "Annals of Surgery.")
Mr. Pringle—"Cystotomy for Tumour of the Bladder."

Fig. 2.
Cautery resection of papilloma of bladder. (Mayo, "Annals of Surgery.")

Fig. 3.
Removal of a large amount of bladder with transplantation of ureter.
(Mayo, "Annals of Surgery")
Mr. Pringle—"Cystotomy for Tumour of the Bladder."

Fig. 4.
Showing method of closure of bladder incision. First row of sutures.
(Mayo, "Annals of Surgery.")

Fig. 5.
Second row of sutures closing the bladder. (Mayo, "Annals of Surgery.")
sutures, and inner Connell suture of catgut (Fig. 4), and an outer peritoneal suture of fine silk (Fig. 5).

As a rule, the abdominal wound may be closed in its entirety, but if there has been any soiling of the peritoneum a drain may be left in for a few days. In a simple case it is not necessary to drain the bladder, as the patient generally passes urine voluntarily and at frequent intervals from the evening of the operation, and if there is any urethral spasm a catheter can be frequently passed. Some operators, however, drain these simple cases by means of a catheter in the urethra. In severe cases, as, for instance, where the prostate has also been removed or a ureter transplanted, it is better to drain the bladder suprapubically through an independent incision into the bladder, made after the peritoneal cavity has been closed.

My thanks are due to the publishers of the *Annals of Surgery* for permission to use the accompanying illustrations.

*Report of Case.*—The patient, a man aged forty, was sent to me by Dr. H. Powell, of Nenagh. He complained of frequent attacks of painless haematuria during the past twelve months, each attack lasting several days. With the cystoscope I saw a large papilloma springing from the right side of the bladder, but it was impossible to clearly define its origin, as the floating papillae, of which the bladder seemed to be full, constantly obscured the view. On June 1st I performed transperitoneal cystotomy as described. The tumour, which was of the size of a hen's egg, was pedunculated, the pedicle springing from the base of the bladder about an inch below and to the right of the right ureteral orifice, which was not interfered with. An excellent view was obtained, and the tumour was easily removed with scissors, a piece of normal mucous membrane being taken with it. The raw area left, which was about an inch square, was then cauterised with a Pacquelin cautery, and one stitch of catgut inserted to control a bleed-
Cystotomy for Tumour of the Bladder.

ing point. The bladder was sewn up as described, and was not drained. The abdominal wound was completely closed. The patient made an uninterrupted recovery, the wound healing by first intention. He passed urine voluntarily the evening of the operation, and continued to do so at frequent intervals. The urine was slightly tinged with blood for the first few days. On June 24th I again examined his bladder with the cystoscope, and could see the line of incision soundly healed, while the site of the growth was marked by a small area of granulations. He went home the next day—that is, on the twenty-sixth day after operation, and was then able to retain his urine for five hours.

Note.—Since writing the above I find that Richardson in 1895 successfully performed transperitoneal cystotomy on two cases for the removal of large calculi on which the bladder had firmly contracted.a

BIBLIOGRAPHY.

2 Harrington. Ibid., October, 1893.
6 Primrose: Ibid., December, 1909.

Mr. Blayney said the method of treatment was comparatively new, but when brought to one’s notice it would tend to excite surprise that it had not been used much earlier. Surgeons had been for a long time suturing intestines which contained large numbers of bacteria, and was obviously much more dangerous to open than the usually aseptic bladder. They had the experience of suturing of the bladder after rupture, yet it seemed to have escaped notice entirely that the transperitoneal was much the easiest method of dealing with tumours of the bladder, and gave the

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best exposure. He had used the method twice, and he could confirm what Mr. Pringle had said with regard to the excellent view of the bladder obtained—the whole of the interior was quite under the eye, and anything necessary to be removed could be removed with great ease. The after-treatment he had used was to drain the bladder for a few days, and afterwards water was passed quite readily.

Mr. Jameson Johnson said he had not done the operation, but it appealed to him as being scientific, and based on anatomical principles, and one certain to be very useful in the future. He was not clear as to whether Mr. Pringle wished the method to be employed in every case of tumour of the bladder. He had operated on two cases of benign papilloma of the bladder in the last five or six years. Both were exactly alike, and the pedicle was not very thick. He opened over the pubes, and was able to see quite sufficiently to ligature the pedicle, to snip through the base of the tumours, and remove them entire. Both tumours were the size of a hen’s egg, but when put into formalin they got very considerably smaller. Both patients are alive and in perfect health, and have had no subsequent trouble. They left the hospital ten days after the operation. He would not use the transperitoneal method unless he thought the other method was not sufficient.

Mr. C. A. Ball said he had attempted to do transperitoneal cystotomy in the case of a man, aged fifty-six, who had a malignant tumour about the size of a five shilling piece involving the left ureter. As it was obvious that an extensive resection of the bladder with the orifice of the ureter would be necessary, he proceeded to carry out the operation described. On opening the abdomen it was found that there was a mass of secondary growth completely adherent to the iliac vessels. The case was therefore inoperable, and the abdomen was closed. The patient was able to return home, but subsequently required a suprapubic drain. He was, however, much struck with the splendid access to the bladder that was obtained. Another important point was that one was able to find the secondary growth, which by the older suprapubic method would have been overlooked. In a second case of a woman with a small
malignant tumour near the ureter, but free from it, he carried out the operation. Although in a thin patient it was one of great ease, in a woman of sixty-five with an enormous abdomen the depth at which one was working rendered the operation a matter of difficulty, not so far as the bladder was concerned, but in order to expose the bladder. They had difficulty in keeping the intestines back before opening the bladder, but when opened the tumour was easily removed, and the result was satisfactory. He did not gather whether Mr. Pringle had used the valuable aid of the electric head-lamp which had been brought to his notice by Mr. Woods. With the head-lamp one was able to work with a smaller incision in the bladder, and the interior was readily illuminated.

Mr. Wheeler said that, considering the mortality of the removal of benign tumours, it was time some new methods of technique were developed. He had been impressed with Mr. Pringle's work, and on his advice had used the transperitoneal method in an unusual case. The patient, a man about thirty-two, had haematuria, bleeding at the end of micturition, and sometimes bleeding independently. Examination by cystoscope showed a clot of blood over the orifice of the left ureter, thought to be gathering over a villous tumour. When the bladder was opened there was no sign of any villous tumour, but, in a small pouch above the ureter, there were some varicose veins, which bled into the pouch. They mopped out the bladder and cauterised the region thus affected. The operation had so great advantages over the ordinary suprapubic method that he would be inclined to use it in every case of tumour of the bladder where there was any difficulty in the removal of the tumour. They ran, comparatively speaking, no risks; but any of the cases would be risky with suprapubic cystotomy. He thought a head-light should always be at hand, but its use would depend on the kind of light available at the time of the operation. In his case he stitched up the abdomen without drainage. The patient passed water every hour in the first few days. The operation had been performed only a fortnight ago, and the patient was going on all right.

Mr. Gunn asked if Mr. Pringle meant that the operation
By Mr. Seton Pringle.

was to be done in all cases of the bladder or only in carcinoma. Perhaps the most important point, he thought, was that of the thick or thin patient raised by Mr. Ball. In the thin patient they could get an extremely good view with a suprapubic incision, but not in a fat patient. He had operated on eight cases of malignant growth in the bladder. Two were for drainage purposes. In one of the cases he had not recognised malignancy before the operation, and found the growth too late to do anything. In two cases he did the transperitoneal operation, and in one case had to replant the ureter higher up in the bladder wall. The patient died five days after the operation. The second survived the operation, but died of recurrence five months afterwards. In four cases of radical suprapubic operation, one died twelve months later, one died in nine months, one was still alive three years after the operation, and another four years. One should adopt whatever method was most convenient to get at the growth. No matter how carefully they sutured, there was a danger in the transperitoneal method of leakage of urine, and of haemorrhage occurring, and if that occurred it was apt to choke the drainage tube, and to cause distention which would give trouble.

Mr. Woods said that, in his opinion, no cavity operation could be as well done without an electric head-lamp as with it, but for the purpose they must have a theatre that was not too highly lighted. In his judgment, the mistake made in all operating theatres of his acquaintance, with one or two special exceptions, was that they were too highly lighted. For the purposes of surgery, where they wanted to see detail, too much light was just as disadvantageous as too little. If they had a subdued light, sufficient to enable the assistants to do their work, and others to see what they wanted to see, and they used a suitable lamp, with a large concave reflector that could be varied, he was of opinion that, no matter what the operation was in a cavity, they would be able to see ever so much better, and they would never go back to the old plan that compelled them to put their head between a light and the cavity.

Mr. Pringle, in reply, said he did not advocate the operation for all tumours. He thought it had not been done
often enough to be quite sure of its mortality. He was inclined to advocate it in all cases except those of tumour situated near the apex of the bladder. One would think that with the transperitoneal operation, even with the risk mentioned by Mr. Gunn, they should have a less mortality than the immediate mortality of 10 per cent. with the suprapubic method. One could form a fair idea of malignancy with the cystoscope, but it was not sure, and the transperitoneal method enabled them to deal much more radically and rapidly with the tumour. He had good light in his case, and he thought the chief point was to get the patient into a very high Trendelenberg position, so that he was almost vertical, and the light of the theatre window shining in. He did not personally feel the need of a head-light. As regards the risk of the operation, a great many of the twenty-three cases reported by him, from American literature, were septic bladders. Richardson, in America, had taken out two large stones in two cases in which the bladder had tightly contracted down. He did the transperitoneal operation in both cases, the bladder being intensely septic, and both recovered without peritonitis.
X-RAYS IN THE DIAGNOSIS OF URINARY CALCULI.

By MAURICE R. J. HAYES, F.R.C.S.I.;
Officer-in-charge of the X-Ray and Electrical Department, Mater Misericordiae Hospital, Dublin.

[Read in the Section of Surgery, November 18, 1910.]

The X-ray is now so generally employed in the diagnosis of urinary calculi, and the essential conditions for the successful examination of the urinary tract are so frequently overlooked by the medical attendant, that a discussion of its applications, as well as a reference to the interpretation of the negatives of this region, may serve a useful purpose.

At the outset, I may say that radiography is not "the be all" nor "the end all" of the medical examination. Its sphere of usefulness is limited, and if it be not properly employed within this limited sphere, and if due attention be not paid to the details necessary for the production of a good radiogram, it is worse than useless, because it is misleading.

Radiography should be employed as an aid to, and not as a substitute for, the ordinary methods of diagnosis. The X-ray has proved to be such a "short-cut" in the diagnosis of so many conditions, and it has relieved us so much of the necessity of making a careful analytical study of symptoms and signs, that we are becoming more and more inclined to resort to it to the exclusion of other trustworthy methods of clinical investigation.

That this excessive confidence has resulted in grave
errors in diagnosis and treatment in the past, cannot be denied even by the most enthusiastic radiologist, but, happily, improved apparatus, better technique, and the delegation of this important work to medical men, who bring a knowledge of anatomy and pathology to bear in the intelligent interpretation of their negatives, have all combined to reduce the percentage of error almost to a negative quantity. However, a careful examination of the urine, and an examination with the cystoscope or sound, where such is practicable, when combined with radiography, furnish more valuable information than any number of X-ray negatives alone, however perfect they may be. I do not suggest that in cases where all the clinical data point unmistakably to stone, that a radiographic examination should be omitted, for frequently the X-ray reveals calculi in both kidneys, when the symptoms point only to involvement of one; and, again, the patient not unfrequently refers his symptoms to the kidney of the unaffected side, but I cannot help thinking that, because of the unlimited confidence placed in an X-ray picture, it is expected to furnish more information than it can at all times give.

It is not the negatives that unmistakably reveal the presence of calculi that are a worry to the radiologist; it is those in which the shadows cast are of doubtful origin that make his position a very responsible one. For the accurate interpretation of these doubtful shadows, it is necessary that he should have some knowledge of the clinical data of the case under examination, and this brings me to an important point—the X-ray specialist is, by his position, precluded from making any clinical examination of the patient, or inquiry into his history; therefore, any information on these points ought to be sought for from the surgeon, when a combined study of
the plate by him and the radiographer will prove advantageous to both. It will, at any rate, relieve the radiographer from the unpleasant circumstances in which his well-intentioned zeal on behalf of the patient may involve him. Furthermore, the surgeon should decide for himself as to the value of every negative; this will afford him opportunities of becoming familiar with shadows that are normal as well as abnormal, and a study of the size, shape, and situation of calculi will often suggest to him a ready way of dealing with them at the subsequent operation. As Mr. Fenwick says: "The aim of true surgery is to remove a stone from the kidney with the least possible damage to the structure of the gland and to that of its collecting cavity, the pelvis; and this ideal, I contend, is more nearly attained with the assistance gained from radiography of the kidney than by any other method of examination." ("Radiography in the Diagnosis and Treatment of Urinary Stone," 1908, p. 32.)

Although the bodies of some individuals obstruct the passage of the X-ray more than others, it is now possible to obtain a good negative of every patient, except those who are very obese.

By way of preparation, thorough evacuation of the intestines is essential, and this precaution should on no account be omitted if the patient has been taking any of the metallic salts—e.g., bismuth or iron—immediately before he presents himself for examination. The accompanying plate (Fig. 1) is a good illustration of the necessity that exists for such a precautionary measure; it is of the kidney region of a boy who had been taking a bismuth mixture at the time he was radiographed. You can readily see how some of these shadows may simulate calculi, or obscure them, if they are present. Scybalous
masses in the bowel, also, even though unmixed with any drugs, may cast shadows suggestive of stone.

In radiographing renal cases, it is necessary to have the kidney as fixed as possible, as a small calculus may escape detection in a kidney which freely moves with respiration. To obtain fixation of the kidney, as well as to limit the antero-posterior diameter of the abdomen, many costly, cumbersome, and unwieldy forms of apparatus have their own advocates. An ordinary girth, with buckles at each end, into which run straps fixed to either side of the couch, makes an admirable compressor, and serves to fix the kidney completely. When the patient is lying on the plate with his shoulders slightly raised, and the thighs flexed on the abdomen, this position is not at all irksome. In radiographing vesical cases, I put the patient lying on the plate which is in contact with the anterior abdominal wall, and the "normal ray" is directed upwards and forwards through the pelvis. In this way it is, as a rule, possible to separate the shadows of calculi from the shadows cast by the coccyx, sacrum and pubic bones.

Some X-ray workers declare that they can more readily detect calculi by fluoroscopic examination than by taking a photograph. This is not my experience. I always examine these cases with the screen, but I have only on a few occasions been able to see the shadows of calculi on it, and in these the stones were very large. Although this is a method of examination which is attended with great risk to the operator, if proper protective precautions are not carefully taken, it gives one much valuable information as to the size, situation, and mobility of the kidney—all of which may assist considerably, not alone in the interpretation of the negative, but also in the after-treatment of the patient.

The different kinds of calculi cast shadows of different
Mr. Hayes—"X-rays in the Diagnosis of Urinary Calculi."

Fig. 1.

Fig. 2.

(1) Biliary calculus; (2) uric acid; (3) and (4) mixed phosphates; (5) and (6) oxalates; (7) mixed oxalates.
MR. HAYES—"X-rays in the Diagnosis of Urinary Calculi."

Fig. 3.
densities, and the density of the shadow depends on the size of the calculus, as well as on its composition. It may be possible to surmise from the character of the shadow what substance the concretion is composed of, but this is a point of little practical utility, and one is, as a rule, content with recognising the form, and not the nature, of the calculus.

Calcium oxalate is most opaque to the X-ray, then cystin, next phosphates, while pure uric acid calculi, especially if they are small, may not throw any shadow at all. Fortunately, calculi are, for the most part, composed of a mixture of any, or of all, of these salts. Fig. 2 is a radiograph of the more common forms of calculi, including a biliary calculus, but the shadows cast on this plate bear no relation in distinctiveness to the shadows that they cast when imbedded in the tissues, for it is now a well-known fact that even large calculi, composed of various substances, which are themselves very opaque to the X-ray, have escaped detection even by competent radiographers, with excellent negatives. Inflamed and pyonephrotic kidneys, sometimes for some unexplained reason, mask even large multiple stones.

Any radiogram which clearly shows the outline of the psoas muscle, the transverse processes of the lumbar vertebrae, and the last rib, will also, most probably, reveal a calculus, if present. A negative diagnosis ought never to be given where these points are not shown on the plate. Yet one often sees the shadows even of small calculi on plates where these cardinal points do not appear.

In one of my early cases, I failed to get the shadow of a uric acid calculus, but the patient was a stout man, and I doubt if even now, with more experience and better technique, I would, with this stout subject, be more successful than I was four years ago. The clinical mani-
festations of calculus were so positive that Mr. William Taylor operated, and removed a fairly large uric acid stone from the lower pole of his left kidney.

Calculi may be obscured, and so escape detection by their shadows being super-imposed on those of adjacent bones. By changing the respective positions of the plate and tube, such shadows may be separated.

Shadows simulating calculi may be produced in many ways—e.g.:

I.—By calcified areas in the kidney.
II.—By calcified mesenteric glands.
III.—By scybalous masses in the intestine.
IV.—By phleboliths.
V.—By undissolved pills, or other foreign bodies, in the intestine.
VI.—By appendicular concretions.
VII.—By calcified ovaries, or uterine tumours.
VIII.—By moles or warts in the skin.
IX.—By defects in the manufacture, or during the course of development of the plate. Liquids accidentally dropped on a plate before it has been developed, or, after it has been developed and dried, may produce appearances simulating stone. The same may be said of negatives which have dried everywhere except in small patches. All such developmental defects can be recognised by tilting the radiogram and examining the film in reflected light when the cause of the shadow will be quite obvious.

Calcified Areas in the Kidney Substance.—Fig. 3 is a negative in which I thought the shadows thrown were due to calculi, but the operation proved me to be wrong. In both cases the kidneys were tubercular, and the shadows were produced by caseous material which had partly become calcified. The general conformation of the shadow, as well as its shady, indefinite outline, may assi
one in forming a conclusion as to the nature of the substance producing it, for calculi, as a rule, have well-defined borders, but there are exceptions, and one finds it often difficult to give a definite opinion. It is in such cases that a bacteriological examination of the urine, and a cystoscopic examination of the ureteric orifices, give more reliable information than any X-ray photograph.

I will not discuss in detail all the causes to which error may be due, but I wish to show you this negative, in which the "shotty" shadows present are due to phleboliths, probably in the prostatic plexus of veins. From their irregular arrangement it is at once evident that they are not ureteric calculi.

In another negative I found a shadow, the exact nature of which I cannot explain. The patient had symptoms of stone in the left kidney—the shadow is on the right side at the level of the third inter-vertebral disc, quite close to the spine. Mr. Fenwick, treating of ureteric calculi, says that "they are in the line of the ureter, their outlines are sharp, and they are more or less oval." The shadow in this case lay too near the bodies of the vertebrae to be in the line of a normal ureter, and, from its irregular shape, above and internally, I was disposed to think that it was an abnormal process of bone, or calcified cartilage, although it is not anywhere attached to the vertebrae; moreover, as it was not in the affected side, I felt justified in not considering it as having any bearing on the symptoms, and I gave a negative diagnosis. The patient under medical treatment has had no further recurrence of the pain.

In a negative of the pelvis of a boy who had symptoms suggestive of a stone in his bladder, I found a well-marked shadow just above the pubis. The patient was prepared for examination in the usual way, and I had no doubt but
this shadow was produced by a stone in his bladder. On the strength of my diagnosis, and against his own judgment, Mr. Denis Farnan operated, and found no calculus. From thorough examination of the negative, the shadow does not seem to be due to faulty development, or a defect in the film, and I cannot explain its presence. I regret I did not at the time take another plate to confirm the original, as I usually do. In another negative taken after operation, no shadow was found.

If radiography has been directly responsible for surgical interference in some cases where the operation has proved such interference to be unnecessary, it has saved very many from the ordeal of undergoing a serious exploratory nephrotoomy. Better appliances, improved *technique*, and the lessons learned from past mistakes, have all combined to make this method of diagnosis precise, accurate and reliable. In a paper published in the *Lancet* of June 17th, 1905, Dr. Lester Leonard, of Philadelphia, reckoned the amount of error in X-ray diagnosis of his 330 cases to be less than 3 per cent., and he says:—"This is a percentage of error that compares very favourably with any other method, or all other methods, of diagnosis, including exploratory nephrotoomy." Small as this percentage is, if I might, without presuming to be dogmatic, offer a personal opinion, I would say that it is a mistake to rely on an X-ray photograph alone for the diagnosis of urinary calculi. Nevertheless, the positive evidence given by a satisfactory radiogram makes the course for the patient a safe, and, for the surgeon, an easy one.

Mr. Haughton said there was no department of X-ray work more difficult to work out than renal calculi, and the skiagrams reflected great credit on Mr. Hayes. He did not think that X-rays should be used to replace the ordinary
methods of clinical examination, but rather to confirm them. He had never known a Röntgen picture to make a mistake with regard to a stone in the kidney. The first thirty-two cases which he examined for stone with X-rays gave no shadow, and the cases which were operated upon proved the X-rays to be correct. With regard to controlling the respiratory movement of the kidney, the strap mentioned was an admirable addition to the work. There were other methods of extreme usefulness. The best was the diaphragm compressor of Albers-Schönberg, in which a cylinder of lead was gently but persistently squeezed into the abdominal wall. Mr. Mackenzie Davidson placed the patient lying on his face on a large soft cushion of feathers, which gave an idea of comfort, and squeezed the viscera flat towards the spine. The examination was made with the tube underneath the couch. However, the method advanced to-night might prove quite as good as either of those he had mentioned.

Sir John Lentaigne said that Mr. Hayes, unlike many demonstrators, had hardly done himself justice in explaining an error in diagnosis. He (Sir John) considered that an abscess cavity, shut off, and containing semi-fluid, gritty matter, could not be called anything else but a stone in the course of formation, and should give a shadow if any stony material gave one. That was the condition in the case in which he had operated, and there was no mistake. Mr. Hayes had X-rayed a case several years ago, when apparatus was not so perfect. He demonstrated clearly three small stones—little larger than beans—in the kidney, when the patient complained of pain and trouble on the opposite side. Owing to his diagnosis the stones were successfully found and removed, and the patient completely cured. The same result in other cases reflected great credit on Mr. Hayes and radiography. He joined in impressing the importance of not undervaluing the old methods. The X-rays were so valuable a help that they were tempted to drop the more laborious methods of diagnosis. In the case to which Mr. Hayes alluded the tubercle which was found in the kidney was not recognised before the operation. No tubercle bacilli were found in the urine. The X-rays certainly did lead
them to think it was a stone, but without the X-rays the patient could not have been operated on at all, because of symptoms in the kidney there were none until the X-rays showed the shadows.

Mr. Hayes, in reply, said he was prompted to write the paper by the difficulty of radiographers being sent hurriedly to examine cases. Surgeons ought to realise that thorough examination was necessary. He had invested so much in apparatus that he was afraid to put fifteen or sixteen pounds into the Albers-Schönberg compressor. He thought it was a cumbersome and heavy affair, and putting a patient in it was like preparing him for execution by guillotine. It was, of course, excellent, but everything could be obtained by a simple contrivance at an expense of 3s. 6d. He had recently used a rubber air-pillow, and found that he got the shadow of the air-pillow transversely on the plate. He does the work from underneath the couch. It had the advantage that they could see beforehand if the tube was in position. One disadvantage of the air-pillow was that the position of the patient changed during exposure. He expressed his thanks to the speakers for their kind remarks. He had selected the plates as showing the points of the errors that one might likely fall into.
NOTES ON THE DIAGNOSIS OF RENAL CALCULUS.

By L. G. GUNN, M.D., F.R.C.S.I.;
Surgeon to the Adelaide Hospital;

AND

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[Read in the Section of Surgery, November 18, 1910.]

A calculus may be found in the urethra, bladder, ureter, or kidney. In either of the first two positions the stone may be both seen and felt by the surgeon—that is, he may have positive evidence of its presence. In the ureter such evidence is very difficult to obtain, in the kidney it becomes almost impossible.

If a stone is lodged in the lower end of the ureter it may be seen, with the aid of a cystoscope, projecting into the bladder, or it may be felt in the course of the ureter by an examining finger in the rectum or vagina, or it may be touched by an instrument introduced into the ureter.

Should the calculus lodge in the upper two-thirds of the ureter, these methods of examination are no longer possible. In my opinion very little reliance can be placed on the introduction of a wax-tipped bougie into the ureter, for scratches and indentations on the wax are easily made as the point of the bougie passes out of the cystoscope. Again, a wax-tipped bougie may pass a stone impacted in the ureter without receiving any definite marks on its surface.

The surgeon must depend on indirect evidence in
making the diagnosis of stone in the kidney or upper part of the ureter.

Before we consider for a few moments the relative values of such evidence, let me call your attention to four general statements in connection with renal calculus:—

(1) The severity of the symptoms is often in the inverse ratio to both the size and number of the stones present. (A big stone may give rise to slight symptoms, and severe symptoms often occur as the result of a minute calculus.)

(2) A calculus may destroy the greater part of the kidney without giving rise to any marked symptoms.

(3) There may be long latent or quiet periods, possibly of months or years, between attacks, caused by the same stone.

(4) Calculus is never present in the kidney without giving rise to some, though possibly very slight, symptoms.

This last statement is not held to be correct by many observers, and from its nature is impossible to prove.

With the classical symptoms of renal calculus you are all familiar. Their order of importance from a diagnostic point of view would be as follows:—

(1) Renal colic.
(2) Hæmaturia.
(3) Pus in the urine.
(4) Pressure pain in the kidney, or (irritability of the bladder if the stone is in the upper ureter.)
(5) Crystals and tube casts in the urine (alteration between two sides by ureteral catheter specimen).
(6) Enlargement of the kidney.
(7) Tenderness on pressure over the kidney.

It is obvious that each one of these seven may be caused by many other things than the presence of a calculus, con-
ditions so well known to you that it would be both tedious and unnecessary for me to go into the lengthy question of differential diagnosis. One point only would I touch on—that is, tenderness over the kidney.

For some time past, whenever I have had opportunity of examining a thin abdomen, I have attempted to palpate the kidneys. In apparently normal kidneys the amount of pressure the organ will stand without causing any discomfort to the patient varies so greatly that unless the tenderness is marked I do not think it is a symptom of much importance.

I have tried to find out the relative frequency with which those symptoms of renal calculus occur from tables published by Morris and others, as well as from cases of my own—the last being too few in number to rely on alone—and find the following:

Pain in the region of the kidney is the most common, occurring as it does in about 70 per cent. of all cases.
Pyuria comes next with an average of about 57 per cent.
Renal colic and hematuria both occur in about 40 per cent.
Crystals and tube casts, 34 per cent.
Enlargement of the kidney, 24 per cent.
Frequency of micturition, 20 per cent.
Tenderness over the kidney, 10 per cent. of all cases examined.

This important list shows us many things. I would call special attention to three:

(1) That the two most important symptoms, renal colic and hematuria, on which to a great extent we rely to help us to a correct diagnosis, are only present in about 10 per cent. of all cases.

(2) That a combination of symptoms, sufficiently
definite and numerous to make the surgeon confident that a stone exists in a patient's kidney, can only occur in a comparatively small proportion of such cases.

(3) That in a fair proportion of cases the symptoms will be too slight to do more than suggest to the surgeon the possibility of renal calculus.

Under all circumstances, even if the surgeon is certain of his diagnosis, an X-ray photograph should be taken.

Apart from the mere diagnosis of the presence of a stone much valuable help may be obtained from the radiographer as to the position of the stone in the kidney or ureter, the size of the calculus, and whether single or multiple—all points that will be of great assistance to the surgeon in deciding the most suitable operation for the removal of the stone.

The radiographic side of the question has already been dealt with to-night, and will be further described later on. I am not in a position to give any opinion here, but I would advocate as far as possible including in the radiographs both kidneys and ureters as well as the bladder, taking at the same time a compression photo of the suspected kidney.

The surgeon to whom a case comes with symptoms of renal calculus should suspect and examine, as far as possible, the whole urinary system before he makes his diagnosis. I think the radiographer should do the same.

Now the result of the radiograph may be one of four things:—

(1) The negative may be bad, so that no opinion can be formed from it.

(2) The radiographer may be positive that a stone is present.

(3) He may be positive that no shadow of a stone exists.

(4) He may be doubtful whether a stone is present or not.
We may take it for granted that unless the surgeon had suspected that a stone was present he would not have had his patient radiographed. The symptoms of the case may make him fairly certain that a calculus exists or only doubtful of its presence.

The following are the most likely combinations of opinion between the surgeon and the radiographer:—

(1) Both may be positive that a stone is present, in which case there is no difficulty in deciding what to do; but, let me add, both may be wrong.

(2) The surgeon may be positive, but the radiographer may be doubtful. In such a case it is wiser to have a second radiograph taken after the lapse of a few days. From this possibly a more definite opinion may be given.

(3) Both may be doubtful. In such cases it is very difficult to decide what to do. As a rule, such a patient will not present any very urgent symptoms, and it will probably be wiser to wait, keeping in the meanwhile a sharp look out for any other explanation of the symptoms than the presence of a stone in the kidney.

(4) Lastly, the radiographer may be positive that no stone exists. If the surgeon is doubtful, then no operation should be undertaken. If the surgeon is certain that symptoms indicate a stone, then have a second radiograph taken by another expert. Should his opinion agree with that of the first radiographer no operation should be done unless at the express desire of the patient after all the facts have been submitted to him.

Even were a stone left in the patient's kidney for some months it will probably do less damage than if his kidney were needlessly explored. In any case even if, under such circumstances, the patient escapes damage, the reputation of the operator certainly will not.

Into the large question of treatment, both prophylactic,
medicinal and operative, I do not intend to enter; but I cannot close without saying that the contra-indication to the removal of a renal stone are two only:—

(1) The patient being of an advanced age.

(2) The stone being sufficiently small that there is a prospect of its passing the ureter and so escaping into the bladder.

Dr. Gunn has mentioned the X-ray examination of the kidney for stone. I have merely to make a few remarks on what I conceive to be the duty of the radiographer in these cases and on the value to be attached to his findings.

First, I fully endorse what Dr. Gunn has said as to the necessity in cases of supposed calculus of examining the whole urinary system. It has happened in my practice—and judging from the literature it is no very uncommon occurrence—that a stone was found in the kidney which was supposed to be sound, whereas none was found on the side to which symptoms were referred. Moreover, bi-lateral renal calculi are not very unusual, and a knowledge of the presence of such a condition in any case is highly desirable. Again, it will be satisfactory if the radiographer can pronounce that the second kidney is free from calculus and that its size and shape are what might be expected in a normally functioning kidney.

A good radiographic examination cannot be made without a proper preparation of the patient. The bowels should be thoroughly evacuated beforehand, and medicines containing bismuth or iron, &c., should not be taken for some days previous to radiation. This is a consideration which it is well for the physician and surgeon to realise. Cases coming up from the country, lunching in town, and returning the same day are not, as a rule, satisfactory to the radiographer.

I wish to mention only two technical details. First,
By Drs. L. G. Gunn and W. G. Harvey.

that I believe "compression" to be of great value in giving a clearer radiogram and in steadying the kidney to allow its contour to be shown.

Secondly, I think a great deal of nonsense has been written about "soft" tubes. Of course, it is possible to have a tube too hard, but with proper exposure a medium hard tube gives wonderfully good contrast through the abdomen. The ray which gives the best contrast with the stones lying on the plate is not the best when the calculi are in the kidney. I do not, of course, advocate a very hard tube, but while I cannot remember a single instance in which I feel sure that I spoiled a negative by the use of too hard a tube I regret to say that I have often had to retake a kidney owing to the tube in the first instance being too soft.

Now, what is the value of the radiographic findings?

If they are positive—that is, a shadow is present—they are of the highest value. There are, of course, certain fallacies—as, e.g., a flaw in the plate or in development. These will be eliminated by a second plate. A dense mass in the bowel can be best obviated by taking a second radiogram some days later, and after the action of an effective purgative. Calcified glands, &c., will not as a rule give much trouble in the kidney region, though in the ureter their differential diagnosis may be of considerable difficulty.

If the radiographic findings are negative their value is much more difficult to estimate. The general clinical findings must have full weight in the diagnosis. I believe it is possible, under certain conditions, in the case of a pure uric acid stone for the very best radiogram to show no trace of stone shadow. Such cases are, I think, exceedingly rare. In the great majority of cases I believe we shall be correct in making a negative diagnosis where a sufficiently good negative shows no shadow.
It only remains to define a "sufficiently good" negative. Such a negative should show clearly—

(1) The twelfth rib to its extremity.
(2) The tips of the transverse processes of the vertebrae.
(3) The line of the iliopsoas muscle.
(4) The outline of the lower pole of the kidney.

It should, of course, be free from developmental blotches, as also from "intestinal blotches," showing insufficient preparation of the patient.

I now show a few lantern slides illustrative of these points—

Slide 1 shows a small calculus of elongated shape lying at the tip of the last rib and at an angle thereto. This suggests a possible source of error. Were the calculus a little less dense, and if it lay in the line of the last rib, it might easily escape notice.

Slide 2 shows some rather indefinitely marginal calculi in a greatly enlarged and hydronephrotic kidney. The broad ligament and rounded outline of the lower pole of the kidney can be easily made out.

Slide 3 shows an enlarged kidney shadow, but no stone. We see the last two ribs, the line or the iliopsoas, the transverse processes, and the kidney outline. Although not the best of negatives, I believe that it is one which justifies us in giving a negative diagnosis.

Slide 4 shows that an inferior negative (many of the above-mentioned details are absent) may show a calculus quite distinctly.

Slide 5 shows well the outline of the kidney and other details, and also a small nest of calculi.

Mr. Haughton said he was entirely in sympathy with Mr. Gunn in the way in which he put the four possibilities
attaching to the photograph of a stone in the kidney, more especially when doubt existed. If there was any doubt they should repeat the photograph some time later. But a quicker and more satisfactory way was to take a stereoscopic picture by Mackenzie Davidson's method. It was astonishing how two rather indifferent negatives would yield an excellent stereoscopic result. Once they got the proportions and perspective they could be quite certain as to the anatomical relations and the plane in which the suspected shadow lay. The question of including the opposite kidney was most important. He had come across patients in which the pain was referred to one side, and there were two large stones in the opposite kidney.

Mr. Stokes said they could get the symptoms of stone from a hypernephroma. Most of these were not diagnosed until too late. Cases reported showed the surgeon practically certain of stone. If the radiographer took two photographs and found no stone, were they to sit down and let the patient die?

Mr. Pringle said he recently had a case, in which Mr. Gunn was associated, of a man who had an attack of renal colic ten years ago. He had another some months ago. Dr. Lumsden had had the kidney photographed before sending the case on. The photograph was negative; but on account of the very typical attack of colic he decided to use the cystoscope, and they saw the orifice of the right ureter was distinctly congested. The catheter met an obstruction two and a half inches up. Sharp pain was felt, and he said the probability was that the stone was at the lower end of the ureter. A second photograph showed the stone there. At the operation they found the stone in the suspected position, and the ureter above the stone was greatly dilated, showing that the stone had probably been in the lower part of the ureter as a latent stone for ten years.

Mr. Hayes said that in a case described by Mr. William Taylor of hypernephroma a man expectorated a large amount of pus for some time. He was asked to radiograph, and the negative showed nothing but a dark shadow, which they could not make out. Mr. Taylor examined with the screen. The condition of the lung was very manifest.
dark shadow was continuous. A very large kidney was subsequently removed, and it proved to be a hypernephroma. He thought the X-ray fortified Mr. Taylor in his decision. The original idea was, he thought, that it was a sub-diaphragmatic or a liver abscess. The X-ray showed the liver was not at fault. The man was at present alive and well.

Mr. Gunn, in reply, said he did not attempt to deal with the differential diagnosis. What Mr. Stokes said was perfectly true. There were other conditions which made it difficult, but time would not permit their discussion.
ON THE TREATMENT OF LARYNGEAL STENOSIS.

By R. H. WOODS, Pres. R.C.S.I.;
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[Read in the Section of Surgery, December 9, 1910.]

The earlier methods of treatment of this very intractable condition depended on dilatation of the stricture by instruments introduced through the mouth. The dilators devised by Mackenzie and others consist of three or four blunt parallel blades that were introduced closed, and when in situ could be separated to any desirable width by means of a screw in the handle. These instruments were of little use. They were painful in application, temporary in effect, and liable to be followed by severe inflammation. Schrötter made a great advance when he devised his tin bougies. These were solid cylinders of tin, triangular on section with rounded angles, and three or four c.m. long. They were introduced through the mouth by a handle or mandril, their lower end being fixed by a pin, or other device, into a tracheotomy tube, while from the upper end a string was brought through the patient's mouth and secured round the neck for convenience of removal. These tin bougies were allowed to remain in for twenty-four hours, larger ones being substituted as the stricture dilated. When the dilatation had progressed so far as to allow of respiration through the larynx the bougies were removed and dilatation by means of hollow ebonite tubes, introduced through the mouth, carried on daily half an hour at a time. Treatment by these methods was always laborious and generally unsuccessful.
O'Dwyer, of New York, next invented his method of intubation for acute laryngeal obstruction as a substitute for tracheotomy, a method that Dr. John Rogers extended to chronic stenoses. Though less popular here than in America, O'Dwyer's instruments are well known. They consist of metal tubes of various sizes made to fit the larynx and long enough to pass well down the trachea.

These tubes are shaped somewhat like a nail. The head, which in front is deficient, rides on the larynx and prevents the dilator from slipping through into the trachea. Half way down the tube a slight lateral thickening occurs, called the retaining swell. It prevents the instrument from being too easily coughed up. The head is perforated at one side to accommodate a silk thread for withdrawing the tube if necessary immediately after introduction.

Each tube is fitted with an obturator, which can be screwed to the introducing handle. When in the larynx the tube is released from its obturator by pressing on a button with the forefinger. The instrument is introduced as follows:—The patient sits in front of the operator. If a child it is wrapped up so as to confine the arms, and seated on an assistant's knee. A second assistant opens the mouth by a gag introduced on the left side. The operator then with the left forefinger feels for the epiglottis, and, placing the end of the tube behind it, introduces it into the larynx. By pressing the button the tube is pushed off the obturator and the introducer is withdrawn. The tube when going through the mouth should be kept parallel with the dorsum of the tongue.

The instrument is worn in acute cases for five or six days, in chronic ones for many months. As a rule, the tubes remain in position with little or no tendency to ejection by coughing, but exceptions are by no means uncommon. In cases where there is difficulty in retain-
By Mr. R. H. Woods.

Laryngostomy.—Attempts had frequently been made by surgeons to cure such cases by excising the cicatrices and by grafting the raw surface to prevent recurrence of the stricture, but owing chiefly to the difficulty of after-treatment these attempts failed. Somewhat better results were obtained by excising the stricture and inserting a permanent tube through the larynx from below. This device has worked quite satisfactorily in those cases in which I have tried it, but the apparatus could never be dispensed with.

In 1906 Killian introduced a method to which he gave the name of laryngostomy. This consists essentially of establishing a median vertical opening of the larynx, either permanently or temporarily.

This wound is, in the case of cicatrices of the larynx, utilised for dilating the stenosis by indiarubber bougies, by which the cicatricial tissue is made to absorb and the lumen of the larynx kept open until what remains of the cicatricial tissue is old enough to lose its tendency to contract.

The procedure is as follows:—When any septic foci that may have existed in the mouth have been cured a time is chosen when the patient is free from cough and febrile disturbance. The operator should wear an electric forehead lamp. A tracheal cannula without flange at its
upper border is inserted. The patient is put lying on a sand-bag, with the head well dependent and held in position by an assistant. The soft tissues are incised in the mid-line from the upper border of the thyroid cartilage to the trachea cannula. This assumes that high tracheotomy has been performed. All bleeding is carefully arrested. If the stenosis is not impassible a probe-pointed bistoury should be inserted through it from the tracheal wound, and the cricoid and thyroid cartilage incised from below upwards and behind forwards. In this way unnecessary damage to the vocal cords is more likely to be avoided. Should the cartilages be calcified, strong scissors may be needed to cut them.

In cases where the stricture is impassible it must be approached from in front. In this case a strong probe introduced into the larynx through the mouth will be a useful guide.

When open, the cavity of the larynx and trachea above the tracheal tube is lightly plugged with gauze soaked in weak cocaïn solution, 3 per cent., to which a little adrenalin has been added. This blanches the tissues and dulls their sensibility.

Treatment of the Cicatrix.—Though it is customary only to incise the cicatrix vertically in cases where it is small and the obstruction incomplete, it is better practice to excise it in every case. In simple incision we depend for complete opening on the effect of the rubber dilator in causing absorption of the cicatricial tissue, a much less satisfactory process than removing it, especially if, after removal, the raw surface is at once grafted by Thiersch’s method. In excising the cicatrix care should be taken to avoid encroaching on the cartilages, a mistake easy to make in children. In all cases where the fibrous tissue has been excised, and particularly where the obstruction is thick and not a mere web, it is important to graft the raw
surface by Thiersch's method immediately on completion of the operation. The object being to keep the vertical incision open, the next step is to suture by two or three superficial interrupted points the laryngeal and tracheal mucous membranes where they are unaltered to the skin. This is preferably done with catgut.

This done, the cannula, with the dilating tube attached, is put in place, taking care that in so doing the graft is not disturbed.

Instead of introducing the rubber dilator at once, the wound may be plugged for the first two days with gauze above the tracheal cannula. If this is done the layers of gauze should be sewn together to prevent the possibility of any portion becoming displaced, and, perhaps, finding its way into the trachea. It is also advisable that the gauze should have been boiled in vaseline with a view to its easy removal at the next dressing.

The simplest form of dilator is a rubber drainage tube of suitable size prepared as follows:—A piece is taken sufficiently long to reach, when in position, the upper end of the arytenoid cartilage. The ends are rounded by holding them in the flame of a spirit lamp until they begin to burn. The sticky, scorched rubber is then wiped away with a gauze sponge wet with ether. A hole to admit the tracheal cannula is made near one end. A rolled tampon of gauze, well vaselined, is placed in the upper end of the tube, and stitched in place with a silk thread, the ends of which are left uncut. This plug prevents descent of food from the pharynx. The rubber tube, having been first drawn over the tracheal one, the instrument is vaselined and introduced. The rubber portion is first pushed into the pharynx, when the tracheal portion may be put in position without difficulty. A plug of vaselined gauze is next packed into the wound above the tracheal tube and in front of the dilator, and fixed into position by tying the
ends of silk over it. If a skin graft has been placed in the wound it is important, if possible, to postpone the second dressing until the third day after operation.

The moment healing begins to take place the tendency of the wound is towards contraction and closure, especially at the upper end. It is hard to combat this by gauze plugging, and I have found the following plan more serviceable:—A piece of tube is taken as before, but not quite so long, the lower end is cut obliquely, and is not perforated (Fig. 1). The lumen is plugged with vaselined gauze, as before, and a stout silk thread drawn through its lower part. A small square piece of one-quarter inch rubber sheet is cut and transfixed in opposite directions at its middle by needles attached to the ends of the silk thread; these are drawn through and knotted on the end of the rubber sheet opposite that resting on the dilating tube. The laryngeal dilator is first introduced, and is followed by the cannula, to which it may be fixed by the ends of the silk thread. The upper edges of the rubber square should be rounded, and the dilator should, as before, reach the upper border of the arytenoid cartilage. This is a very satisfactory device, for even should the tracheal tube become displaced there is no possibility of the dilator slipping into the trachea.

The patient should be watched closely during the first few days following the operation and great care bestowed on keeping the wound and tube as free from secretions as practicable. Aseptic results are, of course, unobtainable, and a certain amount of septic inflammation may be expected. This evidences itself not merely by redness and swelling of the wound but by the formation of a diphtheritic exudation evoked by coccal invasion. The best means of preventing or mitigating it is by keeping the raw surfaces well covered by an ointment composed of cyllin, 1 drachm; vaseline, 1 oz. It is probable that the exclusion
Mr. Woods—"Laryngeal Stenosis."

Fig. 1.

Fig. 3.
of the air and prevention of crust formation and consequent retention of inflammatory products by the vaseline is at least as important as the germicidal effect of the Icyllin.

The danger of broncho-pneumonia will always be present, and everything possible must be done to avoid it. The temperature of the room, the patient's diet and digestive organs must be carefully regulated. Post-operative treatment must be carried out with great attention to detail. The wound should be cleansed at least daily, and the rubber apparatus frequently renewed, as it has a great tendency to become offensive. Epithelialising must be encouraged by repressing or removing granulations where redundant. Difficulties will present themselves in every case, and must be suitably met as they arise.

It is important that the dilating tube should never fit tightly. As the larynx adapts itself to a tube of given size, the next size larger may, if desirable, be substituted, and will be borne without resentment. After the end of the first month the length of time between dressings may be extended to two or three days. The tubes should always be vaselined before introduction.

As regards the size to which a larynx should be dilated, Barlatier lays it down that one should go on the principle of getting a somewhat larger lumen than a normal larynx of the same age. Thus, in a child of five or six years, the diameter of the tube would be about 10 m.m. It should be remembered that the tubes tend to swell from prolonged contact with the moist surfaces.

Where a rubber tracheotomy tube has been worn for a considerable time absorption of the tracheal rings may have taken place. This condition—tracheomalakia—may throw difficulties in the way of establishing a patent air passage, but there is fortunately some evidence to
show that when the tube is removed regeneration of the cartilages tends to take place. This is a point in need of elucidation, and further observation is necessary before we can predict what is likely to happen in such cases.

The essence of this treatment seems to be, keeping the stricture open for a sufficient length of time either for the fibrous tissue to lose its tendency to contract or until the layer is so thin from absorption that its adhesion to the cartilaginous framework of the air passage is so firm as to overcome the contractile tendency. This may be diagrammatically represented thus, and the description is applicable to all cases of annular scars:

![Diagram](image)

The figure represents a mass of fibrous tissue enclosed within rigid walls. The tendency of that tissue is to contract, and if we neglect all but the circular fibres the
effect of their contraction will be to narrow and finally obliterate the lumen.

It is obvious that the force of contraction will be proportional to the number of fibres, and therefore the thickness of the ring. To counter this we only have the influence of any fibres that may be attached directly to the rigid walls of the tube, and the number of these is constant and bears no relation to the thickness of the ring. So that the ring only needs to be thick enough in order to overcome the influence of the radial fibres.

Now, if by dilatation we are able to cause the absorption of a number of these annular fibres, it is only a question of getting the ring thin enough in order that the radial fibres may bind those that remain to the framework, and so counteract their tendency to concentric contraction. The key to the solution, then, is to remove the circular fibres, while at the same time providing by epithelialising the surface that no new scar tissue is deposited.

Of course it must not be left out of court that a most important factor in the question is the age of the scar, and that if it is only old enough it will show no tendency to contract, but this only happens late in its history.

The length of time during which the after-treatment should be maintained varies. Three and nine months are said to be the usual limits, but in my case it has taken considerably longer. When it is judged that all tendency to contraction of the stricture has passed away the dilator may be withdrawn and the tracheotomy tube removed, and the case watched to see that there is no tendency to recurrence.

Fig. 3 shows a device by which treatment in hospital may be very much curtailed and breathing through the nose established at a very early date. A rubber tube, sufficiently large to permit easy respiration and sufficiently long to
reach from a little above the stricture to somewhat below the laryngostomy wound, is fixed by a stout silk thread, as shown in the diagram, to a plug made of one-quarter inch rubber. All edges are smoothed by burning and wiping with a cloth saturated in ether. The tube is very easily introduced, and is borne most comfortably. There is no tendency for fluids to go against the breath in swallowing.

Finally, what remains of the laryngostomy must be closed by a plastic operation, but this should not be undertaken until some months of observation show that there is no tendency to recurrence of the stricture.

Gluck's method is to raise the two rectangular flaps one on either side of the fistula. The hinge of the first should be next the fistula, while that of the second lies away from it. The first is reflected backward over the fistula and sutured to the median edge of the second. The second is then stretched across the middle line and its free edge sutured to the skin from which the first was severed.

Dr. Dempsey said that strictures, wherever met with, were not easy to deal with, and laryngeal strictures had always been more or less of a bugbear up to the introduction of laryngostomy. The tubes were unsatisfactory, and in very small strictures it was almost impossible to get any kind of dilating apparatus in from above. He would like to know if the tracheal tube was kept in during the operation, and if the anaesthetic was administered through it. Did Mr. Woods think it would be an advantage to administer a vaccine before such an operation? One of the great dangers was that of sepsis within the first week or so, and possibly a vaccine might prove a preventive. He thought that grafting was a new and good plan. Great stress had been laid by Barlatti on the first stage, the stage
of suppuration. Was one satisfied with the mere incision right down through the strictured part? Did one go through the posterior wall of the cartilage, and, if so, was there any danger of wounding the oesophagus in such cases, and might it not be a good thing to pass a bougie? Did Mr. Woods recommend the leaving of a bridge between the tracheal cannula and the laryngostomy opening? Could he give some idea of the mortality of the operation, and the average time it would take an ordinary case of stenosis from beginning to end? He thought a great many such cases were due to faulty tracheotomies performed in a great hurry and in the wrong position.

Dr. Murphy said that any one who had had experience of dilatation by mechanical means knew what a tedious business it was. At one time he had charge of several cases, and the one thing that struck him was that the surgeon must tell the patient what a wearisome time it would be, and must himself be provided with infinite patience. At the same time he thought it might be well to try dilatation by mechanical means through the mouth before undertaking that rather serious operation. We wished to know how much of the soft parts inside the larynx ought to be removed. The removal of the false vocal cords had been suggested. In Gluck's operation was there not a danger of having hair growing from the inside of the larynx when the skin of the neck was inturned in closing the laryngostomy wound?

Mr. Blayney said he had recently given in the removal of the tongue a dose of antistreptococcic serum. He was much pleased with the results subsequent to the operation, and thought it might be of use in laryngeal cases.

Dr. Hayes asked if it would be advisable, in cases of malignant disease of the larynx, to perform such an operation as described with a view to forming a permanent opening in the larynx, and then applying irradiation of some kind? One might apply X-rays, and such an opening would provide a ready means of dealing with it.

Dr. Stokes said he had seen cases where the patient could never do without the tracheotomy tube again. Were these usual cases? How did the vocal cords get on in such cases? It seemed rather drastic to have tin tubes and
rubber tubes in one's vocal cords for the best part of a year. Were the strictures usually due to diphtheria, and were they localised in any special part of the larynx?

Mr. Woods, in reply, said the tracheal tube was kept in, and the child was given chloroform through Junker's inhaler. The trachea above the tracheotomy wound was packed with gauze to protect the windpipe, and to prevent the possibility of pneumonia. He had used vaccine in a good number of cases, but he thought it gave uncertain results. In a recent case, where he extirpated the larynx of a man, he used a vaccine grown from the patient's throat. The operation was not performed for six days after inoculation. The man died of profound sepsis within two days. Within the last three weeks he excised a cancer, taking away the chief portion of the upper jaw and exposing the base of the skull. He did not depend on any vaccine, but applied a solution of chloride of zinc to the raw surface, and the patient's temperature never rose. As to incision of the cicatrix it was said to be quite enough to cut through the cicatrix, and then depend on the dilatation to cause absorption of the tissue. He did not think that as safe a proceeding as to excise all the cicatricial tissue he could find. It then occurred to him to try the grafting. He did not think a bridge between the tracheotomy and laryngostomy wounds would be possible, unless the case was one in which a low tracheotomy had been performed. He believed the mortality was 15 per cent. or 20 per cent. The average time was said to be three to six months, but such a period was much too short for his case. It was twelve months since he had done the child exhibited, and if he took out the tube, in six days the larynx would show some slight contraction. They had to wait until all tendency of the cicatricial tissue to contract had disappeared. Unless the false vocal cords were included in the scar they should not be touched—the rule should be to preserve everything that could be preserved. As to hair, in a man he would probably turn the flap up from below the wound; it would be most serious to put growing hairs inside the larynx. The kind of cancer that would likely get any good from X-rays would necessarily be a superficial one. He did not think the operation would be
very much use for the treatment of cancer by radium. In the case shown the vocal cords were involved by the cicatrix, and were not visible at all. The child, however, had got good substitutes. Looking at it from below they could not tell it from a perfectly normal larynx. In swallowing, not a crumb or drop went the wrong way. He thought the operation showed a very distinct advance in the treatment of such hitherto very unsatisfactory cases.
NOTE ON THE DIAGNOSTIC VALUE OF LUYS' SEGEGATOR.

By R. A. STONEY, M.B., F.R.C.S.I.; Surgeon to the Royal City of Dublin Hospital.

[Read in the Section of Surgery, December 9, 1910.]

When last spring I read a short paper on two cases of nephrectomy before this Section I was surprised to hear the opinions expressed by most of those taking part in the discussion afterwards that they considered Luys' segregator of little practical use, and that in many instances in their hands it had failed to give definite results. I wish, therefore, to bring before the members of this Society the definite position that this instrument fills in the diagnosis of lesions of the kidney, and also in determining the relative functional value of these organs as a preliminary to operation upon them.

In La Presse Médicale for August 3rd, 1910, there is a paper by M. Luys on this subject, of which I shall not hesitate to make free use.

There are two points to be considered—(a) First, that the separation of the urine from the two kidneys by means of this instrument when properly employed is perfect. (b) Secondly, that the results of separation of the urine from either side by means of an intravesical segregator are in many cases superior to those obtained by catheterisation of the ureters.

(a) It has been shown by experiments on the cadaver that, when the segregator is placed in the bladder and different coloured fluids are injected into either kidney,
these fluids escape unmixed from the channel on either side of the instrument, the anterior abdominal wall and the bladder may be opened and the whole process watched, when the coloured fluid is seen entering the bladder by either ureter, collecting in the pouch on either side of the septum, and escaping by either channel. That the same perfect separation can be obtained in the living has been proved again and again by innumerable observations recorded from all countries. But in order to obtain this perfect separation it is necessary to see that both the patient and the segregator are in proper position. The patient should be in a sitting posture, or should at least have the thighs horizontal, while the body is raised to a sloping position. This position is most easily obtained by placing the patient on a gynaecological chair, but it can also be obtained while the patient is in bed by raising the trunk with a bed-rest. The segregator must lie accurately in the middle line and the convex border of the curve must lie snugly against the floor of the bladder, with the junction of the stem and curve tight against the neck of the bladder.

The method of performing an intravesical segregation with this instrument is as follows:—The rubber sleeve is pulled over the centre stem of the instrument; the two catheters are placed one on either side, and the small cap is screwed on the point so as to lock the three pieces together. A soft rubber catheter is passed and the bladder washed out. A few ounces are then left in the bladder, the catheter is withdrawn, and the segregator is introduced. There is usually little difficulty or pain in doing this; certainly not more than with the introduction of a cystoscope. When the instrument has been pushed completely into the bladder it should be gently withdrawn till the curve is felt to come up against the neck of
the bladder. The handle is then raised to a horizontal position. This depresses the curve against the floor of the bladder. That the instrument is in good position may be ascertained by examining with the finger in the rectum in the male or the vagina in the female. By a screw movement of the handle the septum is raised and everything is now ready to commence the experiment. The fluid left in the bladder first escapes in a continuous stream by either catheter, then urine mixed with the remainder of the fluid, and finally the urine escapes in a normal or abnormal manner according to the conditions of the kidneys in any particular case. The following are brief records of the results obtained by the use of this instrument in three cases:

Case I.—The first case was a woman of twenty-five, under the care of my colleague Dr. Moorhead. She had a large movable tumour on the left side lying partly under the ribs which was thought to be a movable kidney with intermittent hydronephrosis or possibly pyonephrosis. The case has been fully described by Dr. Moorhead before another Section of this Academy. As the patient was suffering from very advanced valvular disease of the heart, I examined her in bed, propped up with a bed-rest. Normal-looking urine escaped from either side in equal quantities. As this was one of the first times on which I had used this instrument I did not feel satisfied that it was working properly, but thought there might be leakage from one side of the bladder to the other. I, therefore, injected some methylene blue solution through the left catheter. It returned from this side, the urine escaping from the other catheter remaining uncoloured, showing that the segregation was perfect. It was afterwards found that the tumour was not the kidney but a wandering spleen.

Case II.—The second case was a man who had hæmaturia after an accident, the diagnosis made being a ruptured kidney, probably on the right side. His urine was segregated, and it was found that that from the left side was
normal and contained no blood, whereas that from the right appeared to be nearly pure blood. The diagnosis was confirmed, therefore, and at operation the right kidney was found to be severely torn and pulped.

Case III.—The third case was a girl of twenty-two, suspected to be suffering from tuberculosis of the left kidney, and showing pus, blood, and tubercle bacilli in the urine. She was segregated on two occasions. On the first an anaesthetic was employed, and the amount of urine collected was very small, but that from the right side contained no pus or blood, whereas that from the left contained both. On the second occasion no anaesthetic was employed, and in the course of forty minutes 11 drms. were collected from the left side and 8 drms. from the right; that from the left contained blood, pus, and tubercle bacilli, whereas that from the right was normal. In this case the exact course of the secretion by the two kidneys was beautifully demonstrated. The urine escaping from the right side came in regular gushes of three or four drops at a time, while that from the left came in irregular gushes of four to seven drops at a time.

I shall not weary you with the further record of similar cases. I have said enough to prove that the urine from the two kidneys can be accurately separated, and a perfect picture obtained of the method of secretion.

Professor Cestan, of Toulouse, writes as follows:—"Never, in my hands, has Luys' segregator been wrong, and its results have always agreed admirably with the clinical or operative findings, so well that in the presence of an apparent contradiction I would place more faith in the segregator than in my clinical investigations; but it is necessary to know how to use the segregator and a good segregator. I repeat that, for me, the simplest, the most satisfactory, the most innocuous, and the best is that of Luys."

Professor Hartmann thus describes the absolute confidence that should be placed in this instrument:—"The
proof of the perfect separation of the bladder into two watertight compartments by this instrument is furnished by the examination of the urine obtained in cases of unilateral renal haematuria or pyuria. Since from one side blood-stained or purulent urine is obtained, whereas the other side affords urine perfectly clear and showing no blood and not a single pus cell even after centrifuging. It is also shown by the results given by the segregator in cases after nephrectomy. The catheter corresponding to the existing kidney gives exit to urine by small rhythmical jets. While that on the nephrectomised side yields not one drop of liquid.

Enough has been said to prove our first point—that the segregator gives satisfactory and reliable results when properly used. We will now consider the other half of our contention—namely, that in the majority of cases intravesical segregation is preferable to ureteral catheterisation. M. Luys claims six advantages for his method of separation of the urine.

1. First, it is easier than ureteral catheterisation. It can be employed by any surgeon, and does not require the same amount of skill and practice that is necessary for the introduction of a ureteral catheter. Also, it can be practised anywhere, not necessitating any expensive apparatus or special light, so that the necessity for an electrical installation is done away with. In cases where the patient is so ill as to make any disturbance undesirable it can be practised without disturbing the patient in bed, as in the first case reported above.

2. Secondly, it is absolutely exempt from the danger of contaminating a healthy kidney by a ureteral catheter which has passed through an infected area. Cases of fatal result from this cause have been reported by Israe Hartmann, Legueu, Tuffier, Sampson, and others.
8. Segregation by this method does not disturb the function of the kidneys, or, if it does, it affects the two kidneys equally. Ureteral catheterisation, on the contrary, may stimulate the kidney, or double catheterisation if the catheters are introduced to different levels may stimulate the two kidneys in a different manner or to a different extent. Franck, of Berlin, has practised first ureteral catheterisation and then intravesical segregation in the same patients, and has proved that the former manipulation has disturbed the secretion of the kidney considerably more than the latter. In one case catheterisation, unlike the segregator, caused a spasm of the kidney, and in another case it provoked an abundant polyuria.

4. Intravesical segregation alone permits a knowledge of how a kidney empties itself. In some cases of hydronephrosis produced by a kinking of the ureter no urine escapes from the corresponding tube of the segregator, but may at once begin to flow if the kidney on that side is gently lifted up towards the diaphragm. If a ureteral catheter is used in these cases it may pass through the kink into the pelvis of the ureter and withdraw the urine without the kink having been noticed. In the same way when a small calculus is lying in the ureter a catheter may pass it without detecting its presence, and the urine will then escape from the catheter in a normal manner, whereas in using the segregator the flow of urine from that side would be absent or diminished.

5. The intravesical separation furnishes the total amount of urine secreted by each kidney. If one ureteral catheter is passed to collect the urine from one kidney, while the urine from the other is collected by a catheter in the bladder, some urine may, and usually does, escape between the catheter and the wall of the ureter and mixes
with the urine from the other kidney in the bladder, thus falsifying the results obtained. Even when both ureters are catheterised, some urine escapes from either kidney into the bladder, and the amount lost in this way from the two kidneys may not be the same. Kouznetzky has catheterised the two ureters, then emptied the bladder collected the urine from the two ureteral catheters for a period of two hours, and then emptied the bladder again. In one case he found 194 cubic centimetres and in another case 148 c.cs. of urine collected in the bladder.

6. Finally, in children ureteral catheterisation is usually impossible, but the small sized segregator (No. 1 French scale) can generally be passed, and gives perfect results.

Let me conclude by quoting M. Luys:— "There exists a mistaken tendency to establish a complete antagonism between the method of endovesical segregation and catheterisation of the ureters. The fault lies in thinking that the two methods are hostile, when, on the contrary, it is from their alliance that absolute exactitude of diagnosis of the functional condition of the kidneys by separation of the urine arises; each of them has very precise indications. In the great majority of cases it is the endovesical segregation which should always be applied first as method of examination, and great is the mistake of those who protest that the segregator should be used only as last resort when ureteral catheterisation has proved in practicable. It is no less true that, as a complement to the information thus gained, and in certain special cases it is an advantage to have recourse to catheterisation of the ureter. If the examination of the renal function ought to be made with the segregator, examination of the ureter and pelvis of the kidney can be made only with the ureteral sound. Briefly, the conclusion which I have
advanced for the last eight years, and which seems to me to be more than ever the expression of the truth, is that the segregator is more simple to use, is free from dangers in its employment, and can be utilised for the diagnosis of the renal function in a larger number of cases than catheterisation of the ureter. Well applied it gives results exactly definite and certain, and it affords a complete security."

Mr. Gunn said that he agreed that the two methods were not antagonistic, but he could not agree with some other of Mr. Stoney's conclusions. He had used the instrument, and found it difficult to insert; it was often very painful on account of the pressure and the uncomfortable position; and he was not satisfied with the accuracy of its results. It was an excellent instrument with a healthy bladder, but they must be certain that the bladder was healthy, otherwise the results would be falsified. It should be used in conjunction with the cystoscope. The segregator was very good for its own particular work, which was very limited. Luys himself had since invented an instrument for catheterising ureters.

Dr. Stokes said he had formerly spoken against the instrument, but he had since found that his difficulties were due to his own inexperience.

Mr. Stoney, in reply, agreed with Mr. Gunn as to the uselessness of the instrument in cases of disease of the bladder; but in cases of extensive trouble of the kidney, where there was no bladder disease, he considered it of very considerable use. It was not, of course, to be advocated in opposition to other methods. He might mention that if too much methylene blue was injected it would fill the pouch and overflow to the other side, and so escape on both sides.
THE TREATMENT OF CHRONIC ANTERIOR URETHRITIS BY THE USE OF OINTMENTS IN THE URETHRA AND DEMONSTRATION OF A NEW INSTRUMENT FOR THE APPLICATION OF SAME.

By ANDREW CHARLES, F.R.C.S.I.

[Read in the Section of Surgery, December 9, 1910.]

Amongst the less severe disorders there is probably no ailment which more frequently causes trouble and anxiety to the surgeon than does chronic urethritis. The ordinary routine of patients injecting aqueous solutions is in many instances fraught with failure due to—

(1) Inability of the patient to inject them effectively.
(2) The fact that the injections have not sufficient time to act.
(3) Uncertainty that the solutions are brought into contact with the entire inflamed surface of the urethra.
(4) The glandular orifices may be obstructed with plug of mucus, which do not allow the fluids to penetrate.

Aqueous solutions, according to Janet, "glide upon the mucus-covered urethral walls, and the glandular orifice obstructed by their plugs of mucus do not allow them to enter. Oleaginous excipients, on the contrary, adhere to the surface of the urethra, are moulded into all its folds and incorporated with the mucus, and enter into intimat
contact with the mucosa. Finally, the adherence of the oleaginous preparation to the urethral mucosa is an important advantage, permitting a prolonged action of the drug, and protecting for a long time the urethral walls from the irritating action of the urine. For there are arthritic and eczematous patients and those who eliminate badly their alimentary toxines who have very irritable urethras.”

Then it is said that energetic medicaments, when incorporated in greasy bodies, lose the most part of this irritant action. One can employ without any inconvenience a 1 in 15 carbolic oil when the same solution in water would be absolutely caustic.

On looking up the literature on the subject of oleaginous applications to the urethra I find—

(1) Medicaments incorporated with cocoa butter, used in the form of bougies.

(2) Medicaments in the form of ointments applied by means of sounds, ordinary or fluted, thus combining mechanical and chemical effects.

(3) Injecting the ointments by means of a syringe into the urethra.

Criticism of the foregoing methods:—

Bougies—(1) Do not dilate the canal sufficiently.

(2) Are not antiseptic on their external surface.

(3) The basis on which they are made is not readily absorbable.

Sounds—(1) If fluted sounds are used the time required for the liquification of the ointment is about half an hour, which is waste of time and gives rise to pain.

(2) Ordinary sounds—Most of the ointment is left on the glans penis.
If one considers the pathogenesis of chronic urethritis the discharge may be due to—

(1) Periurethral infiltration.
(2) Glandular catarrh.
(3) Catarrhal condition of the deeper layer of the mucus membrane.
(4) Combination of any of the above conditions.

The treatment of chronic urethritis by the application of a sound coated with an ointment, mechanical and chemical effects combined, should be effective considering the pathology.

The mechanical effects necessary are to—

(1) Open the ducts of the glands.
(2) Dilate and cause pressure on the periurethral infiltrations.
(3) Relieve any reflex spasmodic conditions of the urethral muscles or elastic fibres which may prevent the healing of an ulcerated or abraded mucous membrane (analogous to the condition of the sphincter ani when dilated for fissure).

The chemical effects of an ointment when applied efficiently are, when—

(1) The ointment is brought into immediate contact with the glands, lacunae and mucous membrane and acts as a stimulator, astringent, and healer.
(2) The inflamed surfaces are kept apart in consequence of the urethra being covered with a coat of ointment (as in eczema intertrigo, where cure can only be obtained by separating the inflamed surface).

In designing the instrument which I have introduced the profession I had these objects in view:—To apply an ointment effectively and have a mechanical effect at the same time.
By Mr. Andrew Charles.

The instrument consists of—

Metal tube with side slits, the lower end of which is closed with a conical-shaped screw.

Metal obturator equal in diameter to the internal diameter of the tube.

Metal nozzle (two or three are required) with universal internal screw at one end for purpose of attaching to any ordinary collapsible tube.

The instrument possesses the following advantages:—

1. Simplicity.
2. It can be easily cleaned by removing the conical-shaped screw, and sterilised by boiling.
3. The urethral surface is completely covered with a large quantity of sterile ointment.
4. The urethra can be massaged on the surface of the instrument, so that the ointment can be forced into the folds of the urethra and into the ducts of the glands.
5. Acts as a dilator.

Technique—

1. The patient is placed on a couch.
2. The anterior urethra is washed out with a pint of antiseptic solution, such as hydrogen peroxide 5 per cent. Potassium permanganate 1 in 2,000, mercury perchloride 1 in 20,000, or oxycyanide of mercury 1 in 2,000 (use a 4 oz. syringe fitted with a rubber nozzle).
3. The instrument is sterilised and lubricated with glycerine, and is passed without its obturator as far as the bulb—sometimes in the posterior urethra.
4. Attach one of the nozzles to a collapsible tube containing the ointment to be used, and insert it into the urethral tube, as it lies in the urethra, squeeze-
Chronic Anterior Urethritis.

ing the collapsible tube. The tube may be partially filled with the ointment. Should the ointment require a certain amount of liquification heat the nozzle in the flame of a Bunsen burner.

(5) Having introduced the ointment, pass gradually the metal obturator, when the ointment will then exude through the lateral slits of the tube.

(6) Rotate the entire instrument in the urethra two or three times, so as to spread the ointment over the urethral surface.

(7) Massage the urethra on the surface of the instrument for two or three minutes, starting at the perineal scrotal junction up to the fossa navicularis.

(8) Remove the instrument, and cover the glans penis with cotton wool, which should be retained until the next urination.

(9) Advise the patient to wear a suspensory bandage.

(10) Applications are made twice weekly.

Choice of ointments.—There should be at hand several different drugs, put up in collapsible tubes.

The basis in each case should be lanoline. Lanoline is considered by Casper to be the best, as it has the power of taking up aqueous secretions and adheres better to the mucous membrane of the urethra.

Finger has shown the great value of lanoline in chronic urethritis. He says—"If one injects fluids, gelatine, or cocoa-butter suppositories, the first subsequent urination will wash them out. This is not the case with lanoline, which adheres closely to and is pressed into the mucous membrane. Urination evacuates the ointment only in small particles for as long as thirty-six hours after its insertion."

To render the lanoline suitable to put into a collapsible tube incorporate with it 25 per cent. of almond oil.
If the glandular elements of the urethra are affected the silver preparation gives the best result.

If there is a constant exfoliation of epithelium cells Young recommends salicylic acid.

If the inflammation is merely periurethral Finger's ointment is recommended.

In conclusion, the use of ointments is a very valuable adjuvant, but I do not wish to exclude other treatments, such as high dilatation of the urethra, irrigation, instillations, and urethroscopic applications.
TWO UNUSUAL GALL-BLADDER CASES.

By W. S. HAUGHTON, M.D., B.Ch.,
Surgeon to Steevens' Hospital.

[Read in the Section of Surgery, January 20, 1911.]

The two gall-bladder cases which I have the honour of bringing under your notice to-night occurred within a short time of one another in my practice last year, and present such unusual features that I hope they may prove of interest to the Section.

In my first case the chief interest centres round a foreign body found in the gall-bladder, whose origin and route of access to that organ are matters for speculation.

Case I.—The patient, a well made man, forty-five years of age, was seen by Dr. Hayes, of Rathkeale, and Dr. Kennedy, of Limerick, both of whom advised surgical treatment, and he subsequently came under my care.

For two years previous to the time I first saw him he suffered from well-marked intermittent attacks of biliary colic, three, at least, of which were of very unusual severity as regards the pain, acute vomiting and tenderness over the gall-bladder being present on each occasion.

He had many minor attacks, and in the intervals between these was subject to severe dyspeptic disturbances, associated with considerable gastric pain.

Another remarkable feature of his case was the occurrence of left-sided hemi-cranial headache in the parietal region, which seems difficult to explain, but which has completely disappeared since the operation.

I kept him under close observation for some three weeks before operating, during which period he had one slight attack of biliary colic.
The abdomen on palpation revealed no distinct evidence of tumour, but deep tenderness could always be elicited over the gall-bladder region, and there was always a sense of increased resistance at this spot.

An exploratory laparotomy was advised and agreed to. An oblique incision was made parallel to the costal margin on the right side, two inches from it, and on entering the abdomen the gall-bladder was nowhere to be seen.

The liver appeared small, and its anterior sharp margin was retracted under cover of the ribs. The stomach was small and contracted, and so firmly bound down by adhesions at the pyloric end as to make it impossible to bring that part out of the wound.

A dense mass of hard, fibrous adhesions, about the size of a fist, had glued together the gall-bladder, the liver, and the stomach.

After considerable difficulty the gall-bladder was partially isolated in the middle of this adhesion mass. It was found to be small, contracted, somewhat nodular to the touch, and in the endeavour to separate it from its bed it became opened. Its internal cavity was small, and about the size of the two top joints of the index finger.

On entering the gall-bladder a stone was immediately encountered, and a few drops of bile-stained fluid escaped. This stone was easily removed.

On introducing my finger a second time, I received a smart prick in the tip of my finger, through the glove, like that of a blunt-pointed pin, and on removing this pricking object I found it to be a small bristle, half an inch long, with a piece of fine thread tightly wound round one end, with a loose end, some two inches long, depending from it; the whole thing being stained with bile.

Another smaller stone was then removed from the cystic duct, and no other stones being felt, either in the gall-bladder or by external palpation of the cystic and common bile ducts, a probe was passed without interruption down to the duodenum.

Following the principles laid down by Moynihan and others it is my usual practice to remove every gall-bladder whose
walls show any sign of structural degeneration, more especially on account of the undoubtedly high incidence of malignant change which has been proved to take place in old, chronically inflamed gall-bladders.

Obviously, this gall-bladder was one which should be removed, and a strenuous effort was made to accomplish this, in spite of its inveterate adhesions, the course of which was checked by the onset of a very smart haemorrhage from the deepest part of the wound in the liver substance.

This was arrested by pressure, and a further effort was made to detach the remains of the gall-bladder from the stomach wall.

This dissection demonstrated the existence of a very peculiar, annular, thick, fleshy, adhesion between the wall of the stomach and the coats of the gall-bladder about the size of a crown piece, in which the muscular tissue of the stomach was undoubtedly incorporated, and it became apparent, that to remove the gall-bladder completely implied the resection of the stomach wall itself.

On consulting with my colleagues at this point it was agreed that the patient's condition would not justify stomach resection, and we were obliged to rest satisfied with the curetting away of as much as possible of the gall-bladder tissue and mucous membrane, which surface was also treated with a light application of pure carbolic acid.

A rubber drainage tube was inserted down to the bottom of the gall-bladder, and the wound was stitched up in the ordinary way.

During the next four days the patient's condition was very precarious, owing to rapid feeble action of the heart.

There was some fever and purulent discharge from the wound, which, however, rapidly disappeared after the fourth day, after which he made an uninterrupted recovery.

I have since learned from Dr. Hayes that his recovery has been complete and permanent; all pain and gastric symptoms having disappeared, and also the severe, hemi-cranial headache from which he had suffered prior to operation.
Now, for the foreign body. What is it? And how did it get there? I would venture to hazard the opinion that the size and character of this bristle, with its attendant, coiled up thread, indicates the domestic tooth-brush as a possible origin; that this was swallowed with food or at some other time, and while in the pyloric end of the stomach it became engaged in some pocket or ruga in the mucous membrane, there setting up irritation and ulceration, which resulted first in an adhesion to the gall-bladder, followed by perforation of the stomach wall through the adhesion, through the wall of the gall-bladder, and so it entered this organ, where its presence would easily account for the formation of the two gall-stones.

This route, I think, must be considered as at least a possible route, having regard to the severe gastric symptoms noted before operation, suggesting gastric ulcer, and, further, in the facts revealed by operation—namely, this peculiar, dense, annular adhesion between the wall of the stomach and that of the gall-bladder.

I, however, prefaced my remarks to-night by stating that the origin of this foreign body and its mode of access were matters of speculation, and I shall feel very much gratified if members of the Section will suggest alternative routes.

The interest of my first case being largely mechanical, we may describe the interest of the second case as pathological, representing as it does a typhoid carrier walking about unsuspected in our midst, and probably voiding at each evacuation of the bowels an unknown quantity of typhoid bacilli, whose possibilities as agents of infection may be infinite.

Case II.—This patient, a woman aged fifty, was sent to me as a case of abdominal tumour by my gynaecological
colleague, Dr. Purefoy, while acting for Dr. Hastings Tweedy. She was a soldier's wife, and had for some six years previously been suffering from intermittent abdominal attacks, whose symptoms simulated partial intestinal obstruction, associated with marked chronic constipation.

There was no definite history of typhoid in her case, but she had had numerous attacks of malarial fever while abroad on foreign service, some one of which must have been combined with enteric in all probability, or else the enteric fever passed without notice.

On my first examination, a tumour was felt in the right umbilical region, trending towards the right iliac fossa. It was about the size of a small orange, and felt hard, but was considerably masked by the presence of large quantities of faecal matter in the intestines.

My preliminary diagnosis was probably a malignant tumour of the ascending colon with faecal lodgment.

A vigorous course of aperient treatment was carried out for six days, by means of purgatives and enemata, with the result that the tumour became more definite, was now felt at the level of the umbilicus, and could be freely moved in a transverse direction for several inches. It did not move very much with respiration. An exploratory laparotomy was advised, and the patient's consent obtained.

This case illustrates very well some of the varieties of diagnosis which may be arrived at after careful examination, all of which proved subsequently incorrect in the light of the exploratory operation, and it is an additional proof of the value of this method of diagnosis, if such be wanting.

In aseptic hands an exploratory abdominal incision possesses very trifling risk, while the benefits accruing to the patient and her neighbours are very considerable.

When anaesthetised on the operating table, her abdominal muscles were, for the first time, fully relaxed, and under these conditions the tumour felt larger, smoother, and of a consistence resembling that of the kidney. It moved considerably more with respiration, and could be made to disappear entirely under cover of the liver with a characteristic slip, and involuntarily the suggestion of a movable kidney.
passed through my mind, and I felt some regret that the posterior lumbar region had not been prepared for operation, with a view to fixation of the kidney. She was, however, prepared for an exploratory abdominal incision, which, I need not say, I have no reason to regret, seeing that it led to the discovery of an entirely unsuspected state of affairs.

The abdomen was opened by a vertical incision through the outer part of the right rectus sheath, above the umbilicus, and our tumour proved to be a very large, smooth, tense, pear-shaped gall-bladder, with a long pendulous stalk continuing into the cystic duct. There were practically no adhesions. The gall-bladder was readily delivered out through the abdominal wound, and the remainder of the operation was conducted extra-peritoneally.

An incision being made through the fundus of the gall-bladder, its walls were found to be more than one quarter inch thick. A large quantity—some 14 or 15 ounces of fluid—escaped. This fluid was milky white, and resembled an emulsion with a somewhat opalescent appearance. It was watery in consistence, and did not appear to contain any mucus, bile, or pus.

A sample was immediately obtained under sterile conditions in a sterile test tube, and sent down to the laboratory for examination by our pathologist, Dr. Crofton, whom I am very pleased to see here to-night, and who has some very interesting remarks to make on the subject of his examination.

Eighteen gall-stones were removed—which I now hand round—and the probe passed freely down to the orifice of the common bile duct.

The walls of the gall-bladder were so tremendously altered by pathological change, I considered it my duty to remove it, and, adopting a tip I learned many years ago from Sir Charles Ball, I made an annular incision through the peritoneal covering, and then, with considerable ease, reflected a tube-like sleeve of peritoneum right away to the termination of the cystic duct, which was duly clamped, ligatured, and the gall-bladder then amputated.

No drain was inserted, and the wound healed by primary
union. The patient made an uninterrupted recovery, and has since been free from all troublesome symptoms, so far as I am aware.

I do not wish to anticipate Dr. Crofton's remarks on this most interesting case, and I wish to record here my personal indebtedness to him for the great trouble he took, and the most interesting results he arrived at, in the examination of the contents of this gall-bladder.

I may, perhaps, however, state that the fluid removed from this patient's gall-bladder was a pure culture of typhoid bacilli in suspension in a watery fluid.

The further details of her blood examination I will ask Dr. Crofton to describe.

Here, then, we have two gall-bladder cases which seem to me to possess extraordinary interest, which I trust will prove sufficient excuse for recording their notes before this Section.

Dr. Crofton said that a pure culture of the typhoid bacillus was obtained from the gall-bladder. The patient's blood, even when diluted to 1 in 500, agglutinated typhoid bacilli. The patient had no history of having had any typhoid, but the fact that she had an anomalous illness with a high temperature, and had come from Cairo, was very suspicious, because Cairo is a hot-bed of typhoid fever. There was no history that she had given typhoid to any one.

Mr. Pringle inquired from the members had they found the area of tenderness described by Boas behind opposite the tenth and eleventh dorsal spines on the right side. Boas states, with some authority, that in all cases of gall-stones we get this area of tenderness. He himself had constantly tried for it in all cases, and had only found it once. In such a case as this, where in all probability the gall-bladder would have to be removed in the end would it not be safer to remove the gall-bladder unopened? It would be simpler, and lessen the risk of sepsis. A
By Dr. W. S. Haughton.

regards the second case of typhoid carrier—from the description of the tumour it would appear that the cystic duct was obstructed, so it is quite possible that this woman was not a source of infection, as one might at first imagine. He did not see any reason why one could not get infection of the gall-bladder without typhoid fever, as the infection might easily occur through the mouth.

Dr. Stokes said he would like to ask two questions. First, why there was such difficulty in passing a probe down the common bile duct in the dissecting room, considering that it could be done with ease in the living. The second question was, can the typhoid bacillus live and multiply in a patient who has serum of marked agglutinative power?

Mr. Blayney said in reference to the question of tenderness he had examined for this in a number of cases and had never been able to get it. He did not think it could be relied upon from a diagnostic point of view. As regards the operation of cholecystectomy he said in most cases he had removed the gall-bladder. The mucous membrane is always in a state of disease, and, as the operation is a safe one, he thought, in order to prevent recurrence, it was better to remove the gall-bladder. He had often experienced a difficulty in passing a probe from the gall-bladder into the cystic duct in the living. He thought the difficulty was due to the valve-like arrangement of the mucous membrane. It seemed from the high agglutinating power of the serum that the patient had absorbed a considerable mount of typhoid poison. It has been shown experimentally that in order to produce gall-stones the bacilli must be attenuated, otherwise they produce an attack of cholecystitis and not gall-stones. If this be so one would not expect such a high agglutinating power to be produced by absorption from the gall-bladder alone. Consequently, he agreed with Dr. Crofton that the patient probably had an attack of typhoid fever beforehand.

Dr. Kirkpatrick said a typhoid carrier is a person who excretes typhoid bacilli, and there is no evidence that this patient did excreta these typhoid bacilli. In view of the fact that the bacillus was never discovered in the stools he
thought it very doubtful whether, without further elucidation, Dr. Haughton should describe this patient as a typhoid carrier.

Dr. Pearson said he thought, with regard to the removal or not, the points which should be borne in mind were:—
(1) If we do not remove the gall-bladder, is it a source of danger to the patient? (2) Is there anything to be gained by leaving it behind? Is it a useless organ or has it any function? The gall-bladder which is chronically inflamed is undoubtedly liable to develop cancerous changes. Therefore, a contracted gall-bladder should be removed; it should also be removed if there is a stricture of the cystic duct. In cases of cholecystitis, where the changes are not very marked, one can hope that by drainage alone the mucous membrane of the gall-bladder will return to its normal condition, and one might in that case leave the gall-bladder behind. From statistics it appears that cholecystostomy is less serious than cholecystectomy, so that we should always in suitable cases leave the gall-bladder rather than remove it.

Mr. Gunn said he was not at all certain that it was sound thing to remove the gall-bladder in every case. He had a very unpleasant experience about eighteen months ago, when he operated on a gentleman with a diseased-looking gall-bladder containing calculi. He removed the gall-bladder because it seemed very diseased. A fistula formed and persisted for a long time, but closed eventually. Just a year afterwards his symptoms returned, and he again got a good deal of trouble and a good deal of jaundice. His abdomen was re-opened and it was found that the cystic duct was shrivelled up and atrophied. The communication between the hepatic ducts and the duodenum was reduced to a very narrow track. He regretted very much that the gall-bladder was removed because an anastomosis between it and the duodenum could have been made. He said he would like to ask Dr. Haughton whether he considers it safe to entirely close the abdomen and not leave in a drain.

Mr. Stonex said that with regard to the passing of a probe he quite agreed with Mr. Stokes that there is a great difficulty in the way. In the most cases he had operated...
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on there had been adhesions present which probably have increased the difficulty. Even in cases where there were no adhesions he had also encountered a difficulty in passing probe from the gall-bladder to the duodenum. He thought it was due to the irregular and tortuous course of the cystic duct into the common bile duct. When the gall-bladder appears more or less normal it is better to leave it, especially in younger patients. In cases where there are well-marked changes, either thickening of the wall of the gall-bladder or any tendency to destruction of the cystic duct, or in ulceration of the entire gall-bladder, it should be removed. Statistics are not to be relied upon, as cholecystostomy is done in the simpler cases, whilst cholecystectomy is adopted in the severer cases where there is sepsis, where the organs are considerably diseased, where there is malignant disease, or where the cystic or common bile ducts have to be opened. So, as we cannot rely upon statistics it must be admitted that cholecystectomy is as free from mortality as cholecystostomy.

Mr. Haughton said he quite agreed that the removal of the unopened gall-bladder would have been a safer course than the one he adopted. Mr. Stokes had asked the reason of the difficulty in passing a probe. He thought it was due to the tone of the muscle, which disappears after death. He thought that the gall-bladder should be removed where there is any definite evidence of change rather than leave it there as a future source of malignancy. With regard to Mr. Gunn's question, he thought that in the vast majority of cases it was inadvisable to close the abdomen without drainage.

Mr. Crofton said that he had no doubt whatever that typhoid bacilli could not live in the blood stream or in the tissue fluids of this patient. Those in the gall-bladder were in a position that was cut off from the blood stream owing to the thickening and infiltration of the walls, and so antibodies could not soak through. Another point is that it is quite possible, owing to their position of partial protection, that these typhoid bacilli have developed a strain which is more or less resistant. As to the question whether the patient had typhoid fever, she certainly came from a place where this fever was very prevalent. As regards the
question of removal of gall-bladders, he thought many of them might be saved by vaccine therapy, and that if the microbe could be discovered many of the gall-bladders would be able to return to their normal condition. It is very difficult to immunise a patient and to destroy the living typhoid bacilli in the typhoid carrier. He knew of only one successful case which had been reported. There was one patient in whom he was able to increase her agglutinative power very much, but she was still excreting typhoid bacilli in her urine.
CONGENITAL FISTULÆ.

By J. BOYD BARRETT, M.B., R.U.I.,
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[Read in the Section of Surgery, January 20, 1911.]

In this paper some reference to congenital fistulae in the neck and to such conditions as recto-vaginal fistulae; but I think it will be found that the paper has reached sufficient length in the discussion of—

1. Intestinal fistulae of the umbilicus;
2. Urinary fistulae of the umbilicus;
3. Paracoccygeal fistulae; and
4. Fistulae of the external ear.

These particular abnormalities alone will receive consideration. In this restriction I am influenced by the fact that congenital fistulae of the neck, being more usually of an inoperable nature, are as frequently observed in adults as in children.

Before discussing the diagnosis and treatment of intestinal fistulae of the umbilicus it is necessary to briefly refer to their formation.

At the beginning of embryonal life the intestine, which is being formed by the union of the endoderm with the splanchno-pleure, communicates through the umbilicus with the umbilical vesicle by means of the omphalo-mesenteric canal. At the beginning of the second month the intestine is completely closed and the mesenteric canal is represented by a stalk.
The disappearance of this connection in the third month leaves the intestine free in the abdominal cavity.

In many cases, however, this canal persists, and two conditions are possible. It may be represented by a diverticulum attached to the intestine, or it may still connect the intestine with the umbilicus. It is in this latter condition we are at present interested.

The adherence of the intestine to the umbilicus by the persistence of the omphalo-mesenteric duct may take various forms. The duct may be open in its whole length. The umbilical part may be obliterated, and so we should have a Meckel's diverticulum adherent to the umbilicus. The duct might be obliterated, except for the formation of cysts in the length of the duct or on the deep surface of the abdominal wall, communicating with the umbilicus and simulating fistulae. The duct may be closed at its intestinal end.

The diagnosis of these fistulae depends on the presence of a lumen through which a probe may be passed.

The protrusion of the mucous membrane of the small intestine causing strangulation has been recorded. The diverticulum has given rise to adenomata resembling mucous membrane in appearance and secreting clear mucus. They are, however, solid and have no lumen.

Mr. G. A. Wright gives a graphic description of the persistence of the vitelline duct:—"On examining this child there was a red fleshy prominence, then about one and a half inch long, projecting from the navel. It was about as thick as a cedar pencil and its surface appeared to be mucous membrane except at one spot where a patch of delicate cuticle was found. The apex of the protrusion was perforated by an orifice which readily admitted an ordinary probe, and the instrument could be passed downwards in the middle line and swept round on each
side for some three inches. It could only be passed upwards for about half an inch.

"A thin, watery mucus in small quantities was discharged, but no faeces or urine. Subsequently faecal matter escaped from the orifice. The protruded mass was ligatured and removed with a good result."

As the diverticulum is prolapsed a section shows the central canal lined with villi and also the remains of villi on the outer mucous membrane and tubular glands. The muscular coats are also seen.

The discharge of mucus alone may be explained by the closure of the intestinal end of the duct; and this it is, no doubt, that in many cases obstructs the passage of a probe.

I had recently under my care in the out-patient department of the Children's Hospital, Temple Street, two cases with umbilical fistulae. In each case—one a boy of six years, the other a girl of six months—the diverticulum protruded through the umbilical cicatrix to the extent of about one inch. In both a probe could be passed through an orifice at the apex of the protrusion, which was covered with mucous membrane. They were subsequently operated on by my colleague, Mr. Staunton. The boy before the operation showed symptoms of intestinal obstruction which were possibly due to the dragging of the diverticulum upon the ileum. Both made excellent recoveries.

It is important to remember that it is by no means the rule to find faecal matter coming through the fistulae. Cysts are rare and their diagnosis presents no difficulty. Polypi of the umbilicus are soft and pale in colour, and can so be distinguished from the adenomata with red mucous membrane. Treatment consists in opening the abdomen and freeing the intestine. The wound is closed
as in operations for umbilical hernia. It is difficult to understand how a surgeon could be satisfied with merely ligaturing the base of the protrusion.

*Urinary fistulae* of the umbilicus are due to patency of the urachus. About the middle of intra-uterine life the urachus is generally obliterated, but in these cases it remains permeable. This condition is found in cases where the normal outlet for urine is impeded. It has been found in a girl whose urethra was occluded by a thick membrane and in a case where micturition was impeded by a sarcoma growing in the bladder of a child—a case recorded by Mr. D'Arcy Power.

The opening may be situated at the head of a tumour or appear as a fissure at the bottom of the umbilical cicatrix. The orifice may be extremely narrow, in which case the urine may exude only in drops. On the other hand, the opening may be large and the flow considerable.

The diagnosis depends on the acidity of the discharge, its ammoniacal odour, its increased flow during micturition, and a history of congenital origin.

Cure may be obtained by cauterisation of the orifice, by freshening the edges and suture, or by the more radical operation of removal of the urachus and closure of the umbilical wound as for hernia. This ensures the impossibility of any subsequent protrusion of abdominal contents.

*Paracoccygeal fistulae.*—This name has been given to those funnel-shaped depressions in the skin in the middle line over the sacrum and coccyx. They are not rare, and are found in children who present no other malformation. They are interesting solely from the point of view of their embryological origin and seldom call for surgical interference.

These fistulae give rise to no trouble except in the rare
cases, when, owing to the depth of the fistulous track, and the presence of retained secretion, they become the source of irritation or infection. They are lined with sebaceous glands and sometimes with hair, and when infected may resemble a sinus and so give rise to doubts in diagnosis. The history is, therefore, of importance.

It is seldom that these paracoccygeal fistulae reach any considerable depth, and simple depressions in the skin in the areas mentioned are more commonly found. These depressions may occur singly, but as a rule there are more than one present. Their origin is so well described in Kermisson's "Surgery of Children" that I cannot do better than quote his description in its entirety:

"At the beginning of intra-uterine life the medullary canal is prolonged to the very tip of the coccyx, and there terminates in a swelling which is attached by strong adhesions on its posterior surface to the deeper layers of the skin. Later, as the vertebral column develops very much faster than the soft parts, the cord has to occupy a higher level, but the coccygeal remains persist and attain their greatest development in the course of the fifth month.

"At this time the soft parts undergo a considerable development, the trunk, which up to this had the primitive embryonal dorsal curve, develops its secondary and permanent curves, and the coccygeal eminence, up to this prominent, is completely effaced.

"During this change, the coccygeal remains, which are inserted into the skin, oppose the movement and cause displacement of the skin, which becomes invaginated, and thus these depressions, to which we give the name of coccygeal fossae, are probably formed."

I had recently under my care an infant with a well-marked depression over the sacrum which I regarded
as a paracoccygeal fistula. This child had no other anatomical abnormalities.

Fistulae of external ear.—Fistulae of the external ear are the result of imperfect fusion of the auricular tubercles. These anomalies are more frequently seen at the junctions of the crus helicis with the helix of the tragus with the crus helicis, between the helix and antihelix, or in the lobule. They seldom call for surgical interference, except when, owing to the closure of their orifices, a cyst is formed and suppuration occurs; or they may be mistaken for sinuses leading to glands. The openings are small and the canals usually of no great depth. They are lined with a considerable number of sebaceous glands, and are, therefore, often covered with an incrustation of dried sebum.

The case which I have the opportunity of showing presents a minute fistula in the helix of the left ear. It is very small, and there is no discharge from it. It has never been the source of any trouble, and was discovered by the mother quite by accident.

The child also has a preauricular fistula on the same side which is much larger and is constantly discharging sebaceous material which becomes dried in crusts about the orifice.

A series of eminences can be recognised at the end of the first month of intra-uterine life round the hyo-mandibular cleft. They are six in number—one for the tragus, one for the anti-tragus, two for the helix, one for the anti-helix, and one for the lobule.

It can be readily understood that the incomplete fusion of these tubercles is the cause of the occurrence of fistulae between the parts they represent in life.

The fusion of several units in this region of great complexity is, in the words of Mr. Howell Evans, "of great
interest in the study of our evolution from aquatic ancestors."

Mr. Stoney said there were only two cases of which he could speak from experience. The first was one commonly found in the sacral region occurring in a middle-aged man. He told him he had an ischio-rectal abscess, which had been opened on two separate occasions. When he examined it the first thing that struck him was that it was not an ischio-rectal abscess at all. In the middle line there was a very small depression. He was able to pass a probe through this small opening underneath the skin for a distance of three-quarters of an inch, but not quite as far as the abscess cavity. At the operation he opened the abscess, scraped it out, and introduced a probe again into the depression and found with a little manipulation he was able to pass it into the abscess cavity. He dissected it out. He found it was lined by skin. He came to the conclusion that the abscess was due to an infection which had travelled up from the anus along this fistula to the region of the sacrum. The second case was nearly exactly the same. The first case was operated on three years ago, and there was no recurrence of abscess formation. He had seen one other case of fistula in the middle of the lip of a child of five years of age, which passed into the mucous membrane of the nose. It is said that the central portion of the lip develops from a median nasal process, but apparently this consists of two small projections, which early in life became fused again, so that a median hare lip is the rarest form of deformity in the region of the upper lip.

Mr. Gunn said he did not quite agree with Mr. Boyd Barrett that it was easy to distinguish between umbilical fistula and adenoma, as they both present very similar appearances. In a case which he had at the Adelaide Hospital the mother of the child gave a very definite history of a quantity of clear fluid coming away from a protrusion in the abdominal wall, and he thought he was dealing with a case of urinary fistula. He got the nurse to collect some of the fluid from this small protrusion. As
far as could be determined it was a clear mucoid fluid such as Mr. Boyd Barrett described. The case was treated by cauterisation, and he regretted he did not know what became of the child. Although there was a clear fluid coming from the protrusion he did not think that he was dealing with a case of urinary fistula. There were two cases in the Adelaide Hospital of abscess forming over the sacro-coccygeal region. Every three or four months there is pain, and pus is passed in the motions. These symptoms subsided for a while, and again the trouble returned.

Mr. Stokes mentioned a case he saw of what he believed to be a thyro-glossal duct tumour with a sinus just above the sternum. The sinus was split up and treated, but recurred. It was scraped, and again recurred.

Mr. Pearson thought the diagnosis could often be made from the characteristic position. With regard to urachal fistulae discharging at the umbilicus one cannot be too certain of the diagnosis, because we must remember we may have complete as well as incomplete fistulae. He had a case of incomplete fistula which at first looked like a little granuloma, but it had been present since birth, and he succeeded in finding a small opening in the centre of it which extended down in the middle line towards the symphysis and stopped short. He had tried to treat the case by cauterisation, using nitrate of silver, and he thought he had succeeded, but the case continued to discharge, and he was afraid that cauterisation would not be successful. With regard to the other conditions one may get at the umbilicus he might mention vitelline ducts and cysts. There are some cases which show typical gastric mucous membrane, and he thought it impossible to explain how it came to be displaced into a position where one gets remnants of mid gut. With regard to the case mentioned by Mr. Stoney he was sorry he did not mention what kind of a case he thought it was. He thought if it was lined by compound scaly epithelium it might be one from the neurenteric canal. In reference to the fistula of the upper lip the usual explanation was that the median nasal process stops short, and that the median hare lip is due to the failure of union between the maxillary processes.
Mr. Pringle thought that where the diagnosis lies between patent urachus and intestinal fistula it might be of use to give the patient methylene blue and see if the fluid escaping became coloured.

Mr. Boyd Barrett referred to the two coccygeal cases mentioned by Mr. Stoney which were opened for abscesses, and he considered it quite possible that they were fistulae. He had seen several cases of coccygeal fistulae, but never any deep ones. He thought it a great pity that Mr. Gunn had lost sight of his case, which was probably an intestinal fistula. If ever he does happen to meet the patient again he would consider a laparotomy justifiable in her case. Mr. Stokes' case with the sinus opening in the middle line of the neck he believed to be extremely rare. They are supposed to be due to the thyro-glossal duct. Mr. Pearson had failed to cure his fistula of the umbilicus by cauterisation. He thought this was never successful. It nearly always recurred after treatment by cauterisation, which means that the lips of the duct become adherent, and a cyst is generally formed where the lining membrane is not destroyed. The only result of this treatment is the formation of cysts. The giving of methylene blue would be an aid if the urine was discharged, but if the urachus is closed at the bladder methylene blue would be of no use. He thought that where there was a probability of a fistula being connected with the ileum a laparotomy would be justifiable.
REMARKS ON "APPENDICULAR DYSPEPSIA" AND ON THE TREATMENT OF DIFFUSED PERITONITIS.

By R. CHARLES B. MAUNSELL, M.B., F.R.C.S.I.; Surgeon to Mercer's Hospital, Dublin.

[Read in the Section of Surgery, March 3, 1911.]

The subject chosen for the debate, which it is my good fortune to share in opening, is one which covers a very large field, and one about which so much has been written that it would be impossible for me to write anything original about it. Even to bring before you a rechaufée of many of its aspects would be almost unpardonable. It may not be amiss, however, to briefly mention a group of symptoms which, of late years, have been known by the title of "Appendicular Dyspepsia."

This condition has never been discussed in our Academy, and the credit of drawing public attention to it is due to Mr. Moynihan, of Leeds, although many surgeons recognised the condition previously without insisting upon its great importance.

I do not intend to quote from the work of others, but merely to state my own conception of the meaning of the term "Appendicular Dyspepsia," and briefly record the history of a few cases, from among many, which arise to my mind when looking back upon my appendix operations.

The condition presents itself in two forms—one with gastric symptoms, the other with symptoms mainly intestinal.
I do not intend to elaborate the intestinal form in this communication, but for the sake of discussion I may mention that I have seen chronic diarrhoea, chronic constipation, and symptoms akin to those of mucous colitis, cured or greatly mitigated by the removal of a chronically diseased appendix.

If I were asked for a definition of the gastric form of 'appendicular dyspepsia' I would reply:—It is a group of symptoms, and, perhaps, signs, which point so strongly to organic, gastric, or duodenal disease that it is only by most careful examination or by the supervision of definite appendicular symptoms that a correct diagnosis is probable.

The first case I will mention was seen in consultation with my colleague, Dr. Lumsden.

Case I.—Miss T. L., aged about thirty, first consulted Dr. Lumsden on June 1st, 1908. She had been suffering for three years from epigastric pain and vomiting. She was unable to eat solid food, and had existed upon "slops."

Dr. Lumsden could not elicit any definite history of haematemesis. Upon examination the only obvious sign was tenderness upon pressure in the epigastrium slightly to the right of the middle line.

On June 10th the patient reported that she suffered from attacks of diarrhoea. The epigastric pain was less, but there was severe pain in the back and much depression mentally.

For the following fourteen months, in spite of various forms of treatment, her condition remained the same.

In August, 1909, whilst in England, she suffered from a severe attack of abdominal pain, accompanied by tenderness in the right iliac fossa. During the next month Dr. Lumsden saw her twice on account of severe abdominal pain with marked tenderness in the right iliac fossa. The patient now entered hospital, and I saw her with my colleague.

Upon our first examination nothing definite was found.
but subsequently, when examining the pelvis, it was obvious that there was distinct tenderness on pressure over the brim of the pelvis on the right side. We then determined to explore in the region of the appendix, and I removed a diseased appendix which lay inwards towards the pelvic brim.

This patient has never been troubled with the old symptoms since the operation, and is a healthy, happy, young woman. From this history we see that over four years of suffering was endured before it was possible to determine the true seat of disease.

The second case is one with more purely gastric symptoms.

Case II.—Mrs. D., aged thirty-six, came to me on October 13th, 1910, giving a history of epigastric pain and discomfort and constant vomiting after meals for the past two years. She had not been able to eat any solid food, and subsisted upon milk and broths. She has had eight children, the youngest of whom is three years old. She had not menstruated for the past two years. She has suffered from obstinate constipation.

There was considerable epigastric tenderness, also some tenderness on deep pressure over the right iliac fossa. There was a slight amount of gastroptosis, and splashing could be elicited. There was no pelvic trouble of any consequence. Upon repeated careful questioning I found that for the first eighteen months of her illness the attacks of vomiting and pain were often ushered in by pain and discomfort in the right iliac fossa, but that this had not been the case during the past six months. I explored the abdominal cavity and removed a diseased appendix with immediate and, so far, permanent relief of the symptoms.

The histories of these cases are all much alike, so I will only trouble you by relating one more.

Case III.—Miss S., aged forty, came to me on March 24th, 1910, complaining of epigastric pain and vomiting which usually occurred about two hours after taking food.
She had been troubled in this manner for many years, and has lost flesh, and is sallow and old-looking. In this case also I could elicit tenderness on pressure over the right iliac fossa. By careful questioning I found that two years previously she had to remain in bed for a few days on account of severe abdominal pain accompanied by tenderness over the right iliac fossa.

Upon opening this abdomen I found a diseased and adherent appendix, together with numerous adhesions between the cæcum and ascending colon and neighbouring parts. The symptoms from which this patient suffered have completely disappeared. When making a diagnosis one must eliminate other causes of reflex pain and vomiting, especially causes arising from the pelvic organs, kidneys, or gall-bladder, &c. The gall-bladder and bile ducts are the most difficult pitfalls to guard against as far as my experience has taught me.

We must remember that the fact of proving the presence of a diseased appendix does not exclude the presence of organic, gastric, or duodenal disease. Last year I removed a diseased appendix from a young man just convalescent from a typical attack of acute appendicitis. During the previous few years he had been treated on two occasions by another surgeon for gastric ulcer. I was rather inclined to think that this might have been a mistake in diagnosis, but two months after my operation was called to see the patient as he was suffering from severe hæmatemesis and melæna. I opened the abdomen and found a large chronic ulcer of the first stage of the duodenum.

Some well-known surgeons go so far as to say that even copious hæmatemesis may be caused by chronic disease of the appendix, apart from any organic lesion of the stomach or duodenum, but personally I have not yet met with such a case, and I am rather inclined to be sceptical.

Amongst the many signs of improvement in a patient
after the removal of a chronically diseased appendix none are more marked than the disappearance of melancholy thoughts and the alteration in the colour and texture of the skin.

The second aspect of this evening's subject which I wish to bring before you is brought, not because I have any original form of treatment to advocate, but chiefly to recant some statements made by me in this Academy several years ago.

At that time I advocated thorough flushing of the peritoneal cavity with saline solution in all forms of perforative peritonitis. In that advocacy I was not alone. Some surgeons, at that period, even advising "evisceration" of the abdomen in order to cleanse it thoroughly. To explain the attitude of surgeons at that time it is necessary to mention a few items in the history of the treatment of perforative peritonitis in this country. I have no fear of contradiction when I say that about twelve years ago the mortality following perforation of an abdominal viscus was appalling. Then, chiefly owing to the work of Mayo Robson and Moynihan, perforations of the stomach were successfully treated. In carrying out this treatment many surgeons used flushing of the abdominal cavity, with subsequent closure of the abdominal incision without drainage. This method gave excellent results, and is still the best method in many cases of gastric perforation.

It was a natural mistake to apply this treatment to peritonitis following perforation of the appendix, but few went so far as to advocate closure of the abdomen without drainage. The results were extremely bad.

I think that the credit of giving the death-blow to this heroic and mistaken treatment is chiefly due to Murphy in America, whilst the scientific work of Dudgeon and Sargent in England firmly nailed the lid on its coffin.
Before I had read the work of these and other opponents of flushing I was much impressed by the fact that some very advanced cases which I had to operate upon in the country, reluctantly dispensing with flushing, recovered, whilst less advanced cases treated in hospital showed a heavy mortality.

For several years my practice has been to open the abdomen by the ordinary oblique incision, remove the gangrenous or perforated appendix and pass large "cigarette" drains from the wound to the bottom of the pelvis and to one or both kidney pouches, according to the diffusion of the purulent exudate. Silkworm gut stitches are then placed in position, but not all tied, and the patient is nursed in the "Fowler" position, whilst plenty of saline solution is administered by the rectum.

I do not find it necessary, even in the most diffused cases, to make counter openings in the loin or elsewhere. The drains are removed in from thirty-six to forty-eight hours, and more of the sutures are tied, but the wound is not completely closed.

The uniformly good results which all surgeons who use this simple form of operation obtain is, to my mind, one of the greatest surgical triumphs of recent years.

This paper was read in connection with Mr. Haughton's paper on appendicectomy. The discussion on both papers will be found after the latter. See p. 204.
APPENDICECTOMY, WITH SPECIAL REFERENCE TO THE TREATMENT OF ADHESIONS.

By W. S. HAUGHTON, M.D., B.Ch.;
Surgeon to Steevens' Hospital, Dublin.

[Read in the Section of Surgery, March 3, 1911.]

APPENDICECTOMY is now so familiar to all it is with considerable diffidence that one ventures to add any remarks on the technique of this operation.

There are, however, one or two points in the operation for the radical cure of appendicitis which deserve more attention than they commonly receive, and it is my object to-night to bring these points under the notice of the Section.

I will assume that it is generally conceded nowadays that once a person has had a definite attack of appendicitis they are liable to recurrence, and that the safest method of "prevention" is to remove the appendix by a well-planned and well-timed operation in the interval between two attacks.

This has been rendered the safest and best course by the steady growth and perfection of aseptic technique.

It is in the conduction of such an operation, carried out under the best possible conditions for the patient during the so-called "cold stage" of Continental writers, that the questions arise to which I venture to call attention.

I will not weary you by detailing the various steps of an operation which you all know well. Suffice it to say that in choosing the "route" for removal due attention
By Mr. W. S. Haughton.

should be paid to the anatomical lines of cleavage of the various muscular and aponeurotic structures to be divided, ensuring, as it does, not only easy and comfortable union in the various layers of the abdominal wall, but also preventing the subsequent occurrence of ventral hernia.

Having located the appendix, isolated it, and tied off the artery in its mesentery, we reach the question of how the amputated stump is to be dealt with.

A common practice has been and still is to "ligature" the stump, with or without the use of a crushing clamp.

The value of a crushing clamp is, of course, obvious to all practical operating surgeons: arresting tendency to bleed, squeezing out fluid elements, and leaving fibrous tissue very much reduced in bulk for the reception of its "ligature."

But the use of a "ligature" in this situation is open to the strong theoretical objection, which sometimes assumes practical proportions, that between the site of ligature and the peritoneal cavity there exists a septic focus in the lumen of appendix, small, perhaps, in itself, but armed with septic potentialities which cannot be dealt with effectively by the actual cautery or strong antiseptics.

It is undoubtedly a better practice to simply crush the appendix stump at the selected line of section—say half an inch from cæcum—with a powerful clamp of Kelly's pattern; and while the clamp is exercising its pressure to pass a "purse-string" suture round base of appendix, then divide appendix between the clamp and a Kocher's artery forceps, close to former; cauterise stump with actual cautery while still in forceps; then remove clamp, and, grasping lips of crushed section in an ordinary dissecting forceps, gently depress the stump through purse-string suture into the cæcum, drawing the purse-string tight over the nose of forceps, which is then withdrawn.
One or two Lambert's sutures over the purse-string completes this treatment of stump.

Now, if the stump exercises any septic influence it is compelled to discharge into lumen of colon instead of the peritoneal cavity. I am confident that the neglect of this method, and the adoption of a "ligature," has in more than one instance led to very troublesome adhesions, requiring subsequent operation.

Once the appendix is removed every surgeon is filled with a laudable desire to close up the abdomen as expeditiously as possible. And no doubt the removal of the appendix removes all possibility of future attacks of appendicitis. But does the removal of this organ, per se, remove all the "consequences" of its previous inflammation or attacks of inflammation.

I venture to submit that it does not, and that in many cases at this stage the operation is but half done; in which case any surgeon who yields to the temptation of closing the abdomen at this stage, without an honest search for adhesions which can be remedied, lays himself open to the charge of incompletely curing his patient.

Of course I am aware many surgeons hold that dividing adhesions does little or no good, because they are supposed to recur inevitably.

We have, however, the recorded opinion of some of the most thoughtful living surgeons that every possible attempt should be made, and made thoroughly, to divide as many adhesions as can be found capable of division.

Further, it surely is not logical to suppose that the conditions immediately following septic inflammation of the appendix, causing adhesions, are identical with those following a well-planned aseptic laparotomy, or to suppose that the simple traumatism of careful surgery will be followed by inflammation and adhesions of the same viru
lence and virulent power of contraction as belong to true septic appendicitis.

Under these circumstances let us review the nature of the adhesions commonly found in connection with this condition and their "genesis."

Adhesions may be broadly divided into two classes:—

(1) Those in which two neighbouring loops of bowel become widely adherent all over the area of their opposed surfaces. In this class there is but little prospect of cure, even if the difficult task of separation be safely accomplished. Because the raw, oozing surface thus exposed is largely composed of vascularised, fibrous tissue, denuded of its natural smooth, lubricated covering of peritoneal cells, and it is almost bound to adhere to any neighbouring surface, peritoneal or otherwise.

Such adhesions, fortunately, are not the commonest, and may best be left alone.

(2) The case is, however, quite different with those adhesions originating round the root of appendix, and extending in a radiating fashion from this centre over the caecum, ascending colon, and neighbouring part of ileo-caecal region. These adhesions may be considered more or less to begin and end on the same piece of bowel. But their effect is only obvious to the careful observer:

(1) They limit the area of the bowel (caecum) over which they extend.

(2) They limit and impede the effective area of peristaltic movement in this section of the bowel.

The results of this condition are equally obvious—i.e.:—

(1) Partial constipation leading to chronic constipation, and intestinal obstruction.

(2) Painful colicky contraction of the bowel.

(3) So-called neuralgia of appendix region.
These conditions are common enough after appendix operations if the history of patients is carefully followed up. And I have been obliged to operate subsequently, with satisfactory results, on a number of cases of my own and other people's in which the adhesion question was more or less ignored.

*Genesis.*—To define my meaning let us consider the "genesis" of this second class of adhesions—*i.e.*, the adhesion at root of appendix and extending over caecum and ascending colon—often for many inches. In one case I traced such an adhesion eight inches up ascending colon—*i.e.*, when the adhesion was divided its distal point extended spontaneously upwards eight inches from root of appendix, owing to the release of the imprisoned colon.

"In the "Genesis" of such an adhesion we must assume that in response to bacterial "irritation," originating in appendix, we have a "peritonitis" extending over caecum and colon, and pouring out a layer of "plastic lymph" over a "corresponding area."

At this point I would direct your attention to the *largeness* of this area and the *thinness* of this layer of lymph, both of which factors influence subsequent events.

When this inflammation subsides, this layer of inflammatory lymph must undergo one of two changes—either complete absorption and disappearance by "resolution" or else "organisation" into fibrous tissue.

This leads me to the most interesting observation I have ever made during practical experience of appendix cases on the operating table, and I have observed it in every case undertaken in the "interval" or "cold stage," with the exception of my first four cases, when I did not look for it.

If the caecum be carefully examined near the root of appendix, a number of very fine, adventitious blood vessels
will be seen running transversely or obliquely away from appendix, over the cæcum or ascending colon; these are superficial to peritoneal coat of the bowel and superficial to the longitudinal muscle bands. Further (and this proves them adventitious, if further proof be wanting), if one or two fingers be placed on these blood vessels, they may be made to move laterally, just as the conjunctival blood vessels move latterly over sclerotic coat of eye-ball.

They are thus found to be ramifying in a transparent membrane, movable, and superficial to the peritoneal coat of bowel.

In the dissecting-room and also in the living subject on many occasions I have searched in vain for anything resembling this condition in normal appendix cases.

In most cases of this form of adhesion a blunt dissector may be readily slipped underneath, and when divided by a scissors it is very astonishing to see the sudden expansion of the bowel, amounting to several square inches, which follows its release from this membranous adhesion, which is invisible owing to its transparency, and can only be recognised at first by its adventitious blood vessels.

Once the characters of this form of adhesion are realised it can be readily recognised in future cases, and followed up over whatever extent of the bowel it affects. And the systematic treatment of this kind of adhesion produces an immediate liberation of such a comparatively large area of cæcum and colon that this part of the operation or its neglect must exercise a considerable influence on the subsequent comfort of the patient.

The subsequent "life-history" of adhesions of this type may be thus summarised:

First—The "membranous" adhesion, transparent and extending over comparatively large area of somewhat compressed bowel.
Second—The band-like adhesion, extending over a smaller area of bowel, but gripping it more tightly. This band-like adhesion is thicker and obviously less transparent than the very thin "membranous" form. And the change in extent and thickness is probably due to the peristaltic efforts of the bowel to escape from its tormentor—which leads into the third stage.

Third—The thick, rounded, or "cord-like" adhesion, which covers a much smaller area of bowel, but constricts it very tightly like a string, producing the effects of a stricture—this form being the final stage and producing most severe symptoms if neglected.

Without discussing the point further, I hope it is clear that the question of treating adhesions is worthy of serious consideration; and that the conditions following their division in an *aseptic operation* are more favourable than those following septic inflammation of the appendix.

From those of you who know all these things I would crave indulgence for labouring the points mentioned; but I thought there might possibly be some members interested in the experience I have related.

I wish it to be distinctly understood that there is no suggestion of originality in these observations. They are simply conclusions arrived at from my own experience gleaned on the operating table.

Mr. Maunsell said he would be inclined to crush the stump close to the clamp, ligature with silk and top sew. If any sepsis would follow, the ligature would discharge into the cæcum, so there is no danger of external trouble. It was found that the method advocated by Mr. Haughton sometimes led to hæmorrhage from the bowels.

Mr. Stokes, referring to appendicular dyspepsia, mentioned a case of a gentleman who came to him with symptoms suggesting duodenal ulcer. Subsequently pain
was referable to the appendix, which was removed. It was in a very diseased condition, while the duodenum seemed normal, but he still had his dyspepsia. He thought adhesions in the chronic stage should be divided. With regard to the acute cases he mentioned the case of a student who had an acute attack of appendicitis with abscess. It was opened and drained. He eventually got a second and a third attack. On the last occasion the appendix was removed. The reason the appendix was not removed before the third attack was the fear of breaking down adhesions, but not the slightest trace of adhesions was found on opening the abdomen subsequently.

Mr. R. Harvey said with regard to acute fulminating appendicitis, where an abscess has formed, we are taught in books to cut down and evacuate the pus and not to search for the appendix. His experience showed that there are usually many abscesses, and unless the appendix is removed and all infected cavities drained, the patient goes from bad to worse. With regard to appendicular dyspepsia, he thought somewhat similar symptoms may occur in floating kidney, gall-stones, or pelvic trouble. He mentioned a case of a young girl who had amenorrhea and continuous pain. On opening her abdomen he found she had a long appendix adherent to the ovary and broad ligament. Her appendix was removed, and menstruation returned immediately. Where the appendix lies behind the cæcum the symptoms produced simulate those of acute biliary obstruction.

Mr. Stoney said there is a condition which explains the recurrence of pain when the appendix is removed, and that is the dilatation and abnormal mobility of the cæcum. There is a stasis of abnormal contents in the cæcum. The opening from the appendix into the cæcum is dilated, which results in the passage of the intestinal contents into the appendix and a chronic appendicitis is set up. These cases are supposed to be due to adhesions. He mentioned a case of a dilated and very movable cæcum which he operated upon. He sutured the cæcum into position, placing a ligature between the posterior abdominal wall and the iliac fossa and two sutures between the anterior longitudinal band and the anterior abdominal
Appendicectomy.

wall. This operation was very successful in relieving the patient's symptoms. With regard to Dr. Haughton's method of ligaturing the stump of the appendix there is danger of locking up a certain amount of sepsis between the ligature and the purse-string suture. Pus may form and burst into the peritoneal cavity. He always ligatures the appendix with catgut instead of silk, and uses silk for the purse-string suture. A distinct haemorrhage may occur from the vessels of the appendix where it is crushed and not ligatured, which haemorrhage escapes into the caecum.

Mr. Gunn said with regard to appendicular dyspepsia it was very difficult to distinguish between this and stomach troubles. He said that after removing the appendix one has taken away only a small part and not the whole of the trouble.

Mr. Blayney said it was very difficult to understand how an appendix which was distended at its distal end could produce hemorrhage from the stomach or duodenum. There must be some other condition present besides the changes in the appendix. It matters very little how you treat the appendix stump. He treated several cases by simply snipping it off. Lately he crushes the base of the appendix and cuts through the crushed portion, and invaginates by a continuous suture. He did not think there was any danger of peritonitis following the operation in the cold stage. As regards dealing with adhesions, if there are any obvious adhesions in the form of bands these ought to be divided. If there are broad adhesions there is no use dividing these, as they are sure to form again. With regard to concretions found in the appendix during the course of operations for conditions other than those of appendicitis, in some cases he squeezed the concretions back again into the caecum. Where this could be done he removed the appendix. When there is a definitely localised abscess it is a question whether one should look for the appendix or not. If the abscess is opened and drained the patient will almost certainly recover, but if one makes search for the appendix the danger is increased. It was his practice always to search for the appendix, but if this is not easily found he was content with simple drainage.
Sir C. Ball said the mortality following perforative peritonitis has much diminished since general flushing of the peritoneal cavity has been given up, but he agreed with Mr. Maunsell in flushing out in the case of perforation of the stomach, because the contents of the stomach are actively discharged and spread over a large area by active peristalsis. But in appendix cases there is no proper expulsion of the contents as there are no peristaltic movements, and subsequent sepsis is only local, and can be best met by careful swabbing out and drainage. With regard to adhesions about the caecum where there is a difficulty in finding the appendix he mobilises the caecum by dividing the parietal peritoneum on its outer side and throws the latter forward with all the adherent intestine. By getting to the back of the caecum one can nearly always come down to the region of the appendix (although the appendix itself may be invisible). By dividing the appendix at its attachment to the caecum, and then slitting the peritoneum and adhesions so as to expose the muscular coat of the appendix it is possible to work out the appendix from behind.

Mr. Maunsell said he had great success in flushing in stomach perforation. He had at first tried dry swabbing, and found he was doing harm. The peritoneal surface is knocked off more by rubbing than by flushing. He had performed the operation mentioned by Sir Charles Ball. In one case he shelled the mucous lining out of the adhesion, and the patient still had the muscular wall of the appendix in her abdomen. With regard to concretions in the appendix, if he was doing a major operation, such as removing an ovarian tumour or myoma, he would not meddle with the appendix, but if he found a diseased appendix in a small operation he would remove it. When dealing with acute appendicitis he never leaves an appendix in the abdomen, and this saves him the trouble of looking for it afterwards. He said pus can be found in the pelvis in 99 per cent. of cases.

Mr. Haughton said haemorrhage must be rare if the clamp is used and the cautery on top of it. He agreed with Mr. Blayney that it was wrong to leave broad oozing surfaces after separating adhesions.
ACUTE UNILATERAL PYELONEPHRITIS, WITH REPORT OF TWO CASES.

By SETON PRINGLE, M.B., F.R.C.S.I.; Surgeon to Mercer's Hospital, Dublin.

[Read in the Section of Surgery, April 21, 1911.]

Nowadays the abdomen is so often opened for the relief of acute disease within the peritoneal cavity I think it is of the utmost importance that those extra-abdominal conditions which closely resemble intra-abdominal lesions should receive the attention which will enable us to arrive at correct diagnoses. Most of us, I venture to say, have at one time or another found ourselves in the humiliating position of having operated on a case of supposed acute appendicitis to find a perfectly normal appendix. Therefore, I wish to call your attention to-night to a condition which closely simulates the "acute abdomen," and has frequently been the cause of symptoms which have been put down to acute trouble in connection with the appendix or gall-bladder.

The condition to which I refer is that of acute unilateral infection of the kidney, and I think its importance will be clearly demonstrated by the following report of two cases with which I have had to deal:—

Case I.—A married woman, aged twenty-four, who was apparently in perfect health except for some frequency of micturition for the preceding week, was seized with acute abdominal pain and vomiting one afternoon at 5 p.m. When the doctor, who referred her to me, was called in the
same evening at 7 o'clock he found her lying on her back with her legs drawn up. The patient, on being asked to point out the site of the pain, placed her hand so that it lay obliquely between the anterior superior spine of the right ilium and the umbilicus. The right side of the abdomen was rigid and extremely tender to touch both in front and behind in the ilio-costal space. She looked very ill, her tongue was coated, her temperature 103°, and pulse 124—the whole condition thus closely resembling that seen in acute intra-abdominal inflammation. The doctor ordered hot fomentations to be applied, and, as he suspected appendicitis, made arrangements to have her removed to hospital. On her arrival there about 11 p.m. the same night, I was called to see her. Her temperature was then still 103° and her pulse 126. The very acute pain had, however, passed off, and the tenderness was not marked except in the costovertebral angle behind, but the rigidity of the right abdominal muscles still persisted. Her tongue was dry; she complained of thirst, and was evidently in a state of acute toxæmia. As I suspected the cause of her symptoms, I ordered a catheter to be passed, and the urine thus obtained was examined. It was acid in reaction, the specific gravity was 1026, it contained a fair quantity of albumen, and there was a heavy deposit of pus, but no red blood cells were demonstrated by the microscope. The deposit also contained great clumps of a gram-negative bacillus, which I believed to be Bacillus coli communis, and this was afterwards verified by cultivation. I examined her bladder with the cystoscope next morning, and found the base of the bladder congested and the opening of the right ureter inflamed, while the left ureteric orifice was normal. The urine coming from the right side contained flakes of pus, while that obtained from the left by the ureteral catheter was normal except for a few red blood cells. The diagnosis of acute unilateral infection of the right kidney by Bacillus coli communis was therefore established.

Progress and Treatment.—Her condition remained much the same for eight days. There was moderate right-sided T.
pain and marked tenderness in the costo-vertebral angle. Her tongue was dry, and thirst was complained of. Her temperature varied from 103° to 99°, and her pulse-rate from 100° to 110°. On the third day the rigidity had relaxed somewhat, so that a large, tender kidney could be palpated. On the sixth day I gave her an inoculation of 100 million Bacilli coli communis, the organism having been obtained from her urine, where it occurred in pure culture. On the eighth day I began treatment with anti-colon serum as advised by Dudgeon. I gave the first injection of 15 c.cs. at 6 o'clock that evening. Her temperature was then 102°, and it began to fall rapidly till it reached 97° ten hours later. It then gradually rose, and was 100.6° at 6 o'clock the following (ninth) evening, when she received a further injection of 10 c.cs. The temperature again fell to normal and remained so. I should say that I had also given her large doses of sodium bicarbonate with the idea of rendering the urine neutral or alkaline. Following the fall in temperature the patient made a rapid and symptomatically perfect recovery. The urine, however, on her discharge from hospital still contained a few pus cells and bacilli. At present, some six months later, although she has received a course of inoculations with an autogenous vaccine, there are numerous pus cells in her urine, and a pure culture of coli communis can be obtained from it.

Case II.—A married woman, aged twenty-nine, was sent me by Dr. Powell, of Nenagh, suffering from chronic gastric ulcer. At the operation I found an active pyloric ulcer and also the scar of a healed ulcer, so I performed posterior gastro-jejunostomy. The patient had also a right floating kidney which was particularly easily felt, and during a normal convalescence from the gastric operation, I allowed the students to constantly palpate the organ. On the sixteenth day after the operation I demonstrated this condition to the class, and on that evening she suddenly complained of great pain in the right side of the abdomen and in the back. She vomited and felt shivery, her temperature ran up to 103°, and her pulse to over 100. On examination there was rigidity and tenderness of the right
upper abdomen and ilio-costal space, the tenderness being especially marked in costo-vertebral angle. The patient's appearance was toxæmic, her tongue dry, and she complained of thirst. Her urine, which had been normal, now contained albumen, pus, and Bacilli coli. The cystoscope revealed no inflammation of the bladder or orifice of the right ureter, while normal urine was coming from the left ureter, so that the diagnosis of acute pyelonephritis of the right kidney was established. She remained in much the same condition for eight days, the temperature varying from 99° to 103°, and as I did not at the time know that an anti-colon serum was on the market, and was afraid to use a vaccine in such an acute condition, she was treated by the older methods, and that without avail. Consequently, on the eighth day of her illness, I decided to cut down on the kidney. The kidney was almost twice its normal size, and was intensely congested, being almost black in colour. I therefore split the organ in its entire length along the convex border down into the pelvis. No abscesses were found, so I placed a rubber tube in the pelvis and drew the cut surfaces of the kidney together with a few interrupted stitches, the muscles and skin being also united around the tube brought out on the loin. The result was most satisfactory. Her temperature, which had been 103° the evening before, was only 97.3° on the evening of the day on which the operation was performed, and remained normal except for a slight rise a few days later due to some infection around the drainage tube. All her symptoms rapidly cleared up, and convalescence was uninterrupted. The tube was removed on the fifth day, and although urine escaped from the drainage tract for some weeks, this soon ceased, and she went home six weeks after the operation. On her discharge there were still a few pus cells and bacilli to be found in the urine.

The aetiology is perhaps the most interesting part in the study of this condition, and has given rise to considerable discussion. On several points all observers are agreed:

(1) The great majority of cases occur in females, and
Acute Unilateral Pyelonephritis.

although pregnancy is a common predisposing cause still the proportion of infection in non-pregnant women far exceeds that in males.

(2) The right kidney is attacked in about 90 per cent. of the cases. We must remember that the right kidney is much more often "floating" than the left, and also that it lies at a lower level, and is thus more liable to injury. In either case the organ is in a state of lowered resistance, and so more prone to infection.

(3) The infecting organism is, in the great majority of cases, the *Bacillus coli communis*, and it is usually the only organism present. Rarely cases are met with where the offending organism is one or other of the common pyogenic group.

The route by which infection reaches the kidney is, however, the point in the ætiology on which a good deal of controversy has centred. Many observers, such as Barnard, Dudgeon, Bond, and Box, contend that the infection is always an ascending one—that is, that the organism reaches the kidney by means of the ureter travelling up from the lower urinary tract. In support of this theory it is suggested that the preponderance of females in the cases reported is due to the shortness of the female urethra and to the proximity of the external meatus to the anus, from which it may easily be infected by *Bacillus coli*. Dudgeon has shown that this bacillus is found in the urine in many conditions without producing any symptoms, while Bond has demonstrated the possibility of organisms travelling up mucous passages by means of ascending currents without infecting the tract. These facts would explain not only those cases which follow what may be a mild urethritis or cystitis, but also the cases where no sign of infection of the lower urinary tract could be found on most careful examination. Bond
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further showed that any obstruction to the normal outflow along the canal increases these ascending currents. Such obstructions would occur not only in pregnancy but also in cases of movable kidney causing kinking of the ureter, and in this way the greater frequency of involvement of the right kidney could be explained. Again, the advocates of the ascending infection theory claim that it is difficult to explain unilateral involvement by a blood infection, and also the fact that as a rule no other focus is found in the body.

On the other hand others, among them Brewer and French, claim that the organisms reach the kidney by the blood stream. We know that if any break occurs in the intestinal mucous membrane, the organisms there present can pass in large numbers into the blood, and can be excreted by the healthy kidney without its becoming infected (Metcchnikoff, Canon, Buxton and Torrey, Sampson, Brewer). Brewer calls attention to this fact in supporting the hematogenous theory of unilateral renal infection, and he describes some experiments which he carried out. He injected cultures of living organisms into the veins of dogs and rabbits, and at the same time injured one of the animal’s kidneys, either by bruising it, by injecting bismuth paste into the pelvis, or by ligating one ureter. In the great majority of cases a suppurative lesion was produced in the injured kidney, while the other kidney escaped, and these lesions closely resembled those found at autopsies or operations on cases of acute unilateral pyelonephritis. He, therefore, holds that the Bacilli coli, having gained entrance into the blood stream through a perhaps minute intestinal lesion, are normally excreted by the kidney, but that if, for any reason, the resistance of one or other kidney be lessened at that particular time an acute pyelonephritis results. The condition of lowered resistance may be caused by trauma, by a stone in the
pelvis of the kidney, or by an obstruction of the ureter, such as may be caused by the pressure of a pregnant uterus or by kinking consequent on floating kidney. By the greater frequency of the latter condition—floating kidney—on the right side, and especially in females, he explains to some extent not only the relative frequency of right-sided infection, but also the fact that the majority of cases occur in women.

There can, I think, be little doubt that the infection may be carried to the kidney by either route, sometimes by the blood stream and sometimes up along the ureter, and I do not think the contention that it invariably reaches the organ in the same way can be upheld. Rolleston and Wright, in dealing with this subject, state their belief that the infection may be either hæmatogenous or urogenous, and the two cases I bring before you to-night are, to my mind, strongly confirmatory of this view. In the first case we have the history of definite bladder irritation preceding the acute symptoms and pointing to primary infection of the lower urinary tract, and this was confirmed by the cystoscopic findings; while in the second case we have the necessary break in the intestinal mucous membrane at the anastomotic opening, and the resistance of the kidney, already low, due to its being "floating," further reduced by excessive handling. We are, therefore, surely entitled to regard the infection in the first as ascending, and in the second as hæmatogenous, of which mode of infection I think the second case furnishes an almost perfect example.

**Morbid Anatomy.**—The morbid anatomy of the condition has been studied in *post-mortem* specimens and in kidneys subjected to operation. In the milder forms the organ is enlarged and intensely congested, while subcapsular hæmorrhages are present, microscopically the
condition is one of "cloudy swelling" and small round cell infiltration. In the severe cases multiple abscesses are found in addition to the enlargement, congestion, and hemorrhages. Microscopically in some the appearance is one of acute tubular nephritis going on to suppuration (Barnard)—a condition pointing to ascending infection. In others, the abscesses occur in the cortex, and the condition is one of acute suppurative interstitial nephritis, probably due to the plugging of capillaries by masses of organisms (Brewer), and pointing to a blood infection.

Symptoms and Signs.—The symptoms seen in these cases of acute infection show varying grades of severity, as might be expected from a study of the morbid anatomy. A few cases complain of irritability of the bladder for some days preceding the onset, but as a rule apparently the patient has been enjoying perfect health. In all, the onset is acute, with high temperature and rapid pulse. There is usually vomiting and headache, and in some cases rigors occur. The patient looks extremely ill and toxic. Generally the local signs are marked. There is acute pain in the back and abdomen on the affected side, which is rigid and tender, the tenderness being especially marked in the costo-vertebral angle. The kidney is often felt to be enlarged. In the most acute cases the toxæmia, is very great, and masks the local signs, so that it is very difficult to arrive at a correct diagnosis. In the milder cases the signs pointing to infection of the kidney are generally marked; but here, too, the diagnosis is often by no means easy, and stress must be laid on the tenderness in the costo-vertebral angle. The urine is usually acid, and contains a trace of albumen, pus, a few red blood cells and bacteria, usually a pure culture of Bacillus coli communis. The quantity of pus and blood varies considerably; it has been slight in several reported
cases and might easily be overlooked, while in others, such as those before you to-night, the deposit was marked. The subsequent progress of the case differs with the degree of severity of the infection. In the most severe or fulminating cases the pain and tenderness continue to be extreme, the toxæmia rapidly increases, and if effective operative interference is not at once carried out the patient quickly succumbs. In the milder cases, in which the toxæmia is not so marked, there is not the same urgency for operation, as undoubtedly the condition has a tendency to undergo spontaneous cure. The toxæmia gradually decreases, the temperature, after being irregular for some days, falls to normal, and the local symptoms subside. Some of the mild cases, however, go on to perinephritic suppuration, and some run a mild chronic course for several months.

Treatment.—In the most severe cases immediate operation is imperative, and nothing less than nephrectomy is of service. Brewer reports thirteen of these cases, five of which were treated by nephrotomy and drainage, and all died; whereas the remaining eight were subjected to nephrectomy, and all recovered. In the milder cases we are justified by the present state of our knowledge to try other methods before proceeding to operation. Urinary antiseptics are of little value, but it is well to render the urine neutral or alkaline by large doses of alkalies. Vaccines of the offending organism have been tried, and, as in most acute infections, are not of much avail; but, on the other hand, Dudgeon reports good results following the use of anti-colon serum in doses of 25 c.c.s. spread over three days, and that the serum is worth a trial is evidenced by one of my cases as reported to-night. If, however, in spite of treatment, the toxæmia is not lessening, and the local signs not clearing
up, the kidney should be cut down upon, and, if not extensively enough involved to necessitate removal, should be split open and drained by a tube brought out into the loin, as was done in my second case with complete success. In the cases which become chronic, vaccine therapy should be persevered with, care being taken to eliminate underlying conditions, such as renal calculus.

In conclusion, might I emphasise the objects which I had in view in bringing this subject before you? They were as follows:

1. That thorough examination of the urine should be made before operating on cases with signs of acute intra-abdominal trouble, more especially on the right side.

2. That in cases presenting acute abdominal symptoms examination should be made for tenderness in the costovertebral angle.

3. That if the abdomen is opened for a supposed acute intra-abdominal lesion, and no such lesion found, the kidney on the affected side should be examined, and if it be found enlarged, or the peritoneum over it congested, a further operation through the loin should be at once undertaken, provided the patient be in a condition to stand the prolongation of the operation.

LITERATURE.

Mr. Gunn said acute coli infection occurred more commonly in children than was generally supposed. Another point of some importance, that while in the majority of cases we get pus in the urine, yet in quite extensive coli infection a clear urine was common. So it is necessary to make a microscopic examination of such cases. He was called the other day to a lady who was four months pregnant, and had acute pain on the right side of the abdomen, vomiting, and temperature 103°, fast pulse and distended abdomen. The physician in charge thought she had some form of acute obstruction, the surgeon thought it was one of appendix trouble, and as coli was found in the urine, he (the speaker) thought there was a coli infection of the right kidney. On opening the abdomen he found a twisted ovary.

Mr. Stokes raised the question as to whether *B. coli* might not be present in urine without any inflammation of the kidneys or bladder being present. About four years ago he was requested by the pathologist to examine ten cases of urine from typhoid patients, and coli were found in them all.

Mr. Pringle said he had not met with cases in children. With regard to the case mentioned by Mr. Gunn he wanted to know was there any tenderness in the costo-vertebral angle behind, as great stress is laid upon it. As regards coli being found in typhoid cases, they are commonly found in urine without there being any symptoms of inflammation. If the kidney has a lowered resistance then an acute infection sets in.
NOTES ON A CASE OF EARLY OPERATION IN SACRO-ILIAC DISEASE.

By W. I. de C. WHEELER, M.D., F.R.C.S.;
Surgeon to Mercer's Hospital.

[Read in the Section of Surgery, April 21, 1911.]

A short communication on the subject of sacro-iliac joint may not be out of place, seeing that the diagnosis of the condition in the early stages is difficult and uncertain, that the treatment is, as a rule, unsatisfactory and often unscientific, and the prognosis distinctly bad.

As regards the diagnosis, very feeble attempts have been made to recognise it in its early stages, notwithstanding the fact that after suppuration has occurred the disease is an extremely fatal one.

Signs, such as pain on crowding together the iliac bones, tenderness in the front of the joint, as examined per rectum, scoliosis with drooping of the pelvis, wasting of the muscles, and pain on heavy percussion behind, may be taken as late symptoms occurring after advanced disintegration of the joint. Such symptoms cannot be elicited at the onset of a focus in the sacrum or ilium or in primary synovial disease.

The text-book signs and symptoms appear when there is extensive destruction, and present an unmistakable picture, but at a time when surgical treatment is generally futile.

It is possible, however, to arrive at an early diagnosis so essential to successful treatment, for the signs of the disease, although vague, are sufficiently constant to arouse suspicion, and an X-ray photograph, despite the
statements in the text-books to the contrary, will clinch the diagnosis in the great majority of early cases.

The most constant symptom of disease in the front of the sacro-iliac joint is sciatica, and this is not to be wondered at, seeing that the origin of the nerve lies in almost direct anterior relation to the sacro-iliac articulation.

Little emphasis is laid on this fact in general medical and surgical works, and, in consequence of this, few students will give the same thought to the possibility of sacro-iliac disease as a cause of sciatica as they do to the differential diagnosis between it and hip-joint disease or the presence of a cancerous growth in the rectum.

In addition to sciatica there is a general feeling of pain and discomfort in the sacro-gluteal and lumbar regions over a diffuse area, and occasionally some tenderness over the joint behind, which may be mistaken for a neuritis of the superior gluteal nerve.

There is a difficulty in turning in the bed and in getting into a comfortable position, and the general movements of the patient, notwithstanding the fact that the hip-joint is free and normal, remind one of the old man suffering from chronic rheumatic arthritis of the hip.

The discomfort is increased when the patient is standing on the sound limb with the affected hip abducted and rotated either in or out. Possibly the pain thus produced depends upon the action of the glutens medius, which covers the ilium in the fossa directly overlying the joint.

Occasionally the symptoms of sciatica and lumbago come on very acutely without any warning, and the temperature in commencing sacro-iliac disease may be considerably raised.

Thus, in most cases there are sufficient signs and symptoms to arouse suspicion, without delaying for the onset of those text-book phenomena which are either
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Fig. 1.—X-ray of Mr. R., showing a focus in the upper portion of the sacro-iliac joint (Dr. E. J. Watson).
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Fig. 2 X-ray photo of Case I. showing tubercular foci in sacro-iliac region a lumbo-sacral articulation.
(Dr. Hayes)
absent altogether or only appear when treatment is attended with deplorable results. If sacro-iliac disease is suspected an X-ray photograph must be taken, and in positive cases a focus will be seen either in the sacrum or ilium, or in both, as an extension from a primary synovial infection. The photograph must be a good one, but there is no difficulty as a rule in seeing the clear outline of the joint and any pathological condition which may be present. (Figs. 1 and 2.)

It is remarkable that in a disease so fatal and not very uncommon more attention has not been given to its treatment by surgical writers. It is necessary to go back a considerable number of years before finding in the literature anything more than a passing mention of its symptoms, and even then operative treatment is barely discussed. Thus, among modern writers, Jacobson devotes less than a page to the subject, Kocher's new English Translation does not mention the sacro-iliac joint, Burghard's recent operative surgery describes operation on late cases through the posterior route, and reminds us of the very unsatisfactory results. The British Medical Journal and Lancet for seven years back do not mention the subject.

Of the other writers, Erichsen says the prognosis is always unfavourable. He never saw a patient recover after full development of the disease and after suppuration had set in.

Mr. Makins describes several cases on which he operated with success after the formation of abscess, and urges the necessity for the treatment of the joint along exactly the same lines as for the disease of joints in general.

Mr. Golding Bird, in 1895, described operations designed to reach the joint in a more rational manner
than by following up sinuses, and Mr. Collier, in 1889, opened the joint for continued pain. There was no pus found in this case, but he claims to have effected a cure by the relief of tension.

Mr. Bird’s cases were diagnosed in some instances by the presence of the classical signs after the disease had been well established, in others by the pain produced when direct pressure was made over the most superficial part of the joint. The destruction of the joint was extensive in his cases, and he urges laying bare the entire articulation by wide removal of the iliac bone.

It is apparent, notwithstanding these earlier attempts to treat sacro-iliac disease in a rational manner, that X-ray photography and aseptic technique have not been utilised to develop the surgery of the joint.

Text-books on surgical anatomy are as silent on the subject of this joint as are the surgical works, the points which might be of use to the operating surgeon are carefully omitted.

Yet the joint is not inaccessible, and its anatomical relations are most encouraging from an operative point of view.

For obvious reasons, attempts to expose the articulation from behind are faulty. By this route the powerful posterior sacro-iliac ligaments offer a barrier which, if broken down, interferes immeasurably with the suspension of the sacrum and superimposed trunk on the iliac bones. Injury to these structures can only be repaired by bony ankylosis after very prolonged rest. Similarly, an exposure of the joint immediately in front of the posterior iliac spine is rendered difficult by the strong attachment of gluteus maximus, and by the great thickness of the bone in this region.

On the other hand, in the centre of the fossa occupied
Fig. 3.—Pelvis illustrating the fossa in which the gluteus medius lies. X marks the position of the upper and front portion of the joint.
Fig. 4.—Exposure of the sacro-iliac joint. A. Proper line of incision. B. Faulty approach to the joint. C. Junction of posterior and middle thirds of the crest of the ilium.
Fig. 5.—Exposure of the sacro-iliac joint. The strong aponeurosis (A) covering the gluteus medius has been laid bare.
by the gluteus medius muscle about two and a quarter inches in front of the posterior spine the bone is thin, and through this a drill or trephine will enter the front of the joint at its highest point.

The exact position can be ascertained on the bony pelvis by joining a point marking the junction of the posterior and middle thirds of the crest of the ilium with the anterior extremity of the sciatic notch. The central point of this line marks the upper and front portion of the sacro-iliac joint. (Figs. 3 and 4.)

The first impression on viewing this point on the bony pelvis, and still more so when the soft parts are in situ, is that it is considerably in front of the joint and in this situation the drill or trephine would enter the pelvis. That such is not the case is easily verified.

Assuming, now, that an X-ray photograph demonstrates an osseous focus in an early case of sacro-iliac disease, the operation is carried out as follows:—The anterior and posterior iliac spines are marked while the patient is standing, as it is difficult to accurately find the posterior spine during the operation, but with the patient in the erect position it lies at the bottom of a distinct pimple. (Fig. 4.)

The patient is placed in the position familiar in kidney operations, and the point marking the junction of the posterior and middle thirds of the crest of the ilium ascertained. An incision four inches long is made just below the crest of the ilium, the centre of which corresponds to the point thus indicated.

The superficial fatty tissue here is strong and well-marked, and lying deep to it is the strong aponeurosis covering the gluteus medius muscle. (Fig. 5.)

This fascia is divided in the length of the incision together with the underlying muscle fibres, and the bone is exposed.
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The bone is cleared with a periosteal elevator and the tissues retracted downwards. A finger now feels for the sciatic notch, and the drilling of the bone is commenced midway between this and the crest of the ilium. The best instrument is a Doyen's burr with bit and brace. It should be inclined slightly backwards until the joint is reached. (Fig. 6.)

If the bone is removed later in a slightly forward direction, the pelvic fascia underlying the iliacus muscle can be felt in front of the joint, and an iliac abscess evacuated at the very earliest moment.

If further exposure of the joint becomes necessary, the bone is gouged away in a downward direction towards the front of the sciatic notch and backwards in a direction towards the posterior inferior spine if the disease is more located in the posterior portion.

Throughout the operation it is not necessary to ligature any vessel, and the important superficial nerves lie in front.

The position for the incision is an admirable one, for this area lies developmentally between two sets of blood vessels, the segmental above and those for the limb below.

Before illustrating the remarks just made by a very brief mention of two cases, I would like to emphasise the following points:—

1. The disease, once well established, is a very fatal one. Radical treatment in the early stages offers a good chance of recovery.

2. The signs and symptoms usually described do not exist in the stages of the disease in which treatment promises most.

3. Vague and persistent pains in the sacro-gluteal and lumbar regions, especially when referred down the sciatic nerve, and there is no history of previous similar attacks
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Fig. 6.—Exposure of the sacro-iliac joint. A burr is applied midway between the crest of the ilium and the sciatic notch in the centre of the fossa occupied by the gluteus medius muscle.
which got well, should arouse suspicions of sacro-iliac disease no matter what the age of the patient.


5. Early operation to expose and remove the focus of disease is indicated in this joint as in others.

6. The joint is not inaccessible, and is easily reached through the iliac bone in the centre of the fossa occupied by the gluteus medius muscle.

A very brief description of two cases will suffice to illustrate the remarks just made.

Case I.—A man, aged forty-nine, was admitted into Mercer's Hospital in September last, recommended to me by my colleague Dr. Lumsden. He had been suffering from vague pains and stiffness in the sacra-gluteal and lumbar regions over a diffuse area for six weeks before he sought advice. The pains left the impression that the man was suffering from lumbago or sciatica. He had a disinclination to move in the bed, and he sat up and lay down with great discomfort. There were no signs of sacro-iliac disease, for which he was carefully examined. Full movements of the hip joint were demonstrated without difficulty. A rectal examination revealed no growth, and there was no tenderness in the region of the front of the joint. The urine was loaded with urates. A clear X-ray photograph was not obtained, and he left hospital before a second was done. He was back again in hospital within a month, during which time his locomotion had become more and more difficult. He could not carry his left leg forward without the assistance of his hand. On examination now a large iliac abscess was found, and the origin of his troubles, although suspected in the first instance, now became clear. The abscess cavity was very extensive, from which at least two quarts of pus escaped. When the cavity was dry and clean about two drachms of bismuth and iodoform paste, sterilised in corrosive sublimate solution, was spread over the lining granulation tissue, and the incision closed without drainage.

This case, so far, has done well. He left hospital.
within two months with the cavity completely closed, and he has been hard at labouring work ever since. A recent X-ray photograph shows the disease, which is in a quiescent state. There is a distinct focus in the ilium, the joint is disintegrated below, and the lumbar sacral articulation is also affected. (Fig. 2.) The pity is that a good skiagram was not obtained before abscess formation and the extensive destruction of bone prevented by operation. From the appearance of the photograph (although the abscess is quite healed) one cannot but fear that this man will have recurrence of his symptoms, and the prognosis is most uncertain.

Although this case cannot, so far, be considered unfavourable, the second case progressed in a most gratifying manner, after an early diagnosis and operation.

Case II.—The patient was a gentleman, who consulted me a month before the case just mentioned. His symptoms came on acutely. He was apparently in perfect health until coming in one evening after exercise he developed acute pain in the course of his sciatic nerve, which did not extend below the knee. His temperature for several days reached 102°. For a week he was treated for sciatica and influenza. The temperature fell, and the pain became less, but the general discomfort about the sacro-gluteal region was increased. Thus he could not with any comfort turn in the bed or change his position. It gave him great pain and trouble to get out of bed. Yet on examination all the movements of the hip joint were perfectly free; no pain was caused by forcibly crowding together the iliac bones. There was no tenderness on rectal examination. Sacro-iliaic disease was carefully searched for, and in doing so I had more than one occasion Dr. Moorhead in consultation. For a month nothing but palliative treatment was adopted, there being no evidence of bony disease. The patient in the meantime was improving, though his temperature was never settled, reaching 99° and 100° after intervals of no fev
He was allowed up and out for drives, but the discomfort in the sacro-gluteal region was never absent, and leaning on his sound leg produced more pain on the opposite side. Without any definite signs to guide me, I was convinced that this gentleman, between forty and fifty years of age, was suffering from sacro-iliac disease. I obtained the assistance of Dr. Watson, who kindly took the photograph and demonstrated an early focus in the bone on the iliac side of the joint apparently secondary to synovial disease. After consultation with Dr. Moorhead and Mr. Gordon, I proceeded to operate in the manner already indicated. The opening in the bone struck the front of the joint, and after a little gouging in an anterior direction about half a drachm of pus was evacuated. The finger could feel the pelvic fascia deep to the iliacus muscle, and was carried into the small cavity leading underneath the bone towards the sciatic notch. The over-hanging bone was gouged away, and the little cavity filled with iodoform and bismuth paste. After the operation the pain and discomfort disappeared like magic, the wound healed without drainage. A weak spot developed in the scar a fortnight afterwards, and on introducing a probe a little serum and bismuth were extruded. Each day there was a little bismuth on the pad covering this point. In eight weeks the patient was sent home, and is at present on the Continent. Six months after operation Dr. Rensen, a distinguished Continental surgeon whom he consulted, wrote to me as follows:—“Mr. R. is now quite well. The little fistula has closed after one injection of bismuth and vaseline. He has augmented his weight, and walks upright without any support.”

Mr. Gunn said that the method of getting at the diseased area seems to be an excellent one. He has operated on cases with sinus. The difficulty is that the disease is not confined to one spot, as there is often spinal and hip joint disease as well.

Mr. Blayney said as regards diagnosis by X-rays, it would be very difficult where the disease was confined to the
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synovial membrane, or where there was only a very small focus of disease present. He said that he knew many cases of sacro-iliac disease where sciatica was not a marked symptom. It depends upon what part of the joint the disease starts. If it begins at the posterior aspect of the joint the sciatic nerves will not be affected. The method of exposing the joint seems to be a very good one. It exposes the joint only at its anterior part, but you are probably able to follow the disease if it is more extensive. He would like to know the cause of the elevation of temperature, because tubercular processes do not cause any such elevation unless there is a secondary infection.

Mr. Pearson said that Mr. Wheeler's method of exposure is not to be recommended in primary synovial forms of the disease. Unfortunately, these are the forms which cannot be diagnosed by X-rays. Instead of making a transverse curved incision, an oblique incision downwards and forwards parallel to the upper border of the gluteus maximus, just the same as Kocher's incision for excision of the hip, but placed at a higher level, might do less anatomical damage, and one could split the fibres of the gluteus medius through this incision. If the focus appears at a lower level one should place the drill somewhat lower, as it seems to be quite easy to get into the joint at a lower level, and by that oblique incision one could get higher or lower as one wishes.

Mr. Wheeler said the synovial membrane in this joint is a very primitive structure, and there is only a very small synovial cavity, so in a large percentage of cases the disease will be found in the bone. But if the disease is confined to the synovial cavity there will be very few symptoms till the bone is attacked. He said that although sciatica is common it is not present in every case. As regards the temperature, in tuberculous lesions you do not get any elevation of temperature. He had not got a bacteriological examination of the pus. The possibility of the infection being pneumococcal had occurred to him.
ACUTE PANCREATITIS WITH PANCREATIC PSEUDO-CYST.

By R. ATKINSON STONEY, F.R.C.S.I.; Surgeon to the Royal City of Dublin Hospital.

[Read in the Section of Surgery, April 21, 1911.]

The knowledge of surgical diseases of the pancreas and their treatment is, even at the present time, still sufficiently in its infancy to make it advisable that all such cases should be reported, as, owing to the comparative rarity of these affections, it is only by the accumulation of reports by various observers that we can hope to increase our knowledge and improve our methods of diagnosis and treatment. I feel, therefore, that I need make no apology to-night for reporting the following case which presented two acute surgical conditions of the pancreas, both of which terminated in recovery.

Case.—The patient, a married woman, aged twenty, was admitted on the night of February 16th, 1910, suffering from severe pain in the right hypochondrium, with vomiting and headache. She stated that she had been quite healthy up till six weeks before, when she had been delivered of a child; the labour was quite normal. Three days afterwards she developed severe abdominal pains which came on after meals and lasted for ten minutes or so. She got better, but had a similar attack a week later, and since then the attacks became frequent and the pain was more constant.

On the evening of admission very severe pain in the epigastrium started, and the patient vomited. The pain increased in severity and the vomiting continued till admission, when the patient looked very ill, with pale
Acute Pancreatitis with Pancreatic Pseudo-Cyst.

drawn face and dilated pupils. The abdomen was somewhat distended, but was not rigid, and moved with respiration; it was tympanitic, and there was no loss of liver dulness. No tumour was palpable anywhere. The temperature was 100°, the pulse 66, and the respirations 20-30 per minute. The pain, which was of a continuous character, was most marked in the right hypochondrium below the ribs, where there was also tenderness; this pain was continuous in character, and was slightly relieved by hot fomentations. The patient vomited several times and was very restless during the night. When seen in the morning it was noticed that she was jaundiced, though the vomited material contained some bile. The urine contained albumin and bile, but no sugar, acetone or diacetic acid. One-quarter grain of morphia was given at 11 o'clock, which relieved the pain and allowed the patient to get some sleep; the pain, however, returned in the afternoon, and morphia was given again at 8 30 p.m. The patient got some sleep that night, and she was in much the same condition the next morning; the temperature had varied from 98° to 100.8°. A leucocyte count showed 22,500 white cells. The pain was still severe, and the patient was unable to retain anything given by the mouth, and more morphia had to be given that night. A diagnosis of a stone impacted in the end of the cystic duct was made, and on February 19th (the following morning) the patient was operated on. The abdomen was opened, along the outer border of the right rectus, from the margin of the ribs for five inches. Some recent adhesions between the pylorus, liver and omentum were broken down. There were numerous areas of fat necrosis in the omentum, some of them as large as a sixpence. The gall-bladder appeared normal, and no stones could be felt either in it or in the bile ducts. The pancreas felt enlarged and hard. The gall-bladder was anchored to the parietal peritoneum and opened, and found to contain clear bile, a rubber tube was fastened in it by a single catgut suture, and the wound closed in layers with catgut. That evening the temperature rose to 100.6°, the pulse was 130, and the respirations 30.
On dressing the wound the next morning it was found that there was almost no discharge of bile from the tube. The urine gave no reaction for bile when tested on this day. The bowels were moved twice by a turpentine enema, and the faeces were of a normal colour. The temperature that morning was 99.6° and the pulse 120. The patient had very little pain that day, and the evening temperature was normal. For the next week the patient went on well, the temperature being normal and the bowels moving freely with the help of occasional doses of castor oil. She complained, however, of severe pain in the region of the wound, which was dressed daily and looked healthy; very little bile, however, escaped through the tube.

On the 27th the stitches were removed, the whole wound, except where the tube emerged, being soundly healed. The following day there was a free discharge of bile from the tube, and the patient said she had no pain; on the next day, 1st March, the tube was taken out, and in the end of it about a dozen small stones were found. These were mulberry-like, light yellow, and varied from the size of small shot up to $3\frac{1}{2}$ millimetres in diameter. During the next two days there was a copious discharge of bile, and the dressings had to be changed frequently. On the 4th, the temperature rose to 103.4°, and there was no discharge of bile, only thick mucus. Thinking that a small stone might be lodged in the cystic duct, I injected about 2 oz. of olive oil into the gall-bladder. The patient complained of severe pain during the day, and a hypodermic of morphia had to be administered. For the next few days the temperature remained high, there was no discharge of bile, only mucus and pus coming, and the pain was severe. The injection of olive oil was repeated three or four times. On the 8th, the temperature fell, bile was discharging from the wound, and the patient was slightly jaundiced.

About this time cultures were made from the bile, and it was found to contain both bacillus coli and staphylococcus aureus. The following night the patient vomited several times. This vomiting increased during the following days, and on the 13th she was vomiting everything she took, and
no urine was passed, and she suffered from great thirst. That night the patient complained of pain and stiffness in the arms, and spasms of contraction in the extremities occurred at 11 p.m., 2 a.m., and 7 a.m. In the morning the arms and wrists were flexed and the fingers closely pressed together. The temperature, which had been normal for a week, was only 97°. My colleague, Dr. Moorhead, kindly saw her and agreed with me that she was suffering from tetany. 20 oz. of normal saline were injected into the axilla at 10 a.m., and a catheter was passed which drew off 7 oz. of urine; this was the total quantity secreted by the kidneys in thirty-nine hours. At 1 p.m. two pints of saline were given by the rectum, and at 5 30 another pint was given in the same way. The patient was ordered nutrient enemata of 10 oz., consisting of eggs, beef-tea, whisky, sanatogen, and milk to be given every six hours, and one pint of saline every four hours. Stupes were applied over the loins. At 8 30 a catheter was passed and 7 oz. of urine were drawn off. The patient slept well, there was no return of the stiffness or cramp, and there was no more vomiting. The temperature was 99°. The next day the patient was much better and was allowed a little fluid by the mouth. The following day 2 oz. of fluid nourishment were given every hour, and on the next day, as there was no return of the vomiting, the nutrients and saline were stopped.

For the next fortnight the patient improved steadily, though she still complained of pain in the side and back, there was a free discharge of bile from the wound; there was no jaundice; the faeces were normal in colour and there was no bile in the urine. On the 29th of March, just six weeks after the operation, it was noticed for the first time that the patient's abdomen seemed somewhat swollen, and on palpation there was some tenderness under the ribs or the left side, and it was thought that an indistinct tumour could be felt in this part of the abdomen. The pulse, temperature, and respirations were normal, the wound was becoming smaller, and the discharge of bile was lessening. On April 5th, the patient complained of pain in the centre
of the abdomen all day, and morphia had to be given that night. On the 10th, the patient was allowed up for the first time. There was now an evident swelling in the upper part of the abdomen, involving the epigastrium and the left hypochondrium. On the 14th, the drainage opening was only a pinhole, and only about 2 drms. of bile escaped in the twenty-four hours. The whole upper half of the abdomen was now greatly distended, projecting considerably above the level of the thorax; this was most marked in the centre and towards the left. There was, corresponding to this, a large area of dulness, about the size of a football, extending from the left costal margin to the umbilicus and from the left mid-Poupart line to about two inches to the right of the middle line. The swelling felt elastic, but definite fluctuation could not be obtained. A diagnosis was made of probable pancreatic cyst. On the 18th April, the patient was again brought to the theatre, and an incision was made in the middle line above the umbilicus. On opening the peritoneal cavity a large, rounded, tense fluctuating tumour was found presenting above the lesser curvature of the stomach, which organ was considerably depressed, and pushing forward the gastro-hepatic omentum, which was adherent to the tumour; the wall, fairly thick, was seized with forceps, and after packing between the edges of the wound and the cyst with compresses the cyst was drawn up into the wound and an incision was made into it. About three pints of a thin brownish fluid escaped. The inner surface of the cyst wall felt smooth, but owing to its very large size it was not possible to palpate the whole of its interior. The edges of the incision in the cyst were stitched to the abdominal wall and the wound was closed except for an opening in the centre through which a large tube was passed into the cyst. At the end of forty-eight hours the patient was dressed and about 4 ozs. of fluid drawn out of the cyst with a syringe; on the next day only about half an ounce was obtained. The stitches were removed on the eighth day, when the wound was healed, except for the drainage opening. The tube was now left out, as the amount of discharge was slight there was a little excoriation
of the skin for a short distance round the opening. The discharge soon ceased entirely, and the wound was closed by the end of the month. There was no rise of temperature at any time after this second operation, and the patient was discharged well on the 12th May. She has continued in good health since, and when examined lately there was no tumour to be felt in the abdomen. Professor Thompson kindly examined the fluid removed from the cyst, and reported that it contained trypsin, amylas, and a fat-splitting ferment. There can be no doubt, therefore, that the fluid contained in the cyst was in reality the secretion of the pancreas.

The probable sequence of events in this case was as follows:—The patient had gall-stones without marked symptoms, though they may have been the cause of the pain after confinement; one of these escaped into the bile duct and became lodged in the ampulla of Vater, so that the bile, probably infected, was forced into the pancreatic duct and set up an acute pancreatitis as shown by the pain, temperature, swelling and hardness of the pancreas, and fat necrosis found at the first operation. As the result of opening and draining the gall-bladder the stones escaped, some by the wound, others by the duodenum, and the inflammation of the pancreas subsided. But a portion of the gland more acutely inflamed than the rest, or where, perhaps, there was a hæmorrhage into its substance, sloughed and allowed the secretion to escape into the lesser sac of the peritoneum, where it collected and formed a large cyst which was opened at the second operation. Adhesions around the foramen of Winslow shut off the lesser sac from the general peritoneal cavity. That the stones were not discovered at the first operation was due to their small size and the fact that, owing to the normal appearance of the gall-bladder it was not considered necessary to explore its interior. Although the bladder
and whole length of the bile ducts were palpated, the stones were not felt, and it was thought that the jaundice was due to pressure of the swollen head of the pancreas on the common bile duct.

It is usually recommended in these cases of acute pancreatitis to incise the inflamed gland and drain it directly, but in this case the swelling did not appear to be sufficient to necessitate such extensive interference, and no part of the gland seemed more involved than the rest, nor could any definite hæmatoma be left in its substance. It must be admitted that incision and drainage might have prevented the formation of the cyst. In the second operation, the anterior route and marsupilisation were purposely chosen for opening and draining the cyst in preference to the lumbar route, as giving better access owing to the large size and prominence of the swelling. Though the lumbar route might give a better result in the case of a small true cyst of the pancreas, especially if situated towards the left in the tail of the gland, in the case of large pseudo-cysts it does not appear to offer any advantage in compensation for its unquestionably greater difficulty of performance. The result of this case would appear to bear out this contention, the operation being easily performed, and the cavity being completely closed in less than a month.

The occurrence of tetany as the result of continual vomiting added a further interest to this case, and the result of the treatment by subcutaneous and rectal injections of large quantities of normal saline left nothing to be desired.

Mr. Stokes asked was there any use in giving an enema with undigested proteid in it. As far as he knew there was no method of digestion or absorption.
The President said the mechanism by which absorption occurs is by decomposition and splitting up the proteid into substances which are capable of absorption.

Mr. Wheeler said he would like to ask does Mr. Stoney place much reliance on the chemical test for the diagnosis in acute pancreatitis. He found Sahli's test give a positive result in two cases of chronic pancreatitis. Capsules of iodoform are given, the idea being that normally the pancreatic secretion dissolves the capsules and iodine is found in the urine, whereas in bad cases of pancreatitis the capsule is not dissolved and iodine is not found in the urine.

Mr. Pearson said that after very careful experiments the Mayos have come to the conclusion that Cammidge's test is worthless, unreliable, and tedious. He wanted to know why Mr. Stoney drained the gall-bladder at the first operation, as it appeared normal, although the ultimate result justified what he did. The history of the case with the tumour appearing at the epigastrium would have suggested to his mind a subphrenic abscess rather than a pancreatic cyst. He wanted to know the reason for waiting so long in opening the abdomen the first time, considering there were obvious indications for opening sooner. As regards the administration of morphia, he said there were only two indications for its use—(1) when the diagnosis has been made and the patient has consented to operation, and (2) when the patient has refused operation.

Mr. Seton Pringle said he got a positive result in Cammidge's reaction once in six cases—namely, in a case of acute pancreatitis where the whole of the pancreas had sloughed, and abscess had formed in the lesser sac. He said in spite of the Mayos' result it was worth trying, and he did not think it a laborious process.

Mr. Stoney said that the general opinion of Cammidge's reaction was that it was practically useless, and only in a very small proportion of cases did it give any definite information. As regards treatment, it was quite evident that the patient was suffering from acute pancreatitis, but not of too severe a type, so the reason for opening the gall-bladder was that by doing so the inflammation might sub-
side, and the gland return to normal. There were stones which were overlooked owing to their small size. As regards the question of immediate operation, the patient was admitted in the middle of the night. As the temperature was only slightly raised, it was not thought there was any urgent necessity for any operation. When seen in the morning there was marked jaundice with pain, which made him conclude it was a case of biliary colic. The patient did not look as if she was suffering from anything like perforation. The possibility of the tumour being a subphrenic abscess never occurred to him, because the large size of the tumour, the fact that the temperature was normal, and, further, the fact that at no time were there septic symptoms made him inclined to think that it was either a true cyst or a pseudo-cyst in the lesser sac of the peritoneum.
SOME EXPERIENCES WITH ARSENO-BENZOL ("606") IN THE TREATMENT OF SYphilis.

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[Read in the Section of Surgery, May 26, 1911.]

The object which we have had in view in making this communication to the Academy is not so much to place on record our own experiences, which have been comparatively limited, as to elicit a discussion on a subject which has aroused a widespread interest not alone in the profession, but also among the general public. That such interest should be excited by the introduction of a drug which aims at supplementing mercury in the treatment of syphilis is not to be wondered at. To suggest that there was any other means of salvation for the syphilitic than through the purgatory of mercury seemed like the propounding of a new heresy. It is not surprising, then, that the new method of treatment should have met with a considerable amount of hostile criticism. Such criticism is still occasionally met with, but, on the whole, the verdict of those who have tried the new remedy is extremely favourable.

It may be well that we should introduce our paper with a brief history of the events which led Ehrlich to experi-
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ment with arsenical preparations in the treatment of syphilis. The fact of primary importance was the discovery by Schaudinn that syphilis was due to the spirochæta pallida, a protozoal organism. The good effects of atoxyl, an arsenical compound, in sleeping sickness—a disease due to a protozoon—suggested to Ehrlich that its use in syphilis might also be beneficial. A short experience of this drug showed that, although many cases were greatly improved, its exhibition was liable to be followed by grave complications, the chief of which was atrophy of the optic nerve. Other arsenical preparations were experimented with—arsacetin, arseno-phenyl glycin, arsено-phenol, dichlor-phenyl-arsenious acid, and, lastly, the salt known as "606," which, to give it its full chemical name, is dioxy-diamide-arseno-benzol dihydrochloride. A trial of this drug was made on animals suffering from trypanosomiasis, and on rabbits which had been inoculated on the cornea or on the scrotum with the spirochæta pallida. It was found that the corneal inflammation and the sore on the scrotum could be made to disappear by a single dose of "606," and that the spirochætes present in the tissues were completely got rid of. Further experiments were then instituted to find out the relation between the poisonous dose for the animal and the dose necessary to destroy the organisms. It was found that the relation was as 58 to 1. As this gave a very wide margin of safety it was thought justifiable to begin its administration to men. Small quantities of the drug were sent to various German clinics in order that its effect in human syphilis might be ascertained. The results obtained were such as to lead to its further trial on a more extended scale. The good effects were so marked, and made their appearance so rapidly, that glowing accounts of its success began to appear in the lay Press, and
medical men were bombarded by inquiries with regard to
the new miracle worker.

"Salversan," the commercial name for "606," is sent
out in sealed glass capsules, each containing .6 gramme.
An indifferent gas is used to fill the capsules, as it is
found that the drug rapidly decomposes when exposed to
the air. Its solutions, too, are unstable, so that they
must be freshly prepared for each administration. It is
a yellowish powder which is soluble in water, its solution
having an acid reaction. On neutralising, a precipitate
forms, which, on addition of more alkali, dissolves, being
converted into the mono—or di—sodium salt according to
the quantity of sodium used.

At first the method of administration was by intra-
muscular injection, the preparations used being the acid
solution, the alkaline solution, and a neutral suspension.
The pain produced by the acid and by the alkaline injec-
tions was very severe; the neutral suspension was not
quite so painful, but, even so, there were numerous draw-
backs to the intramuscular method. A painful tumour
formed which lasted for weeks, and was followed in some
cases by necrosis of the muscles and occasionally by
abscess. Further, the bulk of fluid required to be used
was so great that it was necessary to inject it in two
separate places. By introducing an alkaline solution
directly into a vein these drawbacks were got rid of, and in
all our cases the method of administering the drug which
we had used has been the intravenous one. It has seemed
to us that it is the method by which the object for which
it is given—the sterilisatio magna, or destruction of all
infecting organisms by a single dose—is most likely to
be accomplished. The preparation in the most con-
centrated form in which it is safe to give it is at once
distributed to every part of the body, and every spirachæte
which is present is at once brought in contact with it. When given intramuscularly, even in the dissolved condition, it must reach the blood stream through the lymphatics, and must for some time be in an extremely dilute condition; this attenuation must be still more marked when a suspension is used for injection, as, before getting into the blood, it must be dissolved by the feebly alkaline serum. If, as has been stated, there is a possibility of the more resistant organisms escaping destruction and propagating a strain of arsenic-fast spirochætes, this result, one would fancy, is less likely to occur after the intravenous injection. This method has also the advantage that it is quite painless, and that the patient can get about a few days after the injection has been given.

We have used no special apparatus in making the injection. A glass vessel capable of holding 100 c.c., a length of rubber tubing, and a medium-sized hollow needle are all that are required. Rarely have we found it necessary to cut down and expose the vein. The procedure has been as follows:—A solution is prepared by dissolving the contents of a capsule in sterile normal saline solution. The vessel containing this, and, of course, all the apparatus used, must be carefully sterilised. Twenty-three drops of a 15 per cent. solution of caustic soda are added. This causes a precipitate to form, which dissolves on vigorous shaking. Further normal saline is added, making up the quantity to 300 c.c.; thus, each 50 c.c. contains .1 gramme. If the solution is not perfectly clear more alkali is added; it should then be strained through fine muslin, so as to be sure that not the smallest particle of solid matter will get into the vein. The proper preparation of the required solution requires great care, and we are much indebted in this regard to
Dr. O’Kelly, Assistant Pathologist at the Mater Hospital, for placing his highly skilled services at our disposal.

The needle and vessel, having been connected by the tubing, are filled with saline solution. A bandage is fitted on the arm so as to cause venous engorgement. The most prominent vein is then selected; the skin over this is pinched up, and the needle is pushed through the skin in a direction parallel to the vein. By a sudden thrust the superficial wall of the vein can usually be punctured, and the needle pushed on in the lumen of the vein. The constricting bandage is now removed and some saline solution is allowed to flow in; if it flows freely and no tumour forms in the subcutaneous tissue, one may be quite sure the needle is in the vein. 50 c.c. of the Salvarsan solution is then poured into the vessel, and the infusion is continued till the required amount has been introduced—that is, 250 c.c., as the dose we have given was .5 gramme. Some more saline is then run through, and an aseptic dressing applied. No pain is felt by the patient during the infusion.

The sequence of events after the injection has been much the same in all the cases. In the course of an hour the patient gets a shivering fit and vomits; the temperature becomes raised usually to about 102° F. In two of the cases diarrhœa was present as well. Within twenty-four hours all these symptoms disappear, and he feels quite well.

We shall now give briefly an account of the cases which have been treated by us:—

Case I.—P. McM., contracted syphilis ten years previously. Was treated by mercury for a year. Since the has suffered from time to time from ulcers in the legs, the scars of which can be seen. Present trouble a gumma o
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Liner aspect of upper lip to right of middle line. Lip much swollen and stiff, gumma broken down, has characteristic lough on surface. Wassermann reaction positive. Injected on February 20th. Vomiting with elevation of temperature to 101° on same evening. Next morning stated that stiffness has nearly gone; ulcer cleaned up and swelling disappeared in two days. Complete healing did not, however, take place for three weeks. No recurrences so far.

Case II.—J. H., aged twenty-four, contracted the disease three months previously. No specific treatment. Numerous ulcers on dorsum, sides and under surface of tongue; ulcers in both tonsils, has much pain on swallowing. Injected March 2nd. Vomiting and elevation of temperature to 102° on same evening. Next morning pain on swallowing much less, and completely gone in three days. Notable improvement in condition of ulcers on second day, but healing not complete till end of three weeks. No recurrence.

Case III.—J. M., aged thirty-three, had a chancre eight years ago, received mercurial treatment for six months. Secondary symptoms slight. About four years ago had a gumma of frontal bone, which broke down and took some months to heal. Depressed scar to be seen at its site. At present both knees are swollen; they contain free fluid, and are painful. Nodes are present on both tibiae, which are also painful. Injected May 17th. Pain was sensibly diminished the next day, and disappeared in four days. The swelling of the knees reduced more slowly, but is now nearly gone.

Case IV.—J. S., aged about thirty-six, had a chancre eight years ago. Was treated by inunctions and medicine for six months, and says that off and on he has been taking medicine ever since. Has had ulcers on his legs from time to time, and has never felt well since he contracted the disease. At present suffers from sore throat and hoarseness, as scaly red patches on his face. Injected on March 21st. Had vomiting and diarrhoea, with elevation of temperature to 100° on same evening. Felt quite well next morning, and from that time began to experience a marked improve-
ment in his general condition. Seen a week later the skin patches were much improved, and on the fourteenth day had almost disappeared. States he has not felt so well for the past eight years. The hoarseness and pain in throat have quite left him.

Case V.—P. M'G., syphilitic lupus of face. Contracted disease years ago. Present trouble began in November, 1910. A swelling formed on his face over right malar bone; this was opened, but has continued to discharge ever since. About Christmas small sores appeared in the neighbourhood; these continued to form, so that now they cover the whole of the right cheek, the bridge of the nose, the adjacent part of the left cheek, and the greater part of the upper lip. The sores are covered by seabs, and there is marked inflammatory swelling of the skin between them. The upper lip is stiff and swollen from œdema, the lower eyelid is also œdematous. Intravenous injection on March 21st of .5 gramme. Vomiting and diarrhoea, with elevation of temperature, on same evening. A rapid improvement set in at once; the inflammatory swelling and œdema were the first to subside, and then the ulcers quickly healed up; the discharge from the gumma lessened and disappeared and he was discharged from hospital on the fourteenth day after the injection, cicatrisation of the sores being almost complete.

Case VI.—P. S., aged thirty-three, had a venereal sore seven years ago. Had a course of treatment for six months. No secondary symptoms. Four years later had ulcers on skin, for which he was treated by mercury and iodide of potassium. The ulcers disappeared, and he remained well till about six months ago. Then he began to suffer from pain in the left tibia, on which a thickening soon appeared. His general health also became poor. Injected with . gramme on May 15th. The usual chilly sensations, with elevation of temperature, followed the same evening. Next morning was feeling well, and the pain in the leg was much less. A rapid improvement in his general condition took place. Three days after the injection he stated that he felt bett
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han he had been for several months. The pain in the tibia was gone in a few days, but the swelling has not yet diminished. However, one could not expect much change in a bony swelling in a fortnight.

Case VII.—H. B., aged thirty-five, complained of sore throat, which had persisted for four weeks. On inspection, a deep, erythematous rash was seen to cover the posterior pharyngeal wall, while both tonsils, the anterior pillars of the fauces, and the inner surface of the cheeks showed characteristic ulceration of the "snail-track" variety. Infection was admitted by the patient, and had occurred three months previously. The scar was healed, but a distinct cicatrix corresponded to the site of inoculation. The entire body was covered by a papular rash, more or less symmetrically distributed. The patient had received no treatment, and Wassermann's reaction was positive. The patient was admitted to hospital, and received 0.6 gramme of Salvarsan as an intravenous injection. A prominent vein of the forearm was selected, and the needle was pushed in through the skin without any difficulty. On that night the patient was somewhat restless, and complained of headache and nausea. The temperature was 102°. The following morning his condition was much improved, and the temperature normal. At the end of three days he was free from discomfort, and there was no soreness at the site of the injection. On the third day the ulceration began to clear up, and by the end of the week had completely disappeared. The rash began to fade about the end of the first week, but did not vanish entirely till the end of the third. At this period the patient felt quite well—in his own words, "better than he had done for quite a long time." He was under observation for three months, and during that time there had been no sign of recurrence.

Case VIII.—H. O'N. was infected six months before consulting Mr. Dempsey for sore throat. He was thirty years of age, and had a healthy appearance. His throat showed the characteristic appearances of secondary syphilis. Mucous patches were present on the tonsils, along the edges
of the tongue, and on the inside of the cheeks. There was no rash, and the chancre had healed. Before consulting me, this patient had been under mercurial treatment for two months, but the throat had proved obstinate, and showed no improvement. I gave him a vigorous course of the same drug for a month, and, as at the end of that time he was but little better, I admitted him to hospital, and gave him .6 gramme of Salvarsan by the intravenous method. He had precisely the same disturbances as in the case just described, and after twenty-four hours was quite well again. The mucous patches began to clear on the second day, and at the end of eight days his throat was quite normal again. Treated three months ago, there has been no recurrence.

Case IX.—H. D., aged twenty-seven, complained of radiating pains in the head and nasal obstruction accompanied by a nasty discharge, which sometimes contained blood. On examination I found a large ulcer of the septum, with sharp-cut edges, and floor covered with pus. The septum alone was affected. Infection had taken place three years previously, and practically no treatment had been taken. The blood gave a positive Wassermann. I injected .6 gramme of Salvarsan in the usual way, the injection being followed by precisely the same train of symptoms as already described in the other cases. After five days the appearance of the ulcer improved, the discharge lessened, and the edges presented a clean look. Rapid improvement continued, and at the end of four weeks the only trouble experienced by the patient was due to the formation of crusts which adhered to the new surface. Injected two months ago there is so far no recurrence.

Case X.—J. N., aged thirty-four, was admitted under Mr Dempsey's care into the Mater Hospital suffering from pronounced dyspnoea. On examination this was found to be due to òedema of the larynx, and the breathing was so embarrassed that I found it necessary to perform trachea
otomy. Patient gave a history of gradually increasing hoarseness extending over a period of some weeks, and then a sudden difficulty in breathing. On examination, both vocal cords were found extremely swollen and congested, so much so that they filled almost the entire lumen of the larynx, and prevented a view of the upper portion of the trachea, which was subsequently seen to be almost completely filled by a yellowish, sloughy-like mass. The ary-epiglottic folds were very oedematous. The patient gave a history of infection some six years previously, for which he had been treated for only a short period. I decided on trying the effect of anti-syphilitic treatment, and accordingly put the patient on 20 grain doses of K. I. three times daily. Marked improvement followed, the oedema cleared up, and the cords reduced somewhat in size, but breathing without the tube was still impossible. I tried every combination of the usual tertiary remedies, but the larynx showed no further improvement. The patient's blood gave a positive Wassermann, so I decided to try the effect of an injection of Salvarsan. Accordingly, .6 gramme was introduced into a vein of the forearm, and in this case I found it impossible to enter the vein without cutting down on it. In this connection I would suggest that in the case of small veins it is good practice to expose the vessel in the first instance. It is only a fortnight since this patient was injected, but up to now there is no noticeable improvement.

The number of cases which we have treated is ten. Three of these were in the secondary stage, and in them there was a rapid disappearance of the syphilitic manifestations and a marked improvement in the general condition. The remaining seven were in the tertiary stage, and in them, with one exception, the local and constitutional symptoms underwent a rapid change for the better. The one exception was treated only a fortnight ago; but still, judging from the other cases, one would have expected improvement to have already begun. However, tertiary lesions have sometimes been slow in
beginning to heal, and cases are on record where as much as four weeks have elapsed before an improvement took place, so that we do not abandon hope in this case yet.

We have not been able to get the Wassermann reaction examined for, except in three cases, before treatment. None of the cases were examined after treatment, so that we cannot say whether the reaction became negative or not.

In no case did we give a second injection. In this we were probably in error, as it is beginning to be recognised that recurrence of symptoms, after one injection, may be looked for in a small number of cases. Recurrences, however, are much less frequent than formerly, now that the intravenous method of administration has supplanted the intramuscular one. In Schreiber’s statistics it is recorded that in the cases treated by intramuscular injection there were 18 recurrences in 152 cases; whereas there was but one in 565 cases after intravenous injection. In this case the Wassermann reaction remained positive, but no second injection was given.

The time which has elapsed since the introduction of arsено-benzol in the treatment of syphilis is comparatively short, but sufficient cases are now on record to warrant the conclusion that this drug is the most potent curative agent which we possess. But apart altogether from its practical value, its introduction marks an enormous advance in the therapeutics of infective disease. For the first time a successful attempt has been made to destroy, by means of a chemical compound, the parasites of disease, after they have secured a hold on the tissues of the body, without, at the same time, seriously damaging the tissues in which they reside. The use of antisepsics in destroying parasites outside the body led to the greatest advance in surgery which was made since the
world began. We have no doubt that the introduction of Salvarsan marks the beginning of a new epoch in therapeutics.

Colonel Birt said he had listened to the paper with great pleasure because the experiences corresponded with the observations that he and others had made in the army. He had had the opportunity of watching the effects of "606" in about one hundred cases, and in some cases they had simply been marvellous. The common syphilis might heal without any drug, or with small doses of mercury, but these cases were those which had resisted the ordinary treatment. They had been through a prolonged course without effect. When treated with "606" they had, with two or three exceptions, recovered. The only case in which absolute failure had been observed was one of hereditary syphilis with interstitial keratitis. Two or three cases had undergone relapses several weeks after injection, but a second injection gave good results.

Captain Frost said the first case he treated was a man who had practically no palate. In the course of six months no treatment of mercury or iodides had any effect. He was very debilitated. He gave him about .2 gram of "606," and his temperature went to 104°. Ten days later he gave another .2 gram. Between the two there was a tremendous improvement. After the second dose he discharged him from hospital. In six weeks he came back with ulceration of the palate. He gave him .4 gram, and he bled profusely. After the injection the whole thing cleared up. Most of the cases of relapse cleared up absolutely in five or six days after a second dose, except one or two with skin eruptions. It was hard to tell when the secondary symptoms had healed. The cases had had about 15 to 20 grains of mercury by the intramuscular method. In one particular case there were about six weeks between the first and second injections. The patient was collapsed, and had weak pulse for about six hours. He was the only case he had seen that had been weak after injections. He was convinced that two
injections were necessary, and that the second should be larger.

Dr. Henry Moore said he thought the question of the repeating of the dosage could only be arrived at by testing the Wassermann reaction. He had had a patient who got a chancre on his lip. He got scarlet fever, and during that time he showed no symptoms of syphilis, although he should have had the secondary eruption at the time. About a month after he had been cured of the fever the chancre on his lip became larger, and he had a secondary eruption. He gave him "606," and the chancre healed in eight or nine days. His eruption and glands commenced to subside, and he gave a modified plus and minus reaction. Six weeks later he still gave a modified reaction, and he gave him another injection of .5 gram. A week afterwards he gave a negative reaction, and he did not see him for some time. Later he came to him again. His eruption had not completely disappeared, and he gave a modified reaction. Should he again give him "606," or treat with mercury by intramuscular injections before giving "606" again? Continental observers stated that the action of "606" was intensified by mercury, and cases had done best with him with a course of intramuscular injection of mercury before the "606."

Dr. Pugin Meldon said he had tried subcutaneous injection with very disappointing results. He injected about .45 gram in a neutral solution. The next day the rash came out, and a fresh crop of syphilis appeared, and he put the patient on mercury again. Since then he had injected intravenously. He had repeated in about three cases, making the second dose smaller in the case of a man. In a case of primary syphilis, if there was much induration one would expect that the place where the spirochætes would not have a chance of coming in contact with the blood would be in the sore, and he thought it was wise to excise the sore. In women with fat arms it was very troublesome to get into the vein. It was often necessary to expose the vein, and then put a needle into it.

Mr. W. I. de C. Wheeler said the difficulty of the intra-
muscular method was very much less than that of the intravenous method. In his experience, if a perfectly sterile injection was put into the muscles of the back, and the place was massaged, there would not be the slightest trace of hardness or pain after the injection. He had had a case where the needle was in the vein, and nothing would persuade the solution to go in by gravitation. It might be that the needle was transfixed in the lateral wall of the vein. In another case a good deal of the solution got into the tissues of the arm, though massage brought it down. These were difficulties of the intravenous method, and should be pointed out. If the intramuscular method was efficacious without difficulties, then it was the right method, though the weight of evidence was in favour of the intravenous method.

Dr. Pearson asked if Mr. Blayney considered it wise to give an intravenous injection to an out-patient, or whether he considered the patient should be confined to bed for at least twenty-four hours. One case which was given a mercury injection prejudiced him against the intramuscular method. The patient developed a very hard swelling, and though it subsided they decided at the Adelaide Hospital to abandon the intramuscular method. As regards the after-treatment, the "606" had not yet stood the test of time, and he would recommend mercury subsequently by the mouth.

Dr. O'Farrell said he found the amount of alkali recommended was not enough to dissolve the solution, and he had found it necessary to add more. He had no difficulty with the inflow of the solution. Perhaps the needle in Mr. Wheeler's case was blocked with rust after boiling.

Dr. Charles said a patient injected with "606" in August and September, nine months later showed well-marked syphilitic lesions in the mouth and head. He was now under treatment with mercury. He found that after "606" patients did well with the combination of mercury. He was in favour of the intramuscular method, it was so much easier.

The President said he had used "606" in about twenty
cases, chiefly in hospital. The method he employed was practically the same as Mr. Blayney's, with the difference that he used a small glass filter in the middle of the tube between the reservoir and the needle, which stopped anything gross or mechanical from getting into the vein. He had had a difficulty in striking the vein in some of his earlier cases, especially in well-nourished women. It occurred to him to have the arm steeped in hot water to dilate the vein, and this had made a great difference. In addition, he tied a strip of bandage above the elbow to congest the forearm. He had had a special case of a boy, now about twenty, who was brought to him as a child suffering from congenital syphilis. His infection must have been virulent. Although a very decent boy himself, he was brought up in bad surroundings, and had been badly nourished. He had gummata in various parts of his body, one of which nearly choked him. He lost practically every bone in his nose. He had no septum, and the base of his skull and pharynx were obvious. He treated him by every possible method, but on each occasion when they got him well he relapsed. He determined that if he could get hold of a dose of "606" he would give it to the boy. He gave him the first dose that came into the country by subcutaneous injection, and he was now in perfect condition. The lupoid cases were the most resistant to the influence. He had had only one case of recurrence, in a lactating woman. In three weeks time she was as bad as ever, but he gave a second intravenous injection combined with mercury, and since then she was perfectly well. He noticed an extraordinary improvement in the health of the child. The most terrible of all cases of syphilis were those where it attacked the organs of a special sense. In one or two cases he had the satisfaction of finding the hearing in labyrinthine disease improve to a considerable degree. It was, of course, much better to get the patient into hospital if it could be managed; but it was better to give the injection and let the patient go, with proper instructions, than not to give it at all.

The Secretary, in reply, said an improvement in the
general condition of the patient had been noticed apart altogether from the improvement in the local lesions. Interstitial keratitis seemed to be the syphilitic lesion most difficult to treat. In advanced phthisis bleeding took place after injections, and early lung trouble required their cautious administration. In a certain number of cases after injection there had been a lesion of the auditory nerve. Further experience showed that this was not the result of arsenical poisoning. Such a lesion was amenable to further syphilitic treatment, and was really a recurrence of the syphilis. The recommendation apparently now was that the second injection should be given five or six days after the first. The real question between the two methods was which was the better. It was not a question of difficulty, but of results. The amount of alkali required seemed to vary; apparently there was not an absolutely fixed amount, and the directions given were evidently only approximate.
CARCINOMA OF THE LARYNX.

By ROBERT H. WOODS, M.B., P.R.C.S.I.; Surgeon for the Throat, Nose, and Ear to Sir Patrick Dun's Hospital.

[Read in the Section of Surgery, May 26, 1911.]

I should not trouble you with a paper on so well-worn a subject as extirpation of the larynx were it not that the following case has points of quite exceptional interest:—

The patient, M. W. L., aged fifty-one, was sent to me by Dr. William Hamilton, of Boyle, in November, 1909. He complained of pain and difficulty in swallowing for about two months, the pain latterly increasing in severity and shooting towards the right ear, while the dysphagia was so great that only fluid and so-called semi-fluid foods could be taken.

The patient had a very intolerant throat, and examination could only be conducted after cocaïn had been applied. The right side of the larynx was seen to be occupied by a large growth having an ulcerated surface presenting backwards and outwards towards the sinus pyriformis and the opening of the gullet. A gland or two over the carotid sheath at the level of the upper border of the thyroid cartilage were palpably but not greatly enlarged. There was no history of syphilis or any other important complaint. A diagnosis of malignant disease was made, and a portion of the growth removed for microscopic examination. Dr. Earl, to whom it was submitted, reported it to be a flat-celled carcinoma. Sir Charles Ball saw the patient in consultation with Dr. Hamilton and me, and agreed that total extirpation of the larynx offered the only hope of saving the patient's life. This course was agreed to by the patient.

With a view to lessening the severity of the sepsis which
necessarily follows such an operation, it was decided to administer a vaccine beforehand. Accordingly, a swab was taken from the patient's throat, and found by Professor O'Sullivan to contain a variety of micro-organisms, the most numerous being *Staphylococcus albus*; but *Staphylococcus aureus* and a streptococcus were also found. His index for *Staphylococcus albus* was taken and found to be 0.9. A vaccine was made from these organisms containing 30 million *albus*, 15 million *aureus* and about 8 million of the streptococcus in 0.5 c.cm. This dose was injected into the back between the shoulders two days before operation. The index for *Staphylococcus albus* of the blood taken thirty hours after injection was 1.2.

Operation was performed on November 27th, 1909, Professor E. H. Taylor assisting. Tracheotomy was first performed, and the anaesthetic administered through the tracheotomy tube during the subsequent steps. The larynx was opened in the middle line, and an examination made in order to see if it would be possible to take away the growth without sacrificing the whole organ. The tumour occupied the whole of the right wall of the larynx, and involved the back wall so extensively that anything short of total extirpation was out of the question. The larynx was accordingly removed, and the trachea sutured to the skin above the suprasternal notch. A rubber tube, 9 mm. in diameter, was introduced through the nose into the stomach. The sac of the pharynx was sutured in the middle line so as to shut off the food and air passages the one from the other. The operation lasted a little over two hours. His pulse and colour were both good when he was put back to bed.

The patient went on very well for some days. His temperature remained below 100° F., but he suffered considerably from cough and bronchitis accompanied by profuse purulent liquid expectoration, and his sleep was meagre. Two days after operation the patient was seized with a fit of coughing, in which the feeding tube was expelled through the nose. It was replaced successfully, though with some difficulty. On the third day the character of the expectoration changed. It became thicker, and more like muco-pus.
Carcinoma of the Larynx.

He still slept badly—about four hours per diem—and never more than half an hour at a time. On the fourth day some superficial necrosis showed itself in the wound, and the skin for a considerable distance round the tracheal opening was acutely inflamed.

On the fifth day, while dozing after a hypodermic injection of morphine, a gush of blood came from near the base of the tongue. It was stopped by pressure and adrenalin. At 4 a.m. on the sixth day bleeding again took place, this time fairly profusely, but it yielded to the same treatment. Later on I was summoned, to find that the plug, which had been put in to stop the bleeding, had nauseated him, and in his distress he had pulled out both it and the trachea tube; and in the coughing which followed, the stomach tube was expelled through the wound in the throat. The dressings, &c., were replaced, except that, as the pharyngeal stitches had given way, the feeding tube was introduced through the neck wound, to the patient’s great relief; he was intolerant from the very first of the tube passing through the pharynx.

The quantity of blood lost in these haemorrhages did not exceed two pints. There was no obvious defect in its clotting power. His pulse and respirations remained quiet, and the temperature varied between 98° and 100° F. It was observed about this time that the wound showed no tendency to repair, but rather to extend its boundaries. The anterior surfaces where they had been stitched together had failed to adhere, and the granulations were of the poorest quality. It looked, in fact, as if the tissues were slowly melting away. A silkworm suture by which the trachea was anchored to the skin in front of the suprasternal notch, cut through, and the resulting ulcer, so far from healing, gradually eroded the skin until it reached the dimensions of a half-crown piece. Some calcium iodide was given in a mixture.

At 5 a.m. on the eleventh day there was a little more haemorrhage, but it was easily controlled. At 3 30 a.m., at 6 30 a.m., and again at 10 30 a.m. on the twelfth day there were more haemorrhages. Some calcium chloride was administered in the hope of checking the bleeding, though it appeared to be caused rather by the ulcerative process.
described above than by any defective blood condition. At this time the wound presented a startling appearance. Every stitch had cut through, and no two surfaces had united. The trachea was isolated and surrounded by sloughing areolar tissue, through which it rose and fell with great amplitude of movement during coughing. The pus from the sloughing tissues was very profuse, and it was only by unremitting care on the part of the nurses that it could be kept from overflowing into the trachea. A suction apparatus, such as was devised by me, and described in the "Transactions of the Royal Academy of Medicine in Ireland," Vol. XIV., 1896, rendered the most admirable service.

On the sixteenth day after operation a decided improvement took place in the appearance of the granulations. They began to grow abundantly, and from this date the wound filled in with wonderful rapidity.

By the end of December healing was practically complete, but the upper borders of the trachea and gullet had epithelialised, thus establishing a fistula between the two tubes. His cough had disappeared; he was able to sit up for seven hours daily, and the general condition was excellent. On January 19th, 1910, with Sir Charles Ball's assistance, I closed the fistula, but no union took place and the edges separated.

By this time the glands over the right carotid sheath had grown to a considerable size, and it was obvious that their removal—postponed in the hope of our being able to close the fistula—could not be much longer delayed. This operation was carried out on January 29th, Sir Charles Ball assisting. One of the glands was so adherent to the jugular that it was necessary to excise between two inches and three inches of that vein. The glands when examined were found to be cancerous. The wound healed by immediate union.

During all this time food was given by the tube introduced through the fistula. In February I devised a tracheal tube on the principle of Hahn's cannula, by which a rubber covering could be inflated so as to block the fistula, and permit swallowing by the mouth. This worked quite successfully, and on February 21st he tasted his first meal of half a dozen
Carcinoma of the Larynx.

oysters. He left the nursing home on March 19th, and was recommended to present himself for examination at least monthly.

The patient was examined repeatedly after this time. The fistula remained open, but owing to the inflating device on the cannula swallowing could be carried on quite comfortably, while at other than meal-times the fistula enabled him to talk with quite a good voice. In fact, the advantage of being able to talk far outweighed any inconvenience resulting from the fistula, and the patient decided not to have it closed. He was seen at intervals until early in July, 1910. Examination then revealed no recurrence of the disease either in the throat or in the glands.

The patient's next visit was three months later, when, on October 19th, a tumour of considerable size—about that of a walnut—was found on the right side of the neck, the centre of the growth corresponding to the level of the bifurcation of the carotid. It was stony hard, and an obvious recurrence of the disease. There was no ulceration in the pharynx.

It was decided that an attempt should be made to remove it, and on October 22nd the patient was again anaesthetised, Dr. Mulloy, of Kensington, being present. When the tumour was defined and separated from the tissues in front and at its inner and outer sides, we found that, as not uncommonly happens, the condition was worse than appeared from external examination. The growth involved not only the common carotid artery but the prevertebral muscles. Professor E. H. Taylor, who assisted, entirely agreed with me that it was inadvisable to proceed further. Complete removal could only be accomplished by exposing a healthy portion of the common carotid, ligaturing it, and dissecting the cancerous mass up from below, and sacrificing the pneumogastric nerve—an operation that would almost certainly have been fatal, while it gave little or no prospect of eradicating the disease. The lower portion of the mass involved the thyroid gland. Accordingly, the operation was abandoned, except that a small portion was removed for microscopic examination. This proved to be cancerous.
On October 28th I asked Sir Charles Ball to see the patient with me in consultation. He suggested that thyroid extract should be given, and quoted two cases of inoperable cancerous lymphatic glands in which that remedy had been tried with success, though he had tried it in others without any good effect. Three-grain doses of the extract in the form of tabloids (B. W. & Co.) were prescribed three times daily.

On November 22nd—that is, a calendar month after the last operation—the patient came to me complaining of discomfort at the front of the neck low down to the right of the tracheal opening. The skin was tense and fluctuating, but there was no redness of the skin or tenderness. This fluctuating tumour was separated from the hard mass above by a groove which had apparently been caused by the tracheotomy tape. A small incision was made and several drachms of curdy whitish matter evacuated. It was obviously not pus, and I considered it was caused by some necrotic process taking place in the growth; and I remember thinking it strange that if necrotic softening were taking place it should not preferably start where the tumour was bulkiest and most remote from the blood supply. The possible influence of the patient's thyroid gland did not then occur to me. After daily examination for three or four days no more discharge appeared, and the wound was allowed to close.

The patient returned on December 12th with the same symptoms as on November 22nd. The same treatment was carried out, but this time the discharge persisted longer; the wound was finally allowed to close in the first week of January.

The treatment by thyroid extract was continued without interruption from October 28th. At the end of three months (January 24th, 1911) it appeared to me that the growth was not quite so large, but I hardly trusted my observation. At the end of four months there was no possible room for doubt on the matter. The infiltration round the glands had disappeared, and the glands themselves were certainly smaller; and at this time (February 27th, 1911) the patient reported that for the last week he had been quite free from the shooting
pains on the right side of the neck which had been in existence for a considerable time previously.

The glands continued to diminish in size. Early in March the dose of thyroid was increased to 12 grains per diem. The patient had previously tried to take this amount, but could not tolerate it. On March 27th there was no more than a suspicion of any abnormality in the neck, and six months after the treatment was started no evidence of tumour could be felt. Sir Thornley Stoker saw the patient with me in consultation at this time, and advised the continuation of the thyroid treatment.

So far as I know, the only cases in which success by this treatment has been recorded have been those of lymphatic recurrences where the primary growth was first extirpated.

This, the most recent of a series of well-authenticated cases of cancerous recurrences in lymphatic glands cured by thyroid extract, opens up some very important and interesting questions.

1. What is the nature of the influence of the thyroid extract, and by what process did the tumour melt?
2. How far does the existence of such cases go to prove that one of the conditions necessary for the occurrence of cancer in an individual is some defective or abnormal internal secretion.
3. Why does thyroid extract cure a few cases and leave others unaffected?
4. What was the influence, if any, of the vaccine on the subsequent suppuration?

Whatever answers are given to these questions, we must keep in view the important fact that cancer can sometimes be made to undergo a recessional cure under the influence of an animal extract, and that such a fact justifies us in looking forward with confidence to the time when the secret of its existence will be wrested from this scourge.
of humanity, and its prevention, or at least its cure, merely a question of the knowledge and the drug.

Mr. P. J. Dempsey expressed the gratification of the Section for the presentation of such an extraordinary case. The method described of removing the larynx appeared to him to be very much more favourable than the old-fashioned method, and he did not think that under similar conditions of sepsis in the olden times the patient could have survived. The feeding tube appeared to have been a great difficulty. Nature, fortunately or unfortunately, had made a fistula, and it was questionable if it would not be an advantage to have had it done at first. He had read of successes by thyroid treatment, and he had read of failures, and the long period mentioned by Mr. Woods before any change was noticed—practically three months—suggested that the failures might have been due to the treatment not being extended long enough. The removal of the thyroid gland for the cure of cancer had been reported, with some cures, but they were cases of primary growths, not of secondary glandular affections.

Dr. Pearson said he had been present at all the operations, and his own impression at the last was that the patient had not very long to live. He was surprised to see the patient later in a theatre, looking in good health, and showing very little sign of swelling about his neck. He would like to know what symptoms of intolerance the patient displayed when put on the 12 grains of thyroid extract every day.

Dr. H. Stokes asked whether the curious form of ulceration could have been due to any other organism that got in after the operation. Recently he saw a bladder case in which the bacillus was isolated, and after inoculation with it everything cleared up. He understood that in giving Coley's fluid for sarcoma, much benefit was not got until the growth began to break down; it was probable that the thyroid extract had the same effect as Coley's fluid.

The President, in reply, said that the thyroid extract
affected the patient by causing nausea. A culture was made from the pus of the suppurating wound, and was found to be pure staphylococcus albus. With regard to the influence of the injection beforehand, he thought it was open to suspicion that that might have been the cause of the suppuration. He did not think they knew where they were in vaccine therapy, and in future he would use it much more sparingly than in the past.
ABSTRACTS.

SECTION OF SURGERY.

Friday, November 18, 1910.

The President (Mr. R. H. Woods), in the Chair.

Transperitoneal Cystotomy, with Report of a Case.

Mr. Seton Pringle read a paper on above. See page 115, ante.

X-rays in the Diagnosis of Urinary Calculi.

Mr. Maurice Hayes read a paper on above. See page 125, ante.

Diagnosis of Renal Calculus.

Mr. Gunn and Dr. Harvey read a paper on above. See page 135, ante.

Friday, December 9, 1910.

The President in the Chair.

The Treatment of Laryngeal Stricture.

Mr. Robert Woods (President of the Section) read a paper on this subject, which was illustrated by lantern slides. See page 145, ante.

The Diagnostic Value of the Luys' Segregator.

Mr. Stoney read a paper on above. See page 158, ante.
Section of Surgery.

The Treatment of Chronic Urethritis by Use of Ointments in the Urethra and Demonstration of New Instrument for the Application of Same.

Mr. Andrew Charles read a paper on above, and demonstrated the instrument. See page 166, ante.

Friday, January 20, 1911.

Mr. Seton Pringle in the Chair.

Two Unusual Gall-bladder Cases. (a) Foreign Body.
(b) Typhoid Carrier.

Mr. W. S. Haughton read a paper on above. See page 172, ante.

Congenital Fistulae.

Mr. Boyd Barrett read a paper on above. See page 183, ante.

Friday, March 3, 1911.

The President in the Chair.

The meeting was devoted to a discussion on inflammatory affections of the vermiform appendix. The discussion was opened by two papers:

(1) On Appendicular Dyspepsia and on the Treatment of Diffuse Peritonitis, by Mr. R. C. B. Maunsell. See page 192, ante.

(2) Appendicectomy, with Special Reference to the Treatment of Adhesions, by Mr. W. S. Haughton. See page 198, ante.

Friday, April 21, 1911.

The President in the Chair.

Acute Unilateral Pyelonephritis, with Report of two Cases.

Mr. Pringle read a paper on this subject. See page 206, ante.
Notes on Case of Early Operation on Sacro-iliac Disease.

Mr. W. I. de C. Wheeler read a paper on above, which he illustrated with lantern slides. See page 219, ante.

Case of Acute Pancreatitis followed by formation of Cysts.

Mr. A. S. Stoney read a paper on above. See page 229, ante.

Friday, May 26, 1911.

The President in the Chair.

Some Experiences with Arseno-benzol ("606") in the Treatment of Syphilis.

Mr. Blayney read a paper on the above, written by Mr. P. J. Dempsey and himself. See page 238, ante.

A Case of Carcinoma of the Larynx.

The President (Mr. R. H. Woods) read a paper on above. See page 254, ante.
SECTION OF OBSTETRICS.

SOME CONTINENTAL EXPERIENCES—BERLIN, VIENNA, MUNICH, BERN, AND PARIS.

By HENRY JELLETT, M.D., F.R.C.P.I.;
Master of the Rotunda Hospital.

[Delivered to the Section of Obstetrics, October 28, 1910.]

When I looked about for a subject on which to make a few remarks introductory to the Session, it occurred to me that perhaps the members of the Section would be interested in a brief description of my recent visit to Continental gynaecological clinics. Much of what I shall have to say deals with matters already well known to many of you, but it may be new to others who have not recently been abroad. One is necessarily tied to a comparatively short time for a holiday of this kind, and consequently one has to make up one's mind as to whether it is better to spend all or the greater part of that time in one place, or to try to see several places. I chose the latter alternative, and consequently my stay in some of the places was very brief. I went first to Berlin, where I stayed for a fortnight, then to Vienna, where I stayed a week, then to Munich for three days, then to Bern for two days, and then to Paris, also for two days. When at Berlin I saw operations performed by Professors Bumm, Strassmann, Theodore Landau, Casper and Mackenrodt; at Vienna, by Professors Wertheim and Schauta, and their respective assistants, particularly Dr. Weibel; at
Munich, by Professors Döderlein and Klein, and one by one of Professor Amann's assistants; and at Bern, by Professor Kocher. I was unable to see any operations while in Paris.

Berlin is a very large and very modern city. It is also capable of attaining to a degree of heat which we fortunately escape here. To this, perhaps, is due the fact that I have not quite so pleasant recollections of it as of other places, and that I was unable to do as much there as I should have liked. I do not think that I am using more than a permissible amount of exaggeration when I say that practically the whole time I was there the temperature varied between 81° F. and 90° F. in the shade, and that in many of the operating rooms it reached a height of 120° F.

Professor Bumm, at the Charité, is naturally the central figure amongst Berlin gynaecologists, now that Professor Olshausen has practically retired, a prominence which he owes both to his high position and to his writings. By this time I fancy he has left the Charité to take up Professor Olshausen's Clinic. His former post was offered to Professor Döderlein while I was at Munich, but the latter declined it. Professor Bumm himself, in common with every one whom I came across while away, was most kind, and did everything possible to enable one to see his operations. I saw him perform some eight altogether, and though perhaps he was not quite so rapid an operator as others, his technique and asepsis appeared to me to be very good. As I shall have occasion to criticise different points in the technique of different operators, I should like first to make it plain that I am doing so solely on what I saw, and consequently with an imperfect knowledge of the reasons which may have led to a particular action in a particular case.
The eight operations I saw at this clinic were as follows:—Two cases of retroverted adherent uterus, operated on by the abdominal route; one Alexander's operation; one vaginal hysterectomy for prolapse; one total abdominal hysterectomy for myoma; two Wertheim's operations, one for cancer of the fundus, the second for cancer of the cervix. Vaginal hysterectomy for prolapse seems to be a favourite operation in Berlin. I was given to understand by an assistant that a prolapsed uterus was a good one on which to demonstrate vaginal hysterectomy. My informant considered that there were better ways of dealing with prolapse, and I must say I agree with him. The hysterectomy was always followed by a perineorrhaphy, and the particular form of operation adopted seemed to me to be a poor one, in which sufficient attention was not paid to the restoration of the torn muscle.

When removing a myomatous uterus, Bumm removed also both ovaries. They did not seem to be diseased, and I cannot say why he did so. I am not very clear as to the exact form of hysterectomy he adopted, except that it was total, and, apparently, somewhat on the line of Doyen's operation. The hysterectomies which I saw in other clinics were usually supra-vaginal, and I do not think that I saw, either in Germany or Austria, a form of hysterectomy which I considered as quick or as safe an operation as the side-to-side operation originated by Kelly.

The two Wertheim operations performed by Bumm call for some notice. He does not perform the classical Wertheim operation, in which the first step consists in the separation of the bladder from the uterus. He begins rather on the extreme left—i.e., at the outer edge of the left broad ligament—and, after cutting it across, ties the uterine artery far out, and dissects it off the ureter. He
then treats the opposite side in the same manner, and, this finished, he proceeds with the separation of the bladder. If the case is clearly operable, I think this method possesses some advantages, but, if the case turns out to be inoperable, owing to the involvement of the bladder, the operation has already reached a very advanced stage before the extent of the bladder involvement is determined. The first case on which Bumm operated appeared to be a very satisfactory one, as the cancer was fundal, and there was no involvement of the parametrium. There were some large, isolated glands, which were removed. The haemostasis was perfect, but the bladder was opened, and the left ureter was cut at the very last stage of the operation—after it was supposed to have been isolated—during the division of the vaginal wall. One of two things caused this, either an aberrant blood vessel was mistaken for and isolated instead of the ureter, or else the assistant who was holding the ureter out of the way during the division of the vaginal wall allowed it to slip from beneath the protecting retractor. Bumm implanted the ureter very neatly into the bladder, but I do not think that the patient recovered, as, when I saw her two days later, they thought very badly of her. The second Wertheim's operation was much more difficult, owing to extension of the growth.

Bumm lectures each day, except Saturday, from 12 to 1 p.m., and then operates for one or two hours. The hörsaal is large, but, though the light appears to be good, there was usually electric light as well, during abdominal operations. Both obstetrical and gynaecological cases were brought in during the lecture ready for examination or operation, and were examined by certain students. All the operations I saw were performed here except the Wertheim operations, which were done in the aseptic
theatre. Here the light was bad, as there was no headlight and abundance of direct sunlight. I do not know how the Professor saw to operate at all owing to the great contrasts of light, even though he had the help of a powerful searchlight, whose rays came through an opening in the wall on to a mirror, which deflected them into the pelvic cavity.

The lighting of all the Berlin theatres that I saw, with the exception of Professor Strassmann’s, was defective, as in nearly every case the light was either insufficient or excessive, owing to direct sunlight.

Professor Bumm very kindly allowed me to see over the hospital, which is new. It consists of two parts—one for gynaecology, the other for midwifery—and each of these is again sub-divided into an aseptic and a septic side. The wards are disappointing, as they are what we should consider much too small for a modern hospital. I do not know what to say about the nursing. In the theatre it was very good, but the smell in the wards was unnecessary, and the septic wards particularly stank of pus, so that it was evident something was wrong somewhere.

I was particularly interested in the labour ward. It is a very large room, with, of course, washable and impermeable walls and floor. I think the floor was made of unglazed white tiles, and the walls half-way up of glazed white tiles, and above that paint. The floor was covered with bedsteads, both round the walls and in the centre, on which the patients were confined. There was no attempt to screen them off from one another. All operations, except laparotomies and pubiotomies, were done on an ordinary Schröder’s chair, which was screened off in one corner. No one was allowed into the ward without a white coat and overshoes.
Some Continental Experiences.

I did not see much of the pathological laboratories of the Charité, but what I did see seemed to be very excellent.

All the other clinics which I saw in Berlin were private, although in some free patients were taken also. At Professor Strassmann's private clinic in Schumanstrasse I saw about half-a-dozen operations. Two of these were inductions of labour, and in both of them a hydrostatic dilator resembling Champetier de Ribes' bag was used in preference to bougies. Strassmann is particularly strong on vaginal work, and if any one could convert me to the vaginal route as opposed to the abdominal, he would, but, even with his brilliant example, I do not know that I am prepared to be converted at present, or, rather, to be reconverted after a relapse. While I was there he did three vaginal hysterectomies—one for prolapse, one a morcellement operation for a very large myomatous uterus, and the third for a myomatous uterus complicated by an ovarian abscess. The second case—for the large myoma—was a most interesting example of gynaecological gymnastics. It was admirably performed, but it seemed to me that the choice of the vaginal route implied a certain amount of distrust in his asepsis, as the abdominal operation would have been both quicker and easier. Strassmann also performed a vesical-fixation of the uterus. Here again I should have thought Alexander's operation preferable.

Strassmann's Clinic is the newest in Berlin, and is extremely fine. The theatre was almost the only one I saw in which the light was as perfect as one could wish. He is a most capable operator, and his asepsis was good. Personally, I am extremely indebted to him for his kindness to me while I was in Berlin. Any one going from here to Berlin is sure of a most kind reception from him,
as he remembers with evident pleasure his stay in Dublin. He introduced me to a meeting of the Gessellschaft f. Geb. und Gyn., at which I had the pleasure of meeting Professor Olshausen, amongst others.

I was unfortunate in being unable to go oftener to see Professor Theodor Landau operate. He was in Paris when I arrived at Berlin, and then, on several occasions on which he invited me to his clinic I was unable to go. I saw him, however, perform hysterectomy for myoma in one case. I also paid many visits to his pathological laboratory, which is under the direction of Professor Pick, who very kindly gave me half-a-dozen demonstrations in gynaecological pathology. The pathological collection at the Landau Clinic is magnificent, both in its completeness and in the perfection of the specimens. Professor Pick's collection of gynaecological sections is, I suppose, one of the best, if not the best, in the world, and if one could only spend six months with him, one could get a really valuable insight into the elements of gynaecological and obstetrical pathology. Amongst the many sections which Professor Pick showed me in the course of half-a-dozen demonstrations were sections showing decidual formation in the pelvic peritoneum in pelvic peritoneal adhesions, and in the tubes in tubal pregnancy; chorion-epithelioma occurring in chorionic metastases, apart from any tumour formation in the uterus; and chorion wandering cells in the uterine wall as a positive sign of a recent or present pregnancy.

I saw Professor Mackenrodt operating on two occasions, on which he performed six operations. Of these the most interesting to me were two cases of Alexander's operation, which he performs after a method of his own. This differs from the usual method in two ways. In the first place, he never operates on more than one ligament,
and in the second place he makes use of the ligament in an ingenious fashion to close the fascia, which he has divided over the inguinal canal. This he does by button-holing the fascia in a couple of places at each side of the canal, and then, using the ligament as a lace, he laces the fascia together with it, threading it in and out of the button-holes. He considers that this closes the fascia very perfectly, and also fixes the ligament securely. He is very positive that operation on a single ligament is sufficient, and if he is right it is a saving of time in doing the operation. I do not, however, like to imitate him, since any failures I have had after Alexander's operation all occurred in patients in whom only one ligament had been shortened, and I am not disposed to think that the button-holing of the fascia can make any material difference in this respect.

The theatre in Professor Mackenrodt's private Clinic was quite the hottest place of the kind I have ever been in, and judging from the outside temperature at the time, and the fact that a blazing sun was shining full on a glass roof, I do not think that the inside temperature can have been far below 120° F.

The only other Berlin operator whom I saw was Professor Casper, to whose clinic I went hoping to see some bladder surgery in the female. As it happened, however, the only case on that day was one of lithotrity in the male, an operation which he performed with great rapidity.

I have made a few criticisms of individual practitioners in Berlin as I have gone along, and there are now a few general points which I should like to mention.

In the first place, as regards aseptic technique as carried out in Berlin, it appeared to me to be good so far as it went, but incomplete. The operating rooms and
the sterilising arrangements appeared to be altogether admirable. Gloves were almost universally worn. The dress of the operator was not always carefully put on, and masks were never worn. The assistants and the operators for the most part sweated freely into the wounds, partly as a result of the great heat and partly because they never removed their collars while operating.

The anaesthesia at Berlin was also uniformly good, and requires special notice. Every patient brought into the operating room had received that morning one or two injections of scopolomorphia. The usual practice was to divide the vial which I show into two doses, the first half being given two hours before the operation, and the second half one hour before. In some cases no further anaesthetic was given, but, whenever necessary, as a rule chloroform was used. For large operations the Roth-Dräger apparatus was used, and to this I will refer later. Strassmann used stovaine in several instances, and I particularly noted that he did not seem to mind placing the head of the patient slightly lower than the point of injection.

A transverse incision in opening the abdomen instead of the more usual vertical one was almost universally adopted. Indeed, I think that the only instances in which I saw a vertical incision made was by Bumm, when doing Wertheim's operation. A transverse incision may be a most effectual preventer of subsequent hernia, but as affording a convenient aperture through which to operate it seems to be a failure. If one could divide the rectus transversely also, the opening would then be sufficient, but this is naturally not advisable. There also appears to be some risk of opening the bladder, and I saw this done on one occasion.

In vaginal hysterectomy and anterior colpotomy there
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were two points of procedure which seemed good. The first was the use of a curved Muzeux forceps for pulling down the cervix. It enables considerable traction to be made, and, at the same time, it does not easily tear away. The second point was the making of an anterior vaginal flap, in order to give wider access to the parametrium. This was done by making, instead of the usual vertical median incision in the anterior vaginal wall, two vertical lateral incisions, which started below as far down the vaginal wall as was accessible, and ended in the usual circular incision at the cervico-vaginal junction. This flap was then detached, except at its urethral end, and drawn forwards out of the way. At the end of the operation it was brought back into place and fastened by a few sutures. It facilitated the operation to a marked extent by increasing the size of the opening in the vaginal vault.

After leaving Berlin I went to Vienna, where I stayed for a week. There I saw Professor Wertheim and his assistant Dr. Weibel operating on several occasions, and also Professor Schauta and his assistants. I had written to Professor Wertheim from Berlin, and he very kindly arranged for a couple of cancer operations to be done while I was there. The first of these was for extensive carcinoma of the cervix with large iliac glands. He made a very complete sub-peritoneal dissection on the right side, and the whole operation was most thorough and well carried out. The second case was also for cervical cancer, but it proved impossible. Professor Wertheim kindly asked me to examine the patient before the operation, and I should have had no hesitation in regarding the cancer as inoperable. However, he insisted very strongly on the point that one could never tell whether it was or was not inoperable until the abdomen was
opened and the exact extent of the peripheral involvement determined.

Wertheim also performed an extra-peritoneal Caesarian section. The foetus was delivered by means of a special pair of very much curved forceps. After closing the uterine incision he took particular care to bring the peritoneum back into place, and then to bring the bladder back over the peritoneum, so that the bladder might lie between the uterus and the anterior abdominal wall, and so prevent any cicatricial adhesions between the two. I was told that he preferred the intra-peritoneal operation, and only performed the extra-peritoneal operation if the patient was already septic or if she had been examined by a midwife.

Weibel, Wertheim's first assistant, is a particularly fine operator, and, indeed, the Americans at Vienna told me that they considered he performed Wertheim's operation better than Wertheim himself. The operations I saw him perform were one case of extra-uterine pregnancy; one case of vaginal morcellement of a myomatous uterus; and one case of removal of an old ovarian cyst which had been tapped many times and which was tremendously adherent. In the morcellement case the uterus was the size of a five or six months' pregnancy, and he removed it in quite a different manner to Professor Strassmann. He first separated the vagina and tied the uterine arteries, then pushed up the cervix and attacked the fundus, cutting cylindrical pieces out of it with a special knife. The operation lasted an hour and a half, and was very neatly performed. It would have been quite easy by the abdominal route, and I cannot say why the vaginal was chosen.

Weibel also performed an interposition of the uterus for prolapse, accompanied by shortening of the utero-
sacral ligaments, an operation I was specially anxious to see, but unfortunately I missed it. The utero-sacral ligaments were shortened by the abdominal route, and the operation was quite distinct from the method of shortening by the vaginal route, which I think I may claim to have originated. Vaginal shortening is naturally a more convenient operation than is abdominal shortening if the rest of the operation is also vaginal, and I hope Dr. Weibel may be induced to try my method. He told me he had not heard of any operation of the kind. If there is an opportunity during the present Session I should like to bring the steps of the operation to the notice of the Section, as I have found it to be a successful one.

I was shown over the maternity portion of Professor Wertheim's Clinic by his first maternity assistant. It is a magnificent building, quite new and up-to-date in every respect, except that the wards appear to be unduly small. In most respects it was very similar to the maternity part of the Charité at Berlin. I was told that in Wertheim's and in Schauta's Clinic, taken together, some 6,600 patients were confined annually, and about another 1,200 in the Midwives' Clinic. In the first-named two there are altogether 460 beds. The opening of the new hospital has had a curious effect on the status of the patients, for, whereas in the old hospital 95 per cent. of the births were illegitimate, in the new hospital the percentage has fallen to between 60 and 70 per cent. Cases of provoked abortion are very common, and a short time before I was there five cases of phosphorus poisoning were admitted, due to eating matches with the object of bringing on abortion. The practice, I was told, was prevalent, and was frequently fatal.

I saw two cases of osteo-malacia, of which one was acute and was awaiting operation, while the other had been
operated on, and her pain, which prior to operation was very severe, had ceased permanently the day after operation. The usual treatment adopted is the hypodermic injection of 1 cc. of a 1 in 1,000 solution of adrenalin daily for twenty days. Fifty per cent. of the cases are cured in this way, but if, after twenty days, there is no improvement, operation is performed.

The treatment of eclampsia consists in immediate delivery, associated with the use of chloral hydrate and morphia. Chloroform is also given whenever any movement of the patient is necessary, and even during the passage of a catheter. Salines are not given if the urine contains albumin. If the secretion of urine ceases, renal decortication is performed.

All patients are allowed out of bed twelve hours after delivery if they wish, and if the previous events have been normal. They get up for ten minutes or so the first day, twenty minutes the next day, and so on.

Professor Schöttlander, the pathologist to the Clinic, had a most magnificent laboratory and specimens. He came to the Clinic with von Rosthorn, and has apparently settled down there with Wertheim. He was most kind, and took the greatest trouble to show me his department. He also gave me some of his complete sections of the uterus, which I hope to exhibit on a subsequent occasion.

It made one very sad to see the way in which gynaecological pathology is studied, and its practical details carried out both in Vienna and in Berlin. If an operator wants to see a specimen he removed five years before, he sends a number to the pathologist, and he gets the specimen in a few minutes beautifully preserved, and mounted in a manner that enables one to see its details. The laboratories and museums are models of neatness. The pathologists were properly paid, and were, in the
large hospitals, whole-time and resident officers. But even when they were not whole-time officers, their work seemed to be carried out in a thoroughly systematic manner.

I saw very few operations in Professor Schauta's Clinic. The Professor himself I only saw operating in private, and any operations in the Frauenenclinic were performed by his assistants, one of whom was a very excellent operator.

As regards general points of practice at Vienna, there are few points which call for comment. In the first place, both the asepsis and the anaesthesia were uniformly poor. The poor asepsis appeared to be reflected in the fact that operations were so constantly performed by the vaginal instead of by the abdominal route. The light in Wertheim's operating theatre was not good, due partly to the proximity of the students and partly to the absence of head-light. A new theatre is, however, in process of building on a higher floor where a top light can be obtained. Silk was almost as universally used as catgut was in Berlin. There was a tendency to remove more than was necessary at operations. Wertheim's Clinic possessed a very fine hörssaal. There was a most magnificent lantern for demonstration purposes, and there was a hydraulic arrangement by means of which, on pressing a button, outside shutters slid into place over all the windows.

As at Berlin the form of abdominal hysterectomy adopted appeared to me to be slow, and to be inferior to the Kelly operation. On the other hand, the operative technique, apart from the form of operation adopted, is extremely rapid, and one main cause of the rapidity was the manner in which the required instrument was always ready to be placed in the operator's hand, and that it was
placed there in the correct position for him to grasp it and to use it. Extreme pains were taken to teach the nurses exactly the manner in which to do this, and although the mode of teaching them was what we should consider harsh, it was apparently effective, and its result was a material shortening of the operation.

I was only able to stay for three days at Munich, although, for many reasons, I should greatly like to have stayed there longer. I saw the clinics of Professors Döderlein, Klein, and Amann, and saw the two former operate. Amann was unable to operate the day I was at his clinic, and one of his assistants took his place. Professor Döderlein had a very large class of about 300. The hörsaal in which he lectured was old, and not very suitable for its purpose. The day I was there he received the congratulations of his students on his having been offered the appointment at the Charité in Berlin, which appointment he, however, subsequently declined, on the understanding, I believe, that if he remained in Munich a new hospital would be built for him. During his lecture a patient with an abdominal tumour was brought in and examined externally and by the vagina by several students. This arrangement was similar to that adopted by Bumm, and shows the very great advantage of having the lecture hall actually in the hospital. After the lecture the Professor went to the operating theatre, where he operated upon the same patient. Such a procedure does not commend itself to one, as it would seem to increase materially the risk of infection. The operating theatre was a new one, and had been originally built for the Midwives' Clinic. The light was very bad, and the Professor operated practically entirely by artificial light, projected from a large searchlight in an adjoining room.
The tumour in this case turned out to be an ovarian dermoid, associated with ovarian cancer. It was firmly adherent to the rectum, and Professor Döderlein removed some six inches of the latter, performing an end-to-end anastomosis. He was again to operate the following day, but, in consequence of his nomination to Berlin, he was engaged with the Minister, and was unable to do so.

Apart from the matter of performing an abdominal operation upon a patient who had just been examined by several students, Professor Döderlein's asepsis appeared to be good. Gloves were worn, but no masks. The abdomen was painted over prior to the operation with a special solution of india-rubber in order to prevent any contact with the skin.

Professor Klein operated in his private hospital, which was very well arranged and possessed an excellent operating theatre. The operation was a vaginal hysterectomy for metritis and possible malignancy. There was nothing special about the operation, except that he sutured the ligaments before removing the uterus. He was one of the nicest men I met, and did everything he could to help me. Amongst other things, he gave me an introduction to Geheimrath von Winckel, who lives some little way out of Munich, and whom I was very glad to have had an opportunity of meeting, as he is now an old man.

Professor Amann was unable to operate, and I consequently saw one of his assistants instead. His operating theatre was bad in every respect, and was very dirty. It was quite impossible to carry out aseptic technique in it, but he hoped to have a new clinic in a couple of years. The operation was one of interposition of the uterus for prolapse, and, curiously enough, the first assistant, Dr. Albrecht, had just operated on another case in which a
prolapse had recurred after an interposition done some years previously. In that case the uterus was very small, and apparently did not offer sufficient resistance to support itself. The operation I saw was done by an assistant who had not performed it previously, and who operated under the directions of Dr. Albrecht. Consequently, it was not as valuable a demonstration as it might have been. At the time I had never performed an interposition, and criticising it from that standpoint, it seemed to me that a small uterus must prolapse again owing to simple dropping of the cervix, unless the posterior ligaments were first shortened. If this be done, I think the operation must be a very good one, and, as I mentioned before, Weibel, when operating at Vienna, adopted such a procedure.

Since coming home I have performed the operation once, in a case of very marked cystocele and prolapse of the bladder, and in this case the posterior ligaments were intact, so that no shortening was necessary.

The anaesthesia in Munich was good, and closely followed the methods adopted in Berlin. Both Professors Döderlein and Klein used the Roth-Dräger apparatus, by means of which ether and chloroform can be given either singly or in combination, and in which oxygen is inhaled instead of air. Professor Klein told me that its use practically did away with post-operative vomiting. Out of 49 cases in which he had used it, vomiting had occurred only in one. He also gave scopolmorphia before the operation, and he appeared to view with equanimity the fact that in some cases it caused an increase of pulse-rate up to nearly 160 beats per minute. He attributes the absence of vomiting to the small amount of the anaesthetic used, and to the continuous administration of oxygen. The drawbacks to the apparatus are,
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first, its price, and, secondly, that it is large and unportable.

From Munich I went to Bern, where I saw Professor Kocher and Dr. von Felenberg. Professor Kocher operated on a couple of cases of enlarged thyroid and on a case of gall-stones. His technique and theatre arrangements were, of course, all that one could desire, but as he has already many ardent disciples in Dublin, I need not enter into description of them. Dr. von Felenberg took me over his private hospital, which more nearly resembled similar institutions here than any others I saw. It was opened by a syndicate of medical men, who sent their patients there, and it seemed to be up-to-date in all respects. Dr. von Felenberg told me that at Bern they attached so much value to iodine as a skin disinfectant that they had practically abandoned all preliminary preparation of the field of operation, and were content to paint iodine on the skin immediately before operation. He also told me that they never used scopomorphia, as they considered it too risky, but that they very commonly gave veronal instead the night before the operation, and again an hour before the operation, with the objects of calming an excitable patient, giving a good night's sleep and preventing vomiting. I should like to draw special attention to this, as I have tried it in a number of cases since coming home, and have found that it bears out all he said about it. In the first dozen cases in which I gave it there was not any post-operative vomiting. Two patients were each anaesthetised twice. The first anaesthetic was given only for a short time during an examination, the second anaesthetic was given during an operation, which in the case of the second patient was an abdominal section lasting an hour. In each case no veronal was given before the first anaesthetic, while before
the second anaesthetic five grains were given the night before and five grains an hour before the operation. In each case the first anaesthetic was followed by considerable vomiting, and after the second anaesthetic there was no post-operative vomiting. In the case of a third patient on whom an abdominal section lasting three hours was performed, and who had been vomiting intermittently for some months prior to the operation, there was no post-operative vomiting, although in consequence of the patient's condition vomiting started twenty-four hours after the operation. I do not know who was first responsible for discovering the value of veronal in these cases, but of its value, in some cases at all events, there can be no doubt.

After leaving Bern I went to Paris, and there, so far as seeing anything of gynaecological interest was concerned, I was very unfortunate. I tried to see Professors Pozzi and Pinard and Drs. Tuffier and Doyen. I saw Professor Pinard, but he was just going to lecture, and was not operating. I was told on telephoning to Dr. Doyen's hospital that he would operate each morning at 10 a.m., but when I got to the hospital and sent up my card I was told that there were operations, but none that I could see, and that there would not be any. I could not help thinking that perhaps if I had been a general practitioner I should have seen some of them. I saw parts of the Hôpital Baudelocque and Hôpital Beaujon. Both of them are very old, and seemed to be quite opposed to one's ideas of a modern hospital.

Looking back in a general way on all I saw, it certainly struck me that while we may have much here to be sorry for, we have nothing of which to be ashamed. We must be sincerely sorry that local conditions are such that in a city the size of Dublin there are some six or
eight small general hospitals, instead of one, or at most two large ones. This is the fundamental factor which prevents the Dublin school from assuming the importance its previous history and its talent entitles it to, and until it is remedied it is hopeless for it to think of competing with other more fortunately situated places as a great teaching centre. The waste of money that present arrangements are responsible for is in turn responsible for the poorness of equipment of our hospitals as compared with those of Germany and Austria. While the small number of patients under the care of each individual member of the staff is responsible for the fact that we operate less rapidly, and that the general management of our operating theatres is inferior to the German.

So far, so bad. On other points there is no need to be pessimistic. Our asepsis at its best in Dublin is, I think, better than the German asepsis, and is very far ahead of the Austrian as I saw it. Taking it all round, it is quite equal to the German. Our nursing and the management of the wards is decidedly better than either the one or the other. Lastly, we seem to be better able than other places to appreciate at a proper value the work of other places and their advances, and to adopt them whenever they are worthy of adoption. It seemed to me that Berlin, to justify its existence as a teaching centre, had to differ from Vienna, and similarly that Vienna had to differ from Berlin, while both places were quite unable to accept anything from America or from this country. As a result each place was weak in some particular respect in which it might just as well have been strong, and in which it could have been strong by learning from outside. The Dublin school of midwifery and gynaecology owes its greatest strength to its consistent adoption of the very opposite course. It possesses magnificent traditions, and
it knows that, like old china, they are best kept where they will not be broken. It possesses the power of learning from the outside world, and of giving credit to the outside world where credit is due, irrespective of nationality.

Sir Charles Ball said he had great pleasure in proposing a vote of thanks to the President for his admirable address. It was pleasing to them to know that, notwithstanding the excessive heat to which he was exposed during his journey, his powers of observation remained unclouded. Even in the short time he had at his disposal he had seen a great deal, and profited largely by what he saw. He felt sure that if they could all spend an occasional holiday in a similar way, it would do much to improve their work and to better medical matters in Dublin. He was incompetent to speak on the special details of the address, but even to the general surgeon there were many points of interest, more particularly the allusion to giving veronal as an aid to general anaesthesia, and he felt sure that many of them would be glad to try it.

Dr. Purefoy expressed great pleasure in seconding the vote of thanks. A trip to the Continent had a great many attractions, but it had also a great many distractions, and they were all glad to see their President back safe and sound.

The President, in acknowledging the vote of thanks, said he was glad that Dr. Purefoy had alluded to the distractions of the trip, which would account for the lacunae in his address.
SCOPOLAMINE-MORPHINE ANÆSTHESIA IN LABOUR.

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AND

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[Read in the Section of Obstetrics, October, 28, 1910.]

In the last few years great interest has centred around the administration of scopolamine during labour. At the suggestion of the Master of the Rotunda Hospital (Dr. E. Hastings Tweedy), we decided to study the subject, and propose to give our experience in a series of selected cases—namely, one hundred primiparæ. We considered the tests of such a comparatively new anæsthetic would be of more statistical value if primiparæ only were selected. The average duration of labour is longer than in multiparæ, and the occurrence of unexpected abnormalities, such as post-partum haemorrhage and adherent placenta, less common.

It may be asked why we present a record of only 100 cases since we began our study in September, 1908. Our answer is that we only administered scopolamine when the labour ward was quiet and comparatively empty, so that strict attention could be paid to mother and child. We excluded all patients who were quiet and undemonstrative, and all those who came in well advanced in labour.

We began with a dosage of scopolamine hydrobromide 3/50 grain, and morphine sulphate 1/4 grain. After trying various amounts we fixed on scopolamine 3/50 grain and
morphine $\frac{1}{6}$ grain as a safe and efficient dose. When repeated the morphine is omitted. Merck's preparation was used throughout. It is supplied in $\frac{1}{50}$ grain tablets. As we always made up a fresh solution for each dose, it was found convenient to use a half tablet each time. This accounts for our dose of $\frac{1}{2}$ grain instead of $\frac{1}{100}$ grain as usually advised. Other makers' preparations are, no doubt, equally good, but many contradictory symptoms occur from using different preparations of apparently the same drug. Therefore, we thought it advisable to confine ourselves to one trustworthy preparation.

When dealing with a new procedure it is natural to follow authoritative teaching, and at the start we based our method of administration on Professor Krönig's paper, read before the British Medical Association meeting in 1908. In some of our early cases we unwittingly departed from accepted doctrines, and it was from these cases that we think we obtained some of our most valuable information.

In recording our cases we have paid attention to the following conditions:—

1. The power of the drug to relieve pain.
2. Its influence on the force of the pains.
3. Its effect on the child, and particularly if this were manifested to a greater degree when delivery quickly followed the administration of the scopolamine.
4. The necessity for watching the patient.
5. The occurrence of abnormalities, such as delayed labour, forceps delivery, lacerated perineum, retained placenta, and post-partum haemorrhage.

1.—THE POWER OF SCOPOLAMINE TO RELIEVE PAIN.

In previous papers it has been suggested that complete amnesia with unconsciousness of pain is desirable. As a
rule, this is only obtained and maintained by repeating the dose every two hours for two or three doses. We are satisfied with a slighter effect, and we consider the purpose of the drug fulfilled if the patient sleeps between the pains, waking up with more or less demonstration during the height of the contraction, and again falling to sleep when the pain is over. One dose sometimes suffices to cause somnolence, and often deep sleep during, as well as between, pains. We endeavoured to select patients that were particularly noisy and demonstrative, in order to be able to say definitely how much effect the drug had on the sensibility of pain.

The results were as follows:—Ten women exhibited complete analgesia, having no knowledge of pain even when the child was born.

In 57 cases there was a marked effect; sleep between and often during the pains, with great decrease in suffering.

In 20 cases the effect was fairly good as regards relieving the pain to a certain extent, but the patients did not sleep at all.

In 13 cases there was no effect whatever. In 4 of these the drug was lost because of rapid vomiting. Eight received too small a dose; in none of them was it repeated. One patient, after two doses by mouth and one hypodermic injection of $\frac{1}{12}$ grain, $\frac{1}{5}$ grain, and $\frac{1}{4}$ grain respectively showed no result.

Method of Administration.—Of the 10 patients exhibiting complete amnesia, 3 received one dose by mouth, 6 received one dose hypodermically, and 1 received two doses hypodermically. After mouth administration the shortest interval to elapse before delivery was an hour and a half, the longest six hours, and the average three and a third hours. The shortest interval after hypo-
dermic injection was an hour and a half, the longest fifteen hours, and the average six hours.

Of the total number of cases, 37 received the drug by mouth alone; 5 of these vomited. This cannot be said to result from the scopolamine, as other sedatives—for example, chloral, bromide, or laudanum—are often vomited when given by mouth during labour. Therefore, hypodermic injection is only preferable when the patient shows a tendency to vomit, otherwise mouth administration is the pleasanter method. The results we obtained by the latter method were in every way as satisfactory as by the former.

II.—THE INFLUENCE OF THE DRUG ON THE UTERINE CONTRACTIONS.

The rules which we intended to follow in administration were that the membranes should be unruptured, the fœtal heart normal, the os not more than three-quarters dilated, and the pains of normal frequency, strength, and duration—that is, pains every five to seven minutes, lasting forty-five seconds or more, the uterus contracting firmly with each pain. These data are observed by palpating the uterus for three or four successive pains. If only these cases are considered suitable for scopolamine there must be omitted many cases of primary uterine inertia which are a source of annoyance and worry to the doctor and anxiety to the patient's relatives. To ensure good statistical results these patients should be omitted, but the atmosphere of quiet and comfort that is induced by the use of scopolamine makes them eminently suitable cases for its use. This we discovered in one or two of our early cases which at the time of administration we thought to be in strong labour, because of their noisy
Scopolamine-Morphine in Labour.

demonstrations. Scopolamine unmasks the true condition, and the relief of suffering with almost total disappearance of pains is disconcerting if the precaution of palpating the uterus before administering the drug is neglected. But contractions of ten to fifteen seconds' duration, with an outcry lasting one to two minutes, and slow dilatation of the os, enable one to recognise inertia. If scopolamine is used in these cases the delay should not be attributed to the drug. Opium and chloral have a somewhat similar effect.

For the sake of comparison, we collected a series of 100 consecutive primiparae from the first of the year, excluding those with eclampsia, macerated children, abnormal presentations, and ante-partum haemorrhage. In these cases the average duration of labour was 17 hours. The longest labour was 107 hours, and the shortest 2 hours. In the cases that received scopolamine, the average length of labour was 31 hours. The longest labour lasted 71 hours, and the shortest 5\frac{3}{4} hours, giving an average of 14 hours' longer labour in the scopolamine patients.

This prolongation of labour can be explained by the inclusion of the cases of inertia mentioned, and the fact that we endeavoured to choose those patients least capable of bearing pain—in other words, those bound in any event to have a more or less prolonged labour. In addition, the 100 consecutive cases include a large number of patients who were admitted too far on in labour, or too quiet to need scopolamine. They also include a number of cases of rapid labour common enough in primiparae, but excluded as unsuitable for scopolamine. If we had selected 100 cases which would have been suited for scopolamine, but did not receive it on account of the crowded condition of the labour ward, the discrepancy would probably not be so marked.
III.—THE EFFECT ON THE FœTUS.

Much has been written about the dangers to the fœtus, but from our cases we conclude that this has been exaggerated. One child was born in a condition of apnoea. Its birth occurred four and a half hours after a hypodermic injection of $\frac{3}{4}$ grain scopolamine and $\frac{1}{4}$ grain morphine. This effect is much more likely to have been due to morphine than scopolamine. It revived after hot baths and Schultze’s artificial respiration. Two children were born dead, both delivered by forceps after delay in the second stage. Whenever a child dies as a result of delay in the second stage, it is undoubtedly due to an error in technique and should not be laid at the door of scopolamine. The drug was administered fifteen and twenty-six hours respectively before delivery, one hypodermic injection to each patient. These were obviously cases of inertia, and this and not the scopolamine was the cause of death. In the other series there were also two deaths of children during labour, one delivered by forceps and one naturally.

IV.—NECESSITY FOR WATCHING THE PATIENT.

The statement has been made that the doctor must continuously watch a patient who is under the influence of scopolamine. If this be true, it immediately condemns the treatment in the eyes of most practitioners. But such care is unnecessary. The nurse should be instructed to keep a watch on the perineum for signs of pressure, as occasionally delivery occurs unexpectedly. If the patient is asleep she should be kept on her side to prevent the possibility of the tongue falling back, an occurrence common to all forms of anaesthesia. Abnormal mental
effects were observed only in two cases, one patient becoming excited and talking incoherently for a short time. The other patient had an almost painless delivery, and about an hour later, after having been quiet and rational since delivery, got out of bed because she wished to use the bed pan. She offered no resistance, and returned to bed immediately when told to do so by the nurse who was in the room. She said she knew what she was doing, but had an irresistible impulse to leave her bed. She was quiet afterwards. There was no case of actual delirium.

A darkened room is supposed to be necessary for good results, but we never purposely kept the room dark, and we consider to do so would be a disadvantage, as it might possibly interfere with the nurse's watch for the complications indicated—that is, unexpected delivery and falling back of the tongue.

V.—THE OCCURRENCE OF SUCH ABNORMALITIES AS LACERATION OF THE PERINEUM, FORCEPS DELIVERY, RETAINED PLACENTA, AND POST-PARTUM HÆMORRHAGE.

It might have been expected that laceration of the perineum would be more frequent in patients delivered while under the influence of scopolamine because the absence of pain enables the patient to bear down more vigorously. There were 59 lacerated perineums, which is 14 per cent. more than our usual yearly average, 45 per cent.; but in the 100 primiparae we took for comparison there were 65 lacerations.

Forceps were applied nineteen times for delay in the second stage, as compared with nine times in the other series. This is again in most part due to the selection of the cases, and the inclusion of cases of inertia. Occasion-
ally we have noticed delay in the second stage resulting from the patient not bearing down with uterine contractions; the absence of pain instead of making the abdominal muscles act more vigorously—that is, the usual action—caused cessation of voluntary effort. Keeping the patient awake, encouraging her to bear down and pressing on the fundus were sufficient to effect delivery.

Post-partum haemorrhage occurred twice in the scopolamine series, once after chloroform and forceps, once when the membranes were retained. The other series showed one post-partum haemorrhage and one manual removal of an adherent cotyledon remaining after easy expression of the placenta at thirty minutes. The post-partum haemorrhage occurred after the administration of chloroform for the application of forceps.

The average length of the third stage was thirty-five minutes in the scopolamine cases and thirty-three minutes in the others, the longest and shortest third stage in the former series being ninety minutes and ten minutes respectively, and in the latter series one hundred and twenty minutes and ten minutes. Expression caused delivery of the placenta in every case.

CONCLUSIONS.

Our conclusions, as far as may be judged by 100 cases, are:

1. Scopolamine need not be given in larger doses than \(\frac{1}{2} \text{ grain}\).
2. In the majority of cases it may be given advantageously by the mouth.
3. It is undesirable to keep patients in a darkened room whilst under its influence.
4. The patient should be carefully watched. This can be done equally well by the nurse as by the doctor.
5. No ill effects to mother or child need be expected to follow the rational administration of scopolamine.

6. Whilst its chief indication will be found during the first stage of labour, the fear of rapid delivery following its use is not a contraindication.

In conclusion, we wish to thank the Master, Dr. Hastings Tweedy, for permission to publish our results and also for much advice and help in our investigations and case reports.

Dr. Tweedy said there was no question that midwifery was a wearing profession, not because of the serious portion of the work, but because of what one might call its trivialities. It was the patient that complained bitterly and loudly that got on the obstetrician’s nerves; the patient with primary uterine inertia, who sent for the doctor when the os was the size of a threepenny bit, and asked to be delivered at once. He had stated on another occasion that it was the nurse, and not the patient, who should be treated on such occasions. It was nearly always the nurse’s fault when the patient got into that condition of hysteria; and he had often longed for some means to quiet the patient so that the whole household might be rested. He thought they had that means now in scopolamine. It appeared to him that they could give small doses, and tell the nurse to watch the patient; and as far as the series dealt with went, it seemed to be an absolutely safe drug. He had personally used it largely in private practice, and had always been pleased with it. He had been particularly nervous about the consequences that might follow if birth took place shortly after its administration. It would be a very serious thing if it was found that the child seriously suffered because it happened to be born an hour after the scopolamine was used. He thought the cases clearly pointed to the fact that it had very little influence on the child. Probably it was the morphine that was the greater influence, as scopolamine was closely allied to the belladonna group, and belladonna could
be taken by an infant in comparatively large doses, while morphine was a deadly poison to a new-born child. If a child did not breathe freely when it was born, it apparently could be very easily made to breathe by artificial respiration.

Sir William Smyly said if they could get rid of all the pain and anguish, the millennium would have come for obstetricians. He had not used scopolamine in enough cases to form an opinion. He had read a lecture by Dr. Steagsny, of Vienna, given in August last, in which he gave his opinion of scopolamine-morphine. He said that the general mortality due to this treatment had been 3.3 per 1,000, but Gauss says that it is now reduced to 1.3 per 1,000. Death has resulted from the smaller doses, and as late as three days after its administration. Hypalgesia is more marked than analgesia; the patient is deceived, she feels the pains but forgets them. According to Gauss it fails altogether in 23 per cent. It is often attended by very alarming symptoms: respirations sink to 4 per minute, whilst the pulse may rise to 150 beats, and the temperature to 102°. In some cases there is great excitement at the time of the birth, amounting occasionally to mania. Ruptures of the vagina, perineum, and about the clitoris are relatively common. It tends to prolong the second stage from one-half to three hours, and necessitates more frequent use of instruments. After delivery it is impossible to say how long the patient may slumber, and, owing to the risk of suffocation, the medical attendant must remain and not hand her over to the care of a nurse. High temperatures are common during the first days after delivery, and are liable to be confused with those due to septic causes. The lecturer's conclusion was that except in hospital practice the use of scopolamine-morphine in normal labours had little to recommend it, and its use should be opposed as energetically as possible. He (Sir William) did not state these views as his own, as he had none, and had come to the meeting to learn.

Dr. Purefoy congratulated the Assistant Masters of the Rotunda on their admirably compiled paper. He confessed, however, that while listening with great interest, he was
not converted to anything like a favourable view of the practice. It appeared to him that, without any compensatory advantages, it introduced risks from which the use of morphine was free to a great extent. He could not recall any case in which he had cause to regret the injection of morphine. Even in the very careful and temperate statement it was still possible to gather that the risks to the patient and child were by no means inconsiderable. It was quite right that the drug should be fairly tested, and it was only in this way that they could arrive at a just view of its value. He had not used it, and from what he had heard he did not feel at all tempted to use it.

The Secretary said he had no personal experience of the use of scopolamine-morphine, but he would like to repeat a statement made to him by a general practitioner in Dublin who did a good deal of midwifery. He told him that he thought scopolamine-morphine was one of the greatest improvements from the general practitioner's point of view that had been introduced in midwifery. In cases of primiparae where patients were crying out for interference it was particularly beneficial. With \( \frac{1}{10} \) grain of scopolamine and \( \frac{1}{8} \) of morphine injections, the general practitioner was able to watch the patient a while, and then go away for an hour and do some rounds and come back. In cases without it he was kept continually at the place and worried to do something. He did not say how many cases he had had, but he had been using the drug for the last year, and found that it was of enormous benefit, and gave no bad results.

Dr. Ashe said scopolamine was a synonym for hyoscine, and it was a matter of importance which form of it was used. The one generally used was the \( \beta \)-rotatory variety. Dr. Sheill had read a most important paper on the matter last Session. Hyoscine was a potent cerebral sedative, and a first cousin of belladonna. The danger in the treatment was from the morphine.

Dr. Spencer Sheill recalled his communication of twelve months ago, when he brought before the Section the first published cases of scopolamine-morphine treatment in this country. At that time Dr. Solomons mentioned that he had
used it, but had not had sufficient experience of it to warrant an opinion, although he mentioned an interesting case where the patient delivered herself with no one in the ward. He had to congratulate the Assistant Masters on the energy that they had brought to bear on the investigation since that time. He observed that they had used a foreign preparation. The laevo-rotatory form was the much more active of the three forms, and Burroughs and Wellcome, a British firm, had given a guarantee to him that their preparation, known as tabloid scopolamine, or hyoscine, was made up entirely of the laevo-rotatory form, so that he failed to see why a foreign make was used. He also failed to see why of a grain was used when the dose wished to be used was . Dr. Solomons said a few women had no knowledge of pain when the child was born. In cases of administration of nitrous oxide gas, he had remarked in his paper that the patients felt the pain of the extraction frequently, but were not able to remember the pain when the extraction was complete. He had had a patient who said for a number of hours that she had not any pain, but afterwards recalled the pain acutely. He thought administration by the mouth had many disadvantages. Vomiting frequently occurred during labour in otherwise perfectly normal cases, and if the patient vomited half an hour after the administration of the drug, who could say how much of it had been vomited, and whether they should repeat the dose in full or half, or not at all. The simplicity and accuracy of the hypodermic dosage would appeal strongly to practical men. His experience as regards the effect on the fetus was that it did suffer from effects of scopolamine, but not having administered it without the morphine he could not say if it was due to one or both. He could not agree that it was unnecessary to watch the patient after the administration of the drug. The symptoms mentioned, such as the falling back of the tongue, were alone a sufficient reason for not leaving the case entirely in charge of a nurse. It was a very grave responsibility for a medical man to administer the drug, and then leave the patient to a nurse who may have had only six months' training; the quotations from a recent Continental
paper as read to-night by Sir William Smyly support this view. As to choosing picked cases in which prolonged labour was expected, how did they know in which cases to expect prolonged labour? Unless such occurrences as dry labour might lead to this expectation, he could not tell, and even in such cases they could not tell which was going to be prolonged. There were some omissions in the paper: he had found the quickening of the pulse a very marked symptom: the dryness of the tongue due to symptoms of commencing poisoning had not been mentioned; neither had delirium: he had seen one case of delirium directly due to the treatment, and he hoped he would not see another. In conclusion, while congratulating the authors of this interesting paper, Dr. Sheill said that the riper experience, gained since his paper was published, urged him to utter a word of warning to use the drug with the utmost care in all cases. His own conclusions were:—(1) That suitable cases in which to use it are not very common. (2) That the physician shall remain in attendance after its use. (3) That, on the whole, labour is somewhat prolonged. (4) That it is not wholly free from risk to mother and infant. (5) That his success in a case of chorea gravidarum makes him desirous of trying it in eclampsia.

Dr. Horne said he had no practical knowledge of the drug, and had come to listen. He congratulated the Assistant Masters on their paper as a pure statement of facts presented for their judgment. The drug had a mortality of 1.3 per 1,000, and there were serious symptoms pertaining to it, and he asked himself if it really had any distinct advantage over chloroform and morphine. With the latter drugs they could calm a patient, and there was very little danger in their administration in pregnant women.

Sir William Smyly said it was only fair to state that the lecturer whom he quoted objected to chloroform as well as scopolamine.

The President said the paper was one of the most interesting and practical that had come before them for some time. It seemed to him that the Master of the Rotunda, through his Assistants, might sum up the situation in a few
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words: would they continue to give scopolamine-morphine in cases in which the symptoms called for a sedative? He thought the criticisms had been directed to the use of the drug in all cases, and that they had not discussed sufficiently its use solely in cases in which there was need for it, and in such cases whether the patients got it or not there would be an increased mortality. The question was whether in those cases the mortality of scopolamine-morphine would not be less than if the case was left untreated. Whatever conclusion they came to, he thought there could be no doubt that at the present stage they could not give a hypodermic of scopolamine-morphine, and go away. The patient must be under medical observation until the time the effects passed off.

Dr. Solomons, in reply, said they had no maternal mortality, and the only explanation he could offer of the deaths quoted by Sir William Smyly was that either the dosage was wrong or wrong cases were selected, or the drug was not a proper one. He recalled a patient, normal in every way, who died suddenly on the eighth day; luckily she was not given scopolamine or that drug might have been blamed for the mortality. Dr. Purefoy had spoken of risks as compared with morphine: he could only say they saw none. In fact the answer to most of the speakers was that the abnormalities occurred from an injudicious selection of cases. Speaking of the safety of chloroform, in De Lee’s Year Book for 1908 sixteen cases of deaths were reported. As regards continuing the drug, they certainly would.

Dr. Freeland, in reply, said that with regard to the make of the drug, they thought that if they got a good preparation it did not matter where it came from. He had once used a home preparation of hyosine with very bad results. If a patient vomited, they looked to see if there were any results from the scopolamine, and if there were none they repeated the full dose hypodermically; but if they saw some result, they repeated in half doses or not at all. They had not seen any increase in the pulse rate or the extreme thirst, probably because they did not push the drug to complete amnesia. They were satisfied with getting a woman asleep between pains. If they palpated the uterus carefully, and noticed
the duration of the actual contraction, and the feeling of the uterus when contracting, they would probably be able to make a fair estimate of the time of labour. If they had a woman lying apparently comatose, naturally some one would have to watch her; but if they got her in an apparently natural sleep, why not leave her with a nurse? They left them after ether or chloroform lying on their backs, when there is more likelihood of the tongue falling back. As to temperature, he thought many men were very glad to visit the blame for probably septic temperatures on any drug. They did not notice any difference in morbidity one way or the other.
SOME FAILURES AND SUCCESSES FROM MY CASE-BOOKS.

By SPENCER SHEILL, F.R.C.P., &c.

[Read in the Section of Obstetrics, November 25, 1910 ]

Our secretary has asked me to fill a blank in the programme of our Section meetings by reading this evening a short paper. This I have much pleasure in doing, but I found it somewhat difficult on so short a notice to decide upon a suitable subject. I had hoped to be able to bring before you an interesting paper, but the time necessary for searching the literature and for microscopic investigation prevented me. This, then, must be my excuse to you for choosing as my subject something that could be rapidly compiled.

I have selected as my present subject a "pot pourri" from my case-books, and will beg your indulgence if I present it in the form of a kaleidoscopic picture of failure and success—of confession and boast if you will.

I hope I have not a larger percentage of failures in my practice than my fellow-specialists; but I say—"Preserve me from the man who never has a failure"; he has either no practice or no conscience.

It is by our mistakes we learn, and I believe it would be to our mutual advantage if all of our Fellows would record here before the Section their failures as well as their successes, in order that others might draw a moral therefrom, instead of, as is the present custom, recording only the successes, leaving the failures to be hushed up,
or, what is much more likely, to be retailed to our rivals with considerable risk of losing nothing in the telling.

In these few selected cases I hope you may find food for thought and material for comment. I shall be very pleased afterwards to hear remarks that may guide me in the future, even should they be painfully to the point, for doubtless my critics shall one day be on this "stool of repentance" also.

Allow me first to introduce you to a patient—a lady of young-middle age or of late youth, which you will—perhaps better known as "of uncertain age." If her age was uncertain her aims were very definite—that is, her one and only ambition in life seemed to be motherhood. She had suffered much at the hands of physicians, having attended the consulting-rooms of no less than four gynaecologists previous to coming to me. None of them had agreed as to diagnosis; but, of course, that was not to be expected, seeing that they were not treating the patient in consultation with each other, which makes all the difference. One had curetted her, the others had treated her locally and medicinally; but all had encouraged her—yea, filled her with hopes, almost promised her—and all had made deep inroads into her husband's banking account.

Her history seemed to indicate undeveloped internal genital organs, and bimanual examination lent support to that view. Having extracted a fee, I promised to tell her not only the truth, but the whole truth. I did so, and gave her no hope; result—I have never seen her as a patient since, and although that is six or seven years ago her hopes have shown no sign of being realised. I was richer by a guinea, while the other doctors between them relieved her of well over a hundred guineas. I leave it to you to say if I was the actual fool, the
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honest fool, or the fool at all. At the same time it might be wiser not to ask me what I have done since in similar cases.

One of the most painful cases I have had to deal with occurred one Christmas time. The confinement over some seven or eight weeks, and patient and baby both normal. An urgent call one night revealed to me my patient a raving lunatic, her husband endeavouring to pacify her. She had been nursing her baby, so call it "lactational insanity" if you will, but it certainly was not caused by the stress of nursing, as the history will help to show. I found out later facts that had previously been hidden from me—there was lunacy on both sides of the family, and she had been mentally astray in a previous confinement in England. A couple of days later her removal to a private asylum became necessary. It took three strong men and two women to rope her securely for removal. She was pronounced by an expert psychologist to be a very rare case, and she died about six weeks after the first symptom. Should we not all be very strong advocates of forbidding marriage by law where there is a bad family history; or, better still, should not legal sterilisation be practised in order to avoid such misery as this? Just think of this case for a moment and you will not hesitate. A mother dead in acute lunacy, two attempted suicides, and one death in an asylum on her family's side. Her husband of "erratic" habits, and a suicide and an attempted suicide in his family. God help the two or three children who were the fruit of this union.

The next case is one of my nightmares. I remember a famous Dublin surgeon telling me years ago of how he always tried to avoid a meeting with a certain cripple, who delighted to shower praises upon him on each occa-
sion. The man loved the surgeon, but the surgeon's conscience smote him (if men of their cloth possess such a thing), as this case was one of his glaring failures; but the victim knew it not. Well, so it is with my case. A healthy woman, in normal labour with a very large child, but a coward at bearing pain, anxious, and almost angry, relatives. A keen but inexperienced doctor, and in truth the most anxious of all those present. Details are unnecessary, but a craniotomy and extraction followed with appalling laceration of the soft parts. She recovered well, and ever since has sung my praises for "saving her life"; but let us draw a curtain over my feelings. This patient was a martyr in the cause of science unknowingly; for this experience has since enabled me to save two others from the same fate, where those who called me in consultation believed that this dreadful operation was urgently called for.

To turn now to a somewhat more pleasant subject. Here are brief notes of a few of my cases of threatened abortion. One patient was the subject of four abortions caused by a pedunculated fibroid hanging from the peritoneal aspect of the fundus uteri, and retroverting and irritating the organ. I removed the tumour and suspended the uterus. At the sixth or seventh week of her next pregnancy signs and symptoms of threatened abortion again became evident, and, despite my best efforts, an ovum came away. There were signs of a second ovum being in the uterus, and this suspicion was strengthened—or perhaps the idea was put into my head—by her previous history of having aborted twins; so I took the now proverbial course of "wait and see." My waiting was rewarded, and I have lately seen the child—a fine lad of over two years, and in the best of health.

It is surprising what a number of apparently hopeless
cases of so-called "inevitable abortion" may be brought to a successful issue if the expectant treatment be persevered with. Two good examples of this come to my mind out of a considerable number of successful cases which it has been my good fortune to conduct. One, an elderly primigravida, had three successive bleedings, two of them being somewhat alarming in amount—that is to say, alarming from the point of view of saving the pregnancy. Accompanying the last one there was some pain, doubtless caused by the dilating os, which was somewhat patulous. I am a great believer in opium in these cases; as much of it as the circumstances demand, in combination with the other usual treatment. All her married relations and friends agreed and advised—"Nothing," they said, "could save the pregnancy." "Who ever heard of a living child after so much haemorrhage?" and so on ad nauseam. The lady, I have said, was not young, and much depended upon an offspring. I persisted, and luckily for me the patient had unbounded faith—faith which would have done credit to a Christian scientist. To shorten the story, all went well, and she now has a lovely child of over a year old. This child should have a real horror of the word "curette," did she only know how very near she had been to being cut off at so early a period of her intra-uterine career.

The other case was that of a 2-para with symptoms similar to the last one. The treatment was almost identical, also the result. But this case, had it gone wrong, would not have cost me such a fall as the last one described, for the latter was an instance of a childless woman at the time, and I was obliged to work against all the sarcasms and discouragement of ignorant pseudo-friends.
I do not stand before you to advance any foolish view that all threatened abortions may be saved—
that depends upon so many other circumstances besides
the mere bleeding. It might even be undesirable to save
some of the markedly syphilitic ones. But what I do
say is that there is undoubtedly a large number of cases
in which the word "inevitable," and with it the finger
or blunt curette is introduced too early upon the scene.
Whilst I would be a strong opponent of permitting the
symptoms of threatened abortion to drain away the health
and strength of the mother, I would vigorously advocate
the modifying of the generally accepted rules laid down
for the treatment of these cases, along the lines of more
expectant and less operative procedure.

I have a patient who has had four successive healthy
children at term; following these came three abortions.
The cause appeared to be bi-lateral laceration of the
cervix, so I performed trachelorrhaphy. Again becom-
ing pregnant, she had the misfortune to fall and break
her arm about a week before the date at which she usually
aborted, with the result that the fourth mishap promptly
appeared. Again she conceived, and carefully avoiding
excitement, overwork, and slippery places, carried to
term a healthy child. Under ordinary conditions the
expectant treatment of abortions does not tend to increase
the percentage of septic cases, but this does not apply to
those cases where, for one reason or another, abortion
has been deliberately sought for; and especially is this
so where local interference was the method chosen.
Some time ago I was called to see a case of this kind in
consultation with a medical man in the Queen's County.
Expectant treatment had been adopted by him, and that
against the wishes of her relations; but they, of course,
had an ulterior motive. However, I found the patient
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profoundly septic, with acute general peritonitis and almost moribund. She died shortly afterwards. If we find our patient with the signs and symptoms of threatened abortion, with a pulse and temperature, and with foul discharge, it is our duty to empty the uterus without delay, and if we are inclined to waver at all a history of illegitimacy should settle the question, not because we wish to aid and abet in a criminal procedure, but because we may reasonably infer that there has been local interference which has introduced septic material. If seen comparatively early the septic process has not usually penetrated the decidua, and, therefore, removal of the ovum—especially if removed intact—does not prejudice the case. Recently I have done this, when, following the operation, the temperature fell to normal and remained there. Plugging the uterine cavity with antiseptic gauze I consider essential in such cases.

In another class of case which is all too frequent we cannot shut our eyes to the fact that excessive or rough coitus is notoriously the starting point of many abortions; and in these very cases the same unreasonable partner may be, and often is, the means of introducing sepsis also.

In several instances of repeated abortions from this cause in my practice, a timely word of warning to both parties has saved the situation. On the other hand, I have one case of this nature where the failure to carry out my instructions has brought me into their house no less than four times in one year and two months for the purpose of curettage.

I wonder if any of the Fellows have been called upon to make a diagnosis of pregnancy with a pessary in situ? A case treated by a country practitioner with a pessary for retrodeviation of the uterus came to me for my opinion
Failures and Successes from my Case-books.

regarding this point. She was warned not to allow any one but her country doctor to remove the pessary. The impression given to the examining hand was that of a two or three months' pregnancy, due, I think, to the tenseness of the anterior vaginal wall created by the ring. Fortunately I gave a very guarded opinion, and in two days, desiring a definite answer, she returned to me with permission to remove the instrument, when, lo and behold, as if by magic, the uterus was the normal unimpregnated size. I mention the case to you as a pitfall to be carefully avoided if you have not already made the observation in your own practices.

I said in the introduction to this paper that it was by our mistakes we learn; and that is equally true when applied to the business side of our profession is illustrated by the following anecdote:—

My old friend the late Dr. O'F. required my assistance at a case of miscarriage in one of the poor quarters of the city. He had anxiously waited half-an-hour for me before I arrived home. He then said—"Doctor, I am afraid it is useless your coming now; she must be dead of hæmorrhage by this time." I grasped my bag, saying—"Let us go and see her anyhow." On arrival at a dirty little huckster's shop, in the back parlour lay a woman, her face and pulse, and a glance under the bedclothes indicating that her life's blood was fast ebbing. The fœtus was away, but a five months placenta was retained. The doctor had previously warned me that a guinea only was the fee I might expect; but during the manual removal I heard him call to the anxious husband in the shop—"Make it double what I said."

The case was a successful one, the usual methods stopping the hæmorrhage and restoring the failing pulse. Since then she has had a full-term child. Before leav-
ing, her husband pressed two sovereigns into my hand, and into my ear breathed a shower of blessings. A glance at the money and another at the grimy face and the surroundings prompted me to return half the fee. On the car driving homewards the doctor told me politely what a fool I had been to return the money, seeing that the donor was the proud possessor of five coal drays and a thriving business near by, and was good for a ten guinea fee let alone two guineas. His remark I never shall forget as long as I live:—"Remember, Sheill, take the money while the tear is in the eye." After all, the experience was cheaply purchased at a guinea, as I have since learned.

Hæmorrhage is always rather appalling; but I believe more of it is due to bad management than to causes over which we have no control. Two and a half hours after a perfectly normal labour in a multipara, and in which case no anaesthetic was given, I was urgently called to the house. It was daytime, and the nurse had not lost her previous night's rest; nevertheless she elected to lie down to sleep instead of keeping a watchful eye upon her patient. The lady, feeling faint, fortunately succeeded in waking the nurse. The latter, highly trained and of long experience, recognised the pallor, the sighing, and the faintness, and forthwith plied the patient with whisky, neglecting to turn down the bedclothes to ascertain if all was well there. On my arrival the uterus appeared almost the size of a pregnancy at term, and proved to be full of blood. The patient recovered after an anxious time.

I have no doubt all of you will be glad to hear that there is no record in my case-book, and I trust not elsewhere either, of what I said to the nurse afterwards.

This early puerperal relaxation of the uterus is, in
moderate degree, not very uncommon, but, as you know, is most likely to occur after a very tedious labour or following the administration of chloroform. I am convinced, too, that there is a tendency for the scopolamin-morphin treatment to predispose to this unwelcome after-effect. I have remarked it more than a few times, and it is one of the reasons that I have asked myself—"Is the game really worth the candle?"

Let us analyse for a moment this metaphor—what is the "game"? and what the "candle"? Most of us have, I feel sure, entered the profession as a means of livelihood and as an occupation which may bring us renown. In order to attain these ends we strive to gain the goodwill of our patients, and that by doing our best for them in their hour of need. If we are philanthropists our philanthropy must pay us a living profit; but do not imagine I am forgetful of the many opportunities we have, and which most of us grasp, to do a kindness for our patients which will bring us neither fame nor food—that is our privilege.

Now, how does the administration of scopolamin-morphin stand the test? One of its best indications is in elderly primiparae. It is during the more tedious first stage of primiparae that it is especially recommended; yet these are the very patients who, having had no previous labour pains to compare results, and hence believing as they do that no pain could be worse than the ones they are now suffering, never know what pains they have been relieved of as a multipara might. When one weighs against these facts the added risk of haemorrhage, delirium, and infantile asphyxia, and other symptoms less common, but perhaps more alarming, which represent the metaphorical candle, is it any wonder if we ask ourselves—"Is the game worth the candle?"
There can be no doubt that, although the material to work upon in a given time in a large hospital is far greater, private practice is the best place in which to test the real value of a new method like this, for no operation being necessary the hospital facilities for such carries no weight as an argument, and because patients are in a free hospital is no reason why they should be treated with less consideration or put to greater risks than our private patients, and it would be a thousand pities if we allowed ourselves to lapse into the more callous ways of our foreign confrères.

In private practice we must proceed with greater caution, and it is this very caution which acts as a brake upon our enthusiasm, for we know that what is good for our patient is also good for ourselves, and the instinct of self-preservation is no less pronounced in a medical man than it is in any other being.

I venture to predict—or perhaps to put it more correctly—to corroborate the prediction of men of greater experience than I have, that before very long both scopolamin and chloroform will give place to ether in obstetrical practice by reason of its safety, its capability of being administered over a long space of time, and its freedom for ill after-effects.

A subject that to obstetricians is always teeming with interest is the treatment of the lesser degrees of contracted pelvis. About six years ago I published a paper pointing out the great value of induction of labour in such cases, and since then, in spite of the great advances made in surgical methods, I have had no reason to change my mind. Quite a considerable number of these cases have come my way, either in my own circle of patients or seen in consultation with general practitioners, and I was enabled to record an almost unbroken record of
success. Later, perhaps, I shall devote special attention to a paper on this subject, but at present it will suffice to touch lightly upon the more important points, and to mention a few illustrative cases. That there is a great diversity of opinion on this subject few will deny, and this is in part accounted for by slight variations in the classification of the patients as to the extent of the contraction present, and, therefore, of the appropriate treatment. But to my mind it is the medical attendants who require classifying. Please do not jump to the conclusion that I mean the good, middling and bad obstetricians—although truly that is anything but an unimportant factor. I mean the division into the man of the extensive private practice and the man head of a large maternity.

The significance of this distinction lies in the fact that the latter has every facility for operative procedure, however severe. His position gives him greater command over his patients, and for the same reason his errors and miscalculations do him but little, if any, harm; for is he not, rightly or wrongly, looked upon as the last word in obstetrical surgery? But the position of the man in practice is very different. He is obliged to do for his patient, not what is necessarily the best treatment, but what is the best treatment under the existing circumstances. Thus, one may see a case treated in her own home by induction of premature labour and later treated in a maternity or private hospital by hebo-stectomy or by Cæsarean section, and yet both treatments absolutely the fittest under the circumstances. But this simile must not be carried too far, for one may see many successful operations carried out in the patients' homes, and one should see many patients treated by the less radical measures of labour induction or version in the mater-
nities. The tendency is, I fear, to follow the bad example of our German confrères and to be too keen on operative surgery in hospitals. For instance, I know of a case where a patient, the mother of a healthy child some years old, which was brought into the world by induction of premature labour on account of a flat pelvis in the mother, was later delivered of another child by pubiotomy in a maternity. Of course, one could soften it to their conscience with the plea that there is a tendency in multiparae to bring forth heavier children as the pregnancies multiply, but if the elasticity of the female pelvis were a fractional part of the elasticity of that conscience there would be few indications for either pubiotomy or Cæsarean section.

A lady came to me from a provincial town something over two years ago, stating that she had lost three infants at birth, and that the local doctor had told her there was no hope of a living child for her short of Cæsarean section. Her pelvis was flat, but accurate measurements encouraged me to advise her to submit to induction of labour in her next pregnancy. She left me, full of hope, and telling me I could count from the very next day. I was somewhat amused at her self-confidence, but she wavered nothing, and, to my amusement, returned to me less than two months later, well over six weeks advanced in pregnancy. I watched her carefully, and from time to time fitted the head of the child to the pelvic brim. I allowed her to go to within five weeks of term, then induced labour, performed external version, and managed to get the after-coming head through the pelvic brim safely and in good time. The child is still healthy and doing well, and was easily reared so far. It may be suggested that the fetal head is as large, or nearly so, at five weeks from term as it is at full
term. That may be so, but the softness of less advanced ossification, and the version bringing the thin end of the cephalic wedge foremost was the saving clause.

Another patient, having lost two children—the last one under my own care at the labour—was very desirous of a living child. Her pelvis was funnel-shaped and very narrow in the transverse of the outlet. Induction of labour in the thirty-fourth week of gestation procured her a fine strong boy without having recourse to version, which in such a case would, to my mind, be contra-indicated. The child has since done well. Perhaps I have said enough to justify my previous remarks as to the treatment of contracted pelvis in minor degrees, for it must be remembered that these two patients, in common with a number of others, would never have submitted to any operative procedure whatsoever, such as Caesarean section or pubiotomy either in hospital or at home.

Yet in this connection I was astonished to read recently a quotation by an American author from a paper by Dr. Tweedy, the late Master of the Rotunda, stating that "the induction of premature labour is never justifiable," and "that version should never be employed in contracted pelvis cases except as treatment of funis prolapse." I trust that either the quotation is inaccurate or that Dr. Tweedy omitted to state that his opinion only applied to the work in a large maternity; and even in the latter case I beg to take exception to the opinion. I believe that the late Master of the Rotunda has had some very successful cases of Caesarean section and pubiotomy; but that fact does not weaken my contention that there can be no hard and fast rule laid down, and that if each individual case of contracted pelvis be judged on its own merits, giving full consideration to the wishes of the patient and her husband, and to the surroundings and
circumstances in general, there will be as heretofore many valuable lives saved by the very safe and successful, yet less heroic, methods of delivery.

Now, to change the subject. I fear we are as far as ever from being able to accurately prophesy the date of labour in any given case. We may as well candidly admit that the date of quickening, the height of the fundus, the so-called "falling of the womb," the alleged fixation of the presenting part, and other signs and symptoms, are only relatively accurate, and that, speaking generally, they are not likely, per se, to bring us within one to three weeks of the correct date except by mere chance. Short of examination per vaginam very early in the period of gestation we have, after all, nothing to count by except the date of menstruation, and in cases of irregularity of that function, or of cessation due to lactation, &c., we are hopelessly at sea. This fact is much to be deplored, for a wrong calculation often seriously upsets the household arrangements—a mother-in-law may wish to come from England in good time to torment the unfortunate obstetrician, or a nurse may eat the bread of idleness and draw the unearned salary, and at the same time bore to death the patient and her husband. Having told you all this, no doubt you are anxiously waiting for me to expound a new theory whereby we can foretell the day and hour; but you are doomed to disappointment. Even the menstrual history is, as you are aware, only approximately accurate in most cases, and, as the following case illustrates, is very inaccurate at times. The wife of a medical man bespoke my services, and being so certain of her dates, &c., would not allow me to make any calculation or examination whatsoever. I was to be called on the 11th of one December, but the date, December 31st, engraved upon
a handsome little gift bears testimony of her gross miscalculation. And it need not be said that in these instances the child has been carried beyond term. Close scrutiny of many such cases makes me think that, although this excuse or reason may be, and often is, advanced by the medical attendant, it is at any rate very much the exception. The difficulty of the situation seems to be the impossibility of knowing how long a period of time elapses before the meeting of the sexual elements, and then how long it may take before the impregnated ovum imbeds itself upon the uterine wall—or shall we say that in these overdue cases the rupture of the graafian follicle took place in the middle of the intermenstrual, or shortly before the next expected period, and so prevented its coming?

I mentioned vaginal examination in early pregnancy. By that means we can tell accurately to a few days at most if we see the patient between the sixth and ninth week of pregnancy, and although the accuracy of this method of calculating depends entirely upon the dexterity of the observer, it appeals to me as the only really valuable means at our disposal. Moreover, there is much to be said in favour of this examination, if it were for no other purpose than to ensure bringing patients under the care of their chosen medical adviser much earlier than might otherwise be the case. From the selfish point of view it may ensure that the patient will not be influenced later to put her health in the care of another doctor; but, more important still, it gives us the means, if we are only industrious enough or sufficiently solicitous of our patients' welfare, to grasp the opportunity of reducing the number of cases of the intoxications of pregnancy by stepping in where nature fails, and preventing rather than curing many of these dire complications. Primi-
paræ, perhaps, are the ones least disposed to engage their medical man early in the pregnancy, usually from foolish feelings of modesty, and they are the very type of patient in whom the intoxications most frequently make their appearance. A pregnant woman should be under medical supervision from the earliest possible moment; then there would be less trouble with nausea and vomiting, and less fear of it progressing to the severer hyperemesis. The same applies to the train of early signs and symptoms which so frequently lead up to eclampsia—that most dread of all diseases of the pregnant woman, and the one of which we probably know least. In order to make up in some degree for our deficiencies in the curative treatment of eclampsia we should be all the more careful to insert the proverbial "stitch in time" by looking for, instead of waiting until, threatening symptoms make themselves apparent. In this connection I would urge that it is our duty as obstetricians not to be content with the mere search for traces of albumen in the urine, but, upon the least indication of kidney or eliminatory or metabolic deficiency, to estimate carefully the total amount of urea excreted via the urine in the twenty-four hours, which is so valuable a guide. I am not aware whether this test is utilised in our maternities or not, but in any event its uses would of necessity be limited practically to waiting patients and to visiting patients; for those coming to the hospital for labour only would be beyond the stage for prophylactic treatment. In our private practices, however, there is full scope for utilising this test; hence if it is not used in the maternities it should certainly be taught there. Quite recently I was brought face to face with an aggravated case of hyperemesis. She was at term when I first saw her, and in an appalling state of emaciation. There was no marked
abnormality of the urine, but her liver was large and tender. There was no jaundice. The labour over, she did well, but we were obliged to aid by the use of forceps. Twelve hours later she retained food in the stomach—a thing she had not done, I was informed, for over five weeks previously. That there may be excessive vomiting of pregnancy other than that due to intoxications, there can be no doubt. I was consulted by a lady, the mother of five children, and she informed me that at each pregnancy she had vomited daily—sometimes several times daily—practically from start to finish. Her doctors were unable to relieve her, and she was facing this sixth pregnancy in a suicidal frame of mind. The case was largely—if not wholly—neurotic in origin. A complete cure was the result of the usual treatment plus the "suprarenal therapy." I infer from this that the adrenalin was the curative agent, inasmuch as her previous treatment had been, according to her own statement, along much the same lines as mine, excepting only the adrenalin. This is a treatment which I think will repay us all for further investigation. Another vomiting case of mine in three successive pregnancies has had general pruritus associated with the vomiting. There were no demonstrable signs of intoxication, and the remedying of the emesis also removed the pruritus. It may have been of nervous origin, but I am inclined to think it was an undiscovered early derangement of eliminatory functions.

Before finishing this rigmarole of a paper I would like to mention a few other cases of a varied nature. They may carry no moral, but perhaps they will be of some interest. I do not expect many of us have had the unpleasant task of delivering two breech cases with their overcoats on, but this has fallen to my lot. If ever a
speedy vehicle may be credited with saving lives, the motor car may in these two instances—one, a case of twins, the first child born as a vertex, the second a breech born as far as the shoulders, the occiput anterior and the nurse pulling towards the floor without avail, while the lady friend stood on the doorstep wildly gesticulating as I approached. The other case, a single pregnancy, and a night call. The anxious husband met me at the avenue gate. In the bedroom the patient in the dorsal position, the baby born to the neck, while the nurse knelt and devoutly prayed and watched only. A short, sharp struggle brought home an asphyxiated infant which was successfully brought to. Neither patient showed any sign of infection, I am glad to say.

Speaking of twins, we all know the difficulty that exists in diagnosticating them. A lady not over five months pregnant submitted to abdominal palpation. I could not be quite sure, but told her there was a suspicion of twins. She informed her husband, and I am told he straightaway insured for a considerable sum against the contingency. Twins arrived in due course and lived, the husband drawing some £30 insurance money, while I found myself in the pleasant position of having unconsciously aided and abetted in obtaining money under false pretences.

Precipitate labour often ends disastrously. I once came hurriedly into a bedroom and beheld a patient half standing, half squatting, with the baby on the floor being picked up by the nurse. A badly torn perineum was the worst feature of this case. Much more unpleasant was the following:—At 4.30 o’clock a.m. vaginal examination revealed a hard os, not very thin, and about the size of a shilling; average pains were present. I returned home, having stated that I probably would not be re-
quired by this primipara for some hours to come. Half an hour later, in answer to an urgent call, I found the baby born, a ghastly laceration of the perinæum and vagina, and a bi-lateral laceration of the cervix uteri. The nurse stated that soon after my departure pains of extraordinary length and severity set in with great rapidity, and her best strength was futile in holding back the infant. I hope it will be long ere I see another such case. If one could recognise these abnormally strong pains in time morphin or chloroform might save the situation.

A somewhat unusual remote consequence of sapræmia was brought to my notice a little while back. The lady had been attended in her confinement by a general practitioner. The sutured perinæum went hopelessly septic, complete non-union resulting. The toxins circulating in her system made the internal ear their principal point of attack, inflammation of the labyrinth resulting, with dizziness and other subjective symptoms. I sent her to a specialist on ear diseases, but although she is considerably improved under the treatment, the prognosis is not altogether bright. Cases of this nature now and then cropping up should make all obstetricians look with horror at even the smallest of puerperal ulcers.

A peculiarly alarming symptom complicating pregnancy came under my care some five or six years ago. When I first saw the case she was about six weeks pregnant and complaining of dimness of vision in both eyes. There was no specific history, nor had she ever suffered from any previous eye trouble. There was no albumen in the urine, nor any symptom pointing to involvement of the kidneys, although it is true her right kidney was freely movable. I put her in the hands of a competent ophthalmologist, who found all the appearances of
albuminuric retinitis. A month later she became quite blind in the right eye and half blind in the left one. The case turned out to be one of placenta prævia and ended successfully. A month after the confinement the eyesight in both eyes was restored to its normal acuteness. Throughout the pregnancy there was at no time any albumen in the urine. Two oculists and myself still remain in the dark as to the cause of the trouble.

One does not hear much about nymphomania in women, but my experience would tend to argue that masturbation is not very uncommon, for during the past two years four cases have come to me which may be worthy of mention. One woman was mother of two children, and was such a bad case as to lead me to suspect that her brain was really affected by the vice. One of the others had so infected herself that she had contracted an abscess of Bartholini's gland, which had to be operated upon. At the time the cause of the abscess was unknown, but she afterwards admitted her failing. The hymen was intact in all the cases except the first one. The other two cases were brought to me with no complaint except losing flesh and strength and with leucorrhœa. The diagnosis is not so easily made as one might expect, for we are obliged to speak very cautiously, lest, being on the wrong track, we might give offence. The symptoms are not at all unlike what one might expect in cases of tuberculosis of the appendages, and although there are differences, yet three cases of the latter disease at present under my care show considerable similarity to the last two cases of the other kind. Acute scrutiny of the patient during the consultation, and a general character reading from close observation of human nature are of far greater value in making a diagnosis than are the symptoms or the statement of
the patient's mother, who, as a rule, is absolutely unsuspecting.

Having now, I fear, exhausted the patience of the Section, I will conclude after mentioning one more subject. Some of you will doubtless remember my advocating here some years ago the systematic bi-manual examination of all puerperal cases—but more especially primiparae—in the fourth or fifth week post-partum. The reason for this being the tendency of such a large percentage of uteri to become displaced backwards at about this time. I have found 20 per cent. displaced, and nearly another 40 per cent. balanced so that a small thrust, such as might be caused by a full bladder, might readily turn the balance in favour of the backward position. Manual replacement at this time allows involution to proceed in the normal fashion, and saves the patient from much future trouble in the large majority of cases. I do not claim originality for this; I borrowed the idea from some of the heads of the obstetrical profession across the "herring-pond," and I am not ashamed to confess it. I am not aware if many of the Dublin school practise this preventive method, or whether they prefer the more lucrative course of allowing their obstetrical patients to drift into the ranks of gynaecological ones. If the latter, I would sound a word of warning lest they should not be aware of the possibility—if not probability—of their midwifery failures finding their way into the gynaecological chair of other specialists. Thus the neglectful course might prove neither lucrative nor creditable. One I know besides myself who practises it successfully, and I tender to him my hearty congratulations. Perhaps there are also many I know not of. I hope so, as the practice is undoubtedly to be considered as an advance in obstetrical procedure.
Professor Alfred Smith said the statement, that the treatment of abortion should be more expectant than operative, put the case in a nutshell. But they had to put before the every-day practitioner some rule to guide him as to which treatment to adopt. His own rule was to prescribe rest if there was slight haemorrhage. If there was intermittent pain and haemorrhage, with dilatation, then operate. He might mention a drug that was a great help in relieving contractions of the uterus—two tabloids of $\frac{1}{100}$ grain atropin dissolved in a small quantity of sterilised water and soaked in a small tampon of sterilised gauze and placed in the posterior cul-de-sac. He believed there was a distinct place for the induction of labour in midwifery. Some one had found that the diminution of carbohydrates and fluids in the dietary diminished the size of the child materially. There was no more difficult problem than to determine the date of birth. Even in the lower animals the variations were very great; each individual seemed to be a law unto itself.

Dr. Freeland said, in reference to the use of scopolamine-morphine, they saw in the Rotunda in the course of a year, cases of prolonged labour that got no anaesthetic, and yet delivered themselves normally, and had serious post-partum haemorrhage. If they had got scopolamine it is possible they would have blamed this for the haemorrhage. As to the other bad results, they did not see any in their series of 100 cases, and he wondered if it was the preparation of the drug that had to do with it. He thought the bad results reported from the Continent were due to the large doses given. If moderate doses were given, $\frac{1}{120}$ of a grain, and repeated once or at the most twice, he did not think they would see so many cases of mania.

Dr. Tweedy said it was generally thought in Dublin that contracted pelvis was rare, yet Dr. Sheill counted his cases in numbers. As to the induction of premature labour, it was unjustifiable in well-trained men. He did not say that conditions might not arise in which induction might be necessary, but he thought Dr. Sheill gave his case away when he stated that one could not be sure of the date of
Failures and Successes from my Case-books.

birth within a range of one to three weeks, and yet said he induced labour the thirty-fourth week, when confessedly he did not know within three weeks as to when the woman was up to full term. When he (Dr. Tweedy) heard of great successes after induction of premature labour, he wondered how the pelvis had been measured. The man who did not measure would have better success than a man who measured with a Skutsch's pelvimeter. He had given induction a fair trial for a year and a half, and the foetal mortality worked out over 50 per cent. when cases were accurately measured. In the Queen Charlotte Hospital it worked out at 11 per cent., but they measured the pelvis by passing two fingers into the vagina and calculating the size of the inlet. No accuracy could be obtained by a diagonal conjugate measurement. When Dr. Sheill said he knew the proportion between the head and the pelvis he wondered did he give the patient an anaesthetic once a week. If he did not, he could tell him that it was absolutely inaccurate to base any prognosis on the supposed proportion of the head to the pelvis. The treatment for threatened abortion, or abortion, was to leave the case to nature. Treat every case as threatened, and if it was inevitable, the woman would deliver herself naturally in nineteen cases out of twenty. It was only the rare case of abortion that required treatment at all. Ninety out of a hundred married women would be found to have had abortions without a doctor or nurse present. His rule was only to act if dangerous symptoms arose; if she was bleeding so hard that she would die, then by all means empty the uterus: whether it was threatened or inevitable abortion they had to save her life. Dr. Sheill objected, in cases of contracted pelvis, to the modern operations of pubiotomy or hysterotomy. He (Dr. Tweedy) thought the day had arrived when the general practitioner should perform pubiotomy. He had performed it nine times, and, save in the first case, when he did not understand the operation, all his patients had recovered uninterruptedly. The one complication he had had was haemorrhage in two cases, but it was absolutely easy to control. Haemorrhage was due to faulty technique. He was abso-
By Dr. Spencer Sheill.

absolutely convinced that if there was hæmorrhage, the operator had made a mistake, as happened in his two cases. Dr. Sheill had alluded to the importance of estimating the total amount of urea in the urine, but it was worthless to test the urea in the urine, and to leave it unestimated in the faeces. He thought prophylactic version the worst of all treatments for contracted pelvis: it had proved disastrous in his hands as far as the life of the child went.

Dr. Trevor Smith said he remembered seeing several cases of induction of premature labour all of which were successful, and upon one of the patients pubiotomy was afterwards done with the result that the mother was crippled for life, at least so he was informed.

The President said Sir William Smyly taught the elimination of the word "inevitable" from the classification of abortion, and he thought that teaching was universally accepted. The question that did arise was whether the patient had lost as much blood as she could afford to lose, or if the ovum was in an unsafe condition. Dr. Tweedy had a very considerable experience of pubiotomy on which to found his opinion, but other authorities held a different opinion. Induction was not a perfectly safe treatment. The operation offered a very easy route to the infection of the uterus. Could pubiotomy be regarded as relatively safer? As to its case there could be no doubt. Postpuerperal examination of lying-in women was, he was inclined to think, practised by a considerable number, though the desire to practise it was limited by the wishes of the patient, and in cases of large maternities by the time involved.

Dr. Spencer Sheill, in reply to Dr. Tweedy, said that it was true that contracted pelves were not very common in Dublin, but a number of his cases had been sent to him from various parts of Ireland. He said that although no operation could be said to be absolutely safe, he had never had or seen a case of induction go wrong. But he had never used the bougie method in private practice. He could start labour in practically all cases by tightly plugging the cervix with iodoform gauze, of course with all antiseptic precau-
Failures and Successes from my Case-books.

Regarding the foretelling of the date of birth, Dr. Tweedy must have forgotten that he (Dr. Sheill) had said "that we could not be sure of the date within from one to three weeks, except when a bi-manual examination was made between the sixth and ninth weeks of gestation, when we could tell within two or three days." He always insisted upon this examination in these important cases. By accurate measurement he did not mean counting on his finger, but measuring as accurately as it was possible, using a good quality pelvimeter. He had used the Skutsch in five cases, two under an anaesthetic. They were all definitely contracted, but some in minor degree. Dr. Sheill did not object entirely to the operations of Cesarean section and pubiotomy by any means; but he did not lean to the other extreme of condemning induction of labour. Both methods had their good points, the latter being invaluable in the hands of the able practitioner. He could not agree with Dr. Tweedy that pubiotomy was to be considered a safe operation in the hands of general practitioners. In reply to Professor Smith, dietary reduced the size of the child, but not the hardness of the head. With reference to Dr. Tweedy's opinion of the treatment of abortion cases, Dr. Sheill said that he could not permit all his cases to terminate by natural means—only those at the top of the tree of fame could assume an air of "masterful inactivity." He preferred to assist Nature in all bad cases rather than weaken his patients by continued haemorrhage. He did not like unnecessary vaginal manipulation in the threatened abortion. His practice was to use belladonna or belladonna and morphin in the form of suppositories per rectum. He could not agree with leaving abortion cases to Nature when they had gone to the extent of bad haemorrhage. There were instances where the finger, or curette, or expression, was absolutely necessary. Regarding scopolamine in labour cases, he said there appeared to be a general tendency to an increase of haemorrhage where scopolamine had been used. Speaking of the estimation of urea excreted in pregnancy, Dr. Sheill insisted that it was not a useless procedure testing the urine alone, whilst omitting to test the faeces. It
was a well-known clinical fact that, disregarding the faeces, when the total urea in twenty-four hours fell much below normal—even without marked symptoms in the patient—trouble was threatening; and treatment with a view to raising the quantity of urea excreted, or to reduce the intake almost invariably, staved off complications or perhaps even prevented eclampsia. Dr. Sheill returned thanks to the Section for the reception they had accorded his paper.
A CASE OF ECLAMPSIA.

By KATHERINE MAGUIRE, M.D.

[Read in the Section of Obstetrics, January 6, 1911.]

Mrs. C. R., aged thirty, first consulted me in November, 1909. She was a well developed, healthy-looking woman. Her previous history was fairly good; she had had her appendix removed four years previously, and just after this she had a severe attack of iritis said to be rheumatic in origin. She had been married six weeks and was about four weeks pregnant. She was then suffering from cystitis, apparently caused by a chill, and her urine contained pus and albumin; with rest in bed and alkalies this soon passed off, and the urine was normal in a week. Her health after this was very good. She had no vomiting; fetal movements were felt in February, 1910. Her urine was examined occasionally and was quite normal, the 14th of April being the last time on which it was examined before her illness. She felt quite well till the second week in May, when she was just seven months pregnant, but she then noticed that she was easily tired and felt irritable. She did not feel ill, however, and the secretion of urine was not scanty.

On the night of May the 14th, she had a hemorrhage, losing at least a pint of blood, with some pain in the back, but no uterine contractions. I did not see her till the morning, when the bleeding had almost stopped, the pain in her back was better, and she felt quite well. I could not obtain a specimen of urine as it had just been passed and was mixed with blood from the vagina. The fundus was halfway between the umbilicus and the ensiform cartilage, and the uterus was neither tense nor tender. Fetal parts could be easily felt, fetal movements were observed, and the heart sounds were distinct. The abdominal wall was quite
relaxed, much more so than is usual in a primipara. As she was constipated, she was given an enema at 2 p.m., with good results. After this she had pain for a couple of hours just over the pubis and some headache, but in the evening she felt much better. I noticed, however, that her pulse was very hard, and she was perspiring very profusely. I was then able to obtain a specimen of urine, and found that it contained a large amount of albumin. The headache returned in the night, and became very severe, and at a short time before 3 a.m. on May the 16th, she had a convulsion, and another soon after 3. I saw her at 3 15, when she was just recovering from the second convulsion, and gave her a hypodermic of morphine at once. Sir William Smyly kindly came soon afterwards and we tried to give her submammary saline injections, but this caused great pain, and the amount of fluid that we could get in was not sufficient, so rectal injections of saline were given instead and were well retained. She had a third convulsion at 5, and a fourth at 7, but recovered consciousness and sight in the intervals. Three ounces of urine were drawn off by catheter. This was solid with albumin and contained blood. At 10 a.m. she had a fifth convulsion, said to have been very long and severe, this being the last convulsion that she had at this time. She was given altogether 1½ grains of morphine, and also got calomel and compound jalap powder. She was very thirsty and drank milk freely, but vomited several times, and still complained of headache. She passed 17 ounces of urine in the twenty-four hours. Her pulse was about 100 and very hard, and she perspired profusely. There was no oedema anywhere, but her face looked puffy. She slept a great deal, but complained at intervals of severe pain in her left arm; it was afterwards found that this had been caused by a large subcutaneous haemorrhage, which involved the whole arm; there was also a smaller haemorrhage on the right arm, and one on the dorsum of the right foot.

The next day (Tuesday, 17th), her condition was much the same, but the headache was better. There was slight fever, morning temperature 99°, evening temperature 100°. There was still some vomiting. She passed a pint of urine and per-
spired profusely; her pulse was about 100 and still very hard. During the next three days her condition was about the same. She passed about a pint of urine each day; it was still nearly solid with albumin, but contained no blood; it sometimes deposited urates. She had occasional headaches and sometimes twitching in the muscles of the face and hands. Fetal movements, which had been absent for two days, were felt again on Wednesday, but there was no further uterine haemorrhage and no sign of uterine action. She slept well and was in good spirits. On Friday she had a very itchy urticarial eruption, chiefly on the face and thighs. The treatment during these four days consisted of milk diet, purgatives, which after the effects of the morphine had passed off acted very well, saline injections per rectum, and for part of the time she was given citrate of potassium. On Friday night she slept badly, and had a bad headache on Saturday morning (May 21st). The secretion of urine was good, over a pint being passed in twelve hours; and her bowels moved freely several times, but she was evidently worse. She again complained of suprapubic pains, similar to those which had preceded the former attack of eclampsia. Through the day the headache became more severe, and she vomited several times. Sir William Smyly saw her with me in the afternoon; she was then unable to see, and as it was evident that another convulsion was impending we agreed to give her a prophylactic hypodermic of half a grain of morphine. I gave her this at 5.45, and immediately afterwards she had a very severe convulsion which lasted for ten minutes. We decided after this that the uterus must be emptied at once, so I brought the patient to a private hospital, where Caesarean section was performed by Sir Wm. Smyly at 7.30 that evening. The anaesthetic used was chloroform. The fetus was alive, but very small and feeble. After the operation the patient’s condition was fairly good, her pulse was 120, still very incompressible.

She had a restless night, and in the early morning her pulse became extremely weak and could hardly be counted, though when it was counted it was only 120. Her temperature was 101.6°, and though she could be roused when
spoken to she was only partly conscious, and was still in a profuse perspiration. She was treated with rectal injections of saline solution and whisky, and hypodermics of digitalis, and by 3 p.m. her pulse had much improved, and she was conscious. She remembered nothing that had happened since the morning of the previous day.

After this her recovery from the operation was uneventful; there was very little discharge and the wound healed by first intention. On the fifth day there was a good secretion of milk.

The child only lived for sixty hours. It had convulsions at intervals after it was twelve hours old. On the third morning the convulsions became very frequent, and it died of exhaustion, treatment with hot packs and bromide being quite ineffectual.

The patient’s recovery from the nephritis was slow and is still incomplete. The amount of urine after the first day was between two and three pints, but it still contained a large quantity of albumin, though much less than before delivery. Cystitis developed on the eighth day after the operation, and though the acute symptoms quickly subsided under treatment with urotropine, the urine contained pus for several weeks.

The patient went home three weeks after the operation, but was still very weak, had frequent headaches and profuse perspirations, and the arterial tension was still very high. Dr. Finny saw her in June and advised giving her sodium nitrite, which somewhat reduced the tension. The amount of urea was estimated on June 23rd as 1.6 per cent.; it has been estimated several times since, and is always about the same. This gives an output of nearly 200 grains of urea in twenty-four hours, which, as she is still on a restricted diet, is probably as much as could be expected. The amount of albumin is still considerable, though much less than it used to be. Her health has gradually improved, she seldom has headaches now, the arterial tension is lower, and her sight, which was dim for about three months, is now as good as it was before her illness. She still perspires a great deal, but not so constantly as she used to. Menstruation did not
appear till the end of July, ten weeks after the operation. It was then profuse, and had to be checked with ergot; the periods since have been regular and not excessive.

There are some points of interest in this case besides the interval between the two attacks of eclampsia. One was the intense toxæmia, as manifested by the subcutaneous hæorrhages and profuse sweating, as well as by the convulsions, although the secretion of urine was never suppressed, and was not even excessively diminished, while the amount was actually increased on the day that the last convolution occurred. The subcutaneous hæorrhages do not seem to be common as they are not mentioned in the shorter text-books on midwifery. Winckel says that they are described by Stumpf as "multiple hæorrhages under the skin as large as the palm of the hand, with or without subcutaneous injection." He adds that "prognostically these bear a very bad significance." In this case the hæorrhage in the left arm was very much larger than the palm of the hand, while the other two were about that size.

The large hypodermics of morphine did not seem to affect the foetus, though the partial detachment of the placenta by hæorrhage may have prevented it from receiving as large a dose as it would have under ordinary circumstances. It was delivered about two hours after half a grain of morphine had been injected, and was certainly not more sleepy than any feeble premature infant would have been.

On reviewing the results of treatment in this case it will be noticed that two recognised methods were tried by nature—venesection and diaphoresis. The bleeding did not have any obvious effect on the symptoms, though it is possible that the uterine hæorrhage may have delayed the onset of convulsions. The profuse sweating certainly
did no good; it was very weakening to the patient, it greatly increased her discomfort, and added to the difficulties of the nurses.

The treatment with milk diet and purgation did not prevent the second attack of eclampsia.

The morphine certainly controlled the convulsions, and as this is all that it can be expected to do, it was the only palliative treatment that was of any real use. It was, however, obvious that we could not go on administering such large doses of morphia indefinitely, and that the only way of saving the patient's life was to empty the uterus; this proved entirely successful, and no doubt in a case like this, where the symptoms are so severe and the foetus continues to live, it is the only rational treatment.

This paper was read in conjunction with that on "The Treatment of Eclampsia," by Sir William Smyly. The discussion on both papers will be found after the latter on page 343.
THE TREATMENT OF PUERPERAL ECLAMPSIA.

By SIR WILLIAM J. SMYLY, M.D.;
Ex-Master Rotunda Lying-in Hospital.

[Read in the Section of Obstetrics, January 6, 1911.]

The treatment of puerperal eclampsia is one of the burning questions in obstetrics at the present time, and I suppose that during the past few years more has been said and written about it than any other connected with the management of childbirth. But it is not my present intention to enter upon an exhaustive criticism of all the methods of treating this disease which are at present in vogue, but rather to make a few remarks as a contribution to the discussion of Dr. Katherine Maguire's paper.

In the first place, then, what do we know as to the nature of the condition which we are so often called upon to treat? Until quite recent times I could hardly have described it as a disease but rather as a complex of symptoms. But since the publication of the investigations of Lubarsch and Schmorl it is generally recognised that this condition is characterised by certain definite pathological and anatomical changes, consisting chiefly in degenerations and necroses of the tissue cells, accompanied by haemorrhages and thrombosis, especially in the smallest veins. These changes which are always to be found in the most important organs of the body—the brain, the heart, the liver, and the kidneys—are the essential features of this disease and not the symptoms,
By Sir W. J. Smyly.

so that we can now speak of eclampsia without convulsions and convulsions which are not eclamptic.

That the anatomical changes are due to something abnormal in the blood is, I think, accepted as a fact by all, but I think Professor Fromme went too far when, in a paper which he read at Magdeburg in April last, he said—"We are justified in considering eclampsia to be an intoxication caused by the entrance into the circulation of the mother of placental albumen which is foreign to it, and we should seek for the cause in an impairment of the mother's powers of assimilation whereby her blood becomes loaded with unchanged or imperfectly assimilated albumen." This is, perhaps, the most popular theory as to the nature of eclampsia, but it certainly has not yet been proved to be an undoubted fact nor has it been generally accepted as such, for a number of other theories are opposed to it, and their importance consists in this, that our practice to a large extent depends upon the theories we entertain. The idea, for example, that the convulsions were the most important features lead to the use of chloroform, chloral, and morphine to control them.

The conviction that the disease is toxemic has directed our efforts towards preventing the formation of the poison, to its elimination, or its destruction. The first we do by restricting the diet to milk or water and by removing the foetus, the placenta, and the breasts if we believe them to be the source of the mischief. The second object is attempted to be gained by purging, sweating, abstraction of blood, and by transfusion or infusion of saline liquids. To neutralise or destroy the toxins various antitoxins have been prepared and used—those who believe that the ductless glands are the great antitoxic agents give thyroid extract, and those who look
upon the coagulation of the blood in the minute vessels as the chief mischief give hirudine. Other fertile brains have introduced lumbar puncture and decapsulation of the kidneys. The newest theory of all, which I have alluded to already, was published by Selheim, of Tübingen, not quite a month ago. Rejecting the idea that post-partum eclampsia is explained by the retention of placental tissue he comes to the conclusion, for various reasons which I need not now explain, that the breasts are, if not the chief, certainly a very important source of toxins, and this theory he put in practice by excising both glands. The case was a very bad one, and he attributes the recovery to the operation.

Now, how is one to select out of this superabundance of suggestion the best treatment for any individual case? Undoubtedly the best guide is experience, and as in this disease above all others an enormous number of cases is required to test any particular line of treatment we are obliged, in spite of their acknowledged defects, to rely upon statistics.

To make use of statistics it is necessary to adopt some kind of classification, and the most obvious division at the present time is into those who deliver every case as soon as possible and those who, relying upon other methods, do little or nothing to expedite delivery. Between these extremes are those who treat the milder cases expectantly and operate in the more severe; but their experience is of no value whatever in determining the relative value of the operative and expectant methods, because we have no means of forming any estimate of the relative severity of the cases which were, and those which were not, operated upon. When, for example, in the discussion on Dr. M'Cann's paper, read before the Obstetrical Section of the Royal Society of Medicine in
May last, Dr. Herman said that "the collected mortality of the cases treated by Caesarean section was about 50 per cent.," what did that go to prove? I confess to you that I do not know; in my opinion it did not prove anything excepting that Caesarean section has generally been reserved for the worst cases, and what would have happened to them had they been left to nature we know not.

In considering the results of rapid delivery as compared with expectant treatment we must, therefore, restrict ourselves to the statistics of those who limit themselves in practice to one or the other method.

Immediate delivery—that is, as soon as possible after the patient comes into hospital—is now systematically practised by some of the leading obstetricians, especially in Germany. It is founded upon the theory that the poison originates in and proceeds from the placenta, and that the sooner that structure is removed the better prospect of saving the maternal organs from destruction, and that to fail to do so is little short of mal-practice. It is further supported by the fact that in the majority of cases as soon as the child and placenta are removed the fits cease, and that even if they do not post-partum convulsions are by 5 per cent. less fatal than those occurring before or during labour.

This has not been the experience of all observers, but is confirmed by the majority. Nor is it to be assumed that because the convulsions cease after delivery the patients are saved, because, unfortunately a large proportion of them die.

Professor Fromme says that it is generally admitted that the mortality in the eclampsia of pregnancy and labour is from 25 to 30 per cent. when treated expectantly, and that the good results obtained by Stroganoff in Russia he agrees with Seitz in attributing to a milder character
of the disease in that country as shown by the results of other Russian authorities.

Now, what have been the results of rapid delivery? In Zweifel's Clinic between 1892 and 1895 every case was delivered as soon as possible after admission. The mortality, which had previously been 32.6 per cent., sank to 15 per cent., or deducting moribund—that is, cases which died within half an hour of admission, and could not, therefore, be treated—from 28.5 per cent. to 11.2 per cent.

Bumm found that when he treated his cases by the expectant method he lost about 30 per cent., but since he had delivered every one as soon as possible it has sunk to 12 per cent.

Seitz reports that by the same treatment in the Munich Hospital they lost only about 15 per cent., and Winter's mortality is 10 per cent.

The results were much better where the patients were delivered early—that is, after only one or two convulsions. In such cases Liepmann's statistics show a mortality of 2.5 per cent. Seitz, out of Zweifel's material, gives 6.6 per cent., and from his own 10 per cent. Möhlmann shows that in Olshausen's Clinic in cases delivered—

Not later than the third convolution the mortality was 5.3 per cent.

Not later than the fourth to the sixth convolution the mortality was 8.8 per cent.

Not later than the seventh to the tenth convolution the mortality was 17.9 per cent.

After the tenth convolution the mortality was 31.5 per cent.

In the last 100 cases treated by rapid delivery in Veit's Clinic there were 9 deaths. Thirty-four of these were
delivered after the first or second convulsion, and all recovered.

If we now turn to conservative or expectant methods we find some observers have recorded much better results than a mortality of from 25 to 30 per cent. Dr. Tweedy, for example, in the Rotunda had only 8.2 per cent., and Stroganoff only 6.6 per cent. out of 360 cases. I need not delay to describe the treatment which Dr. Tweedy has already so clearly brought before you, and which he is here to defend. But as Dr. Stroganoff’s method, which he prefers to call prophylactic, has proved so successful and is so simple and easily carried out, I shall dwell upon it more particularly, and before doing so I may mention that his reply to Seitz’ statement that his cases were of a milder nature than those met with in Germany, he not only offered to treat any cases that would be placed at his disposal but actually went to Berlin and Vienna, where he treated three very bad cases with complete success. The only German Clinic which has tried his method so far as I know is Leopold’s in Dresden, where it has been employed in 31 cases with one maternal death. The novelty in this treatment is not in the means employed but in the way they are used. He gives narcotics not when attacks occur but in certain doses and at fixed times so as to prevent their occurrence. He attaches great importance to the environment, so as to prevent as far as possible all external irritation. The patient must be kept sleeping or dosing, and anything that would interfere with that is as far as possible eliminated. She is kept in a darkened room, to which only the medical attendant and the nurse are admitted; and all examinations, hypodermic and rectal injections, washings, and catheterisations are preceded by the administration of chloroform—about 20 drops he has found sufficient.
Treatment of Puerperal Eclampsia.

In an ordinary case he proceeds as follows:—

From Commencement of Treatment | Dose
--- | ---
Smallest | Largest

| 0 hour hypodermic 0.015 ($\frac{1}{4}$ gr.) morphia | $\frac{1}{6}$ | $\frac{1}{3}$
| 1 ,, 2.0 (30 grains) chloral enema |
| 3 ,, hypodermic 0.015 ($\frac{1}{4}$ gr.) morphia |
| 7 ,, 30 grains chloral enema |
| 13 ,, 25 grains ,, ,, |
| 21 ,, 25 grains ,, ,, |

The choral is mixed with mucilage of gum arabic and distilled water to 65.

During the subsequent days 15 to 20 grains of chloral are given three times a day, and the treatment must not be given up too soon.

From all this I conclude that the advantages of rapid delivery as contrasted with the methods advocated by Dr. Tweedy and Professor Stroganoff have not been proved. But it may be asked if this be my opinion why did I agree with Dr. Maguire that Caesarean section was advisable in the case which she has brought before you to-night? Well, supposing a case not of eclampsia but of that form of toxaemia which generally precedes and often ends in convulsions. In such a case I do not bring on labour or desire its occurrence; on the contrary, I try to improve the patient's condition by every means in my power. But if, in spite of all my efforts, I find that she is going from bad to worse then I induce labour before her condition becomes hopeless. Well, this case appeared to me to be a similar condition to that, and in my opinion there is a great difference between eclampsia in a patient who has had no treatment and the return of the convulsions in one who has been most carefully treated and restricted to a milk diet for several days.

Another point of much practical importance is why did
I do a classical abdominal instead of a vaginal section as generally recommended in such cases. My reasons were these—The convulsions recommenced at five o'clock on a Saturday afternoon, and by the time the patient was transferred to a hospital and I had procured the necessary assistance (Dr. Jellett from somewhere in the mountains and Dr. Watson I met riding a bicycle) the day was almost gone, and in the fading light I preferred a method of operation with which I was familiar to one with which I was not. I think the good result was the outcome of the treatment employed, but I do not suggest that she might not have recovered without it, though I think she would have died.

The last point of interest in connection with this case is that although the mother had no fits after the birth of the child, the latter had frequent seizures until it died. Eclampsia in infants appears to be a very rare condition. Dr. Esch, of Greifswald, who is the chief authority on the subject, has been able to collect only thirty-two cases. The symptoms are similar to those in the mothers and the post-mortem appearances are the same. Though no autopsy was made in our case, yet I believe that the convulsions were due to eclampsia from want of any other cause. Convulsions, though common in infants, are, according to Dr. Esch, rare before the third month, and in the newly born are generally caused by injury to the brain during birth. This child received no injury, and the fits commenced before it got any food.

Professor Alfred Smith said—You have all listened to the excellent lines of treatment laid down by Sir William Smyly. Do not go away with the idea that eclampsia occurs only before delivery. A great percentage of cases occurs after delivery. He saw a case occur six days after delivery. This
patient had a perfectly natural confinement, but a few days later she had typical scanty urine loaded with albumen. Now, this patient was treated by excellent practitioners, who followed the rules of treatment as laid down regarding fluids and diets, and notwithstanding she afterwards developed the typical eclamptic fits. This patient, who had four children, never had any previous trouble. After all that he had heard from Sir William Smyly there was one thing that impressed itself upon his mind, and that was that the real source of the active cause of eclampsia was not yet discovered. There were probably many causes. When he was Assistant Master of the Rotunda Hospital there was a "run" of cases of eclampsia. All got well following what was then the standardised treatment of potassium bromide and chloral or chloroform, and they thought they had discovered all that was necessary; but then they had a run of bad cases, in which this treatment had no effect whatsoever.

Dr. Horne said a discussion on eclampsia was always of particular interest. There was one clinical fact regarding Dr. Maguire's case, and that was that there was no microscopic examination made of the urine to ascertain as to what was exactly the condition of her kidneys. I quite agree with what Professor Smith said that we get cycles of cases which get well on some particular kind of treatment, and cycles of cases on which this particular kind of treatment had no effect, and hence we are in a mystery as to the exact cause of eclampsia. He mentioned the case of a woman five and a half months pregnant who was seized with convulsions. There was complete amaurosis which lasted for three months. She was kept in hospital till delivery took place. During this time she was kept on a milk diet. When labour set in there was a return of the convulsions. They were all agreed that convulsions coming on after labour is a comparatively rare event. Regarding the treatment of eclampsia, he had adopted the method laid down by Dr. Tweedy of giving morphia, rectal injections and mammary injections, and he was a great believer in large doses of morphia given at once.

Dr. Hastings Tweedy said that he would like to suggest
another theory as to the cause of the toxæmia that induced eclampsia, as well as the fit itself. He believed that the food eaten was the primary factor in the disease. The pregnant state was, of course, essential in bringing about the altered relations of the food particle to its antibody, but other predisposing factors were also at work, such as insufficient fluid intake to the system. There was no death amongst the last thirty eclampsias treated in the Rotunda Hospital, and these statistics covered a period of nearly three years. When the disease had once developed, the administration of even milk is sometimes sufficient to excite a fresh attack of convulsions, and he is in possession of evidence that suggests that an anaphylactic condition is established in respect to food. The treatment consisted of absolute starvation. If the fits recurred repeatedly the patient was turned on to the right side, so as to allow the outflow of mucus from the mouth. If they saw the patient getting blue they turned her over with her face towards the ground, and there was an outflow of mucus from the mouth, and an immediate gasp for breath. An internal student saved a case last year by this treatment. He was deterred by the theory of laking of the blood from injecting plain water under the breasts. He substituted bicarbonate of soda instead of sodium chloride. It was the injection that had been employed for many years in diabetic coma (½ dr. to 1 pint of water). The bowels were lavaged with gallons of water repeatedly and the system was saturated with morphia. None of his cases died during labour, but a considerable time after labour; the shortest was five hours after delivery and the longest was forty-five hours after delivery. They had now reached the point that they could treat eclampsia successfully, and as long as milk was given to a patient she was not treated successfully, because the patient was saturated with some poison and wanted absolute rest. If a woman was about to die he would perform Cæsarean section; if before labour abdominal section; if during labour vaginal section. The preparation for abdominal section was very long, and the patient was exposed to the manipulations of scrubbing and movements during that time which was highly deleterious. Chloroform was the
deadliest drug any woman or man could take suffering from inefficiency of the liver. Ether was better, but it also had its dangers, as it might excite inflammation in the lung. If one delivered through the vagina one could deliver without ether or chloroform or any general anaesthetic.

Dr. Crofton said he was extraordinarily interested to hear Dr. Tweedy's remarks about antibodies. When milk was taken into the stomach it seemed to him it had to be dealt with by live cells, and only that protein which was a natural protein could get into the blood and stimulate the tissues to form an antibody. There was also the question of blood pressure to be considered. Thus people with nephritis of pregnancy had a high blood pressure, and if one gave them nitrates they lost their albumen and they did not get eclampsia when labour came on. Another point he wished to ask Sir William about was whether he had had much bleeding at the time eclampsia came on, because there have been reports in which the fits stopped at once after a large bleeding, and it was essential that the bleeding be continued till the blood pressure was normal.

Dr. Sheill, referring to Dr. Maguire's case of eclampsia, said, although we can have no reasonable doubt that it was a case of eclampsia, still there was a possibility that it was not, for it might have been uræmia or cerebral hæmorrhage. He recalled a case (when he was Assistant Master of the Coombe) which had been diagnosticated as eclampsia, but when a post-mortem was made by Prof. McWeeney it was shown to be a case of cerebral hæmorrhage. The reason he made this remark was because the hæmorrhage did not relieve the blood pressure, and diaphoresis was not the rule in eclampsia, but the child having had eclampsia would seem to indicate that it was a genuine case of eclampsia. He also agreed that it was desirable to use more morphia and scopolamine. He did not think Dr. Tweedy's new theory as to the cause of eclampsia was proved. In fact, after what Dr. Tweedy had stated he would almost hesitate to put milk into his tea.

Dr. Purefoy said that for many years in Dublin free venesection was the regular treatment for eclampsia, and in a fair number of cases recorded the patients recovered. He thought
venesection valuable in the early stages of a case, and had seen venesection of great use in the latter stages of cases when the convulsions, the condition of the lungs, and the condition of the right heart showed that the patient's life was in danger. So there was still something to be said in favour of the expectant treatment, and the rapid emptying of the uterus is very rarely called for indeed. The argument against the emptying of the uterus was that the convulsions do not always cease after the uterus was emptied. The principle of the treatment was to eliminate this unknown poison, unless one accepted Dr. Tweedy's theory. He was greatly struck by the plan of treatment adopted by Sir William Smyly of giving more moderate doses of morphia in fixed doses and at regular short intervals. This was a plan of treatment which recommended itself to his mind.

Dr. Neill said he had heard of a case in which a patient got well after forty fits, and the albumen disappeared from her urine. He referred to Dr. Tweedy's method of taking away the milk diet, and said there was a tendency against giving milk at present in enteric, and he had not been giving milk for some time as he thought it too easily underwent fermentation. He would like to ask Dr. Tweedy whether he would agree with giving the patient whey.

Dr. Tweedy.—Fits have come on after whey.

Dr. Neill mentioned a case of eclampsia in which post-mortem examination showed that the stomach was empty and the urine had been filled with blood.

Dr. FitzGibbon said with regard to venesection in Sinclair and Johnston's "Midwifery" there was a series of cases which had been at first treated by venesection together with copious purgation, but later on in the series purgation seemed to have been left out, and venesection was continued or increased, and on reading over the results they seemed to be better in the earlier lot of cases, which goes to point that the real benefit was more in the purgation than in the venesection. In the case referred to by Dr. Sheill, which was diagnosticated as eclampsia and which was post-mortem found to be cerebral haemorrhage, he would like to mention a case which he had seen in private with typical eclamptic
seizures, and just before he started giving an anaesthetic she had a very violent seizure which lasted for a long time, after which the patient remained in deep coma until she died thirty hours afterwards. She was delivered whilst in coma. He believed the cause of death was cerebral haemorrhage, because she was completely paralysed on one side of the body. In this case he had no doubt the violent eclamptic fit brought on the cerebral haemorrhage, and he thought the same remarks applied to the case referred to by Dr. Sheill.

The President said there seemed to be many interesting theories of eclampsia, so perhaps he would not be wrong in bringing forward his own, which he had held for some ten years or more, and which the discussion strengthened. The theory was that it was futile to look for one cause to explain all cases of eclampsia; that, in other words, there was no one theory which would fit all cases and ever be translated into a positive fact. It seemed to him that to search for the origin of eclampsia was the same as to search for the origin of the Nile, which came out of a lake, which in turn was fed by a number of rivers. Any of these might be considered to be the source, and all contributed to its waters. If one took a number of cases of eclampsia one would probably find different ætiological factors in most of them, and any of these might be called the factor, but the others were also contributory. With regard to the question of diagnosis he was inclined to agree with Dr. Sheill that there was a great obscurity. With regard to the large number of cases of eclampsia met with by Dr. Tweedy he would probably find that some of his cases could not be classified as eclampsia. Cases of eclampsia occurred without albuminuria, and cases of albuminuria may get convulsions which are not eclampsia, and the idea was very prevalent that one should search for a positive cause for them all. Therefore, the time had not yet come when one could talk of the theory which could be translated into a fact.

Sir William Smyly, in reply, said that Stroganoff had a run of three hundred and sixty cases, and Dr. Smith and Dr. Horne had spoken of runs of cases, but had this proved his good treatment? He looked to the person
who had the best results, and at the present day it was
neck and neck between Dr. Tweedy and Professor
Stroganoff. Dr. Tweedy was a great optimist, and he said
he was not going to have any more deaths. Professor
Stroganoff was also optimistic, and he said he was only going
to have 2 per cent. of deaths. As to milk diet he remem-
bered Professor Tarnier said if milk was given for five days
there would be no convulsions.

Dr. Maguire, in reply, said that the patient's urine had
been examined microscopically, and granular and hyaline
casts found, but not so many as might have been expected
with such a quantity of albumen as was present. She
thought it would be very difficult to carry out Dr. Tweedy's
treatment of giving no food in private practice. She would
like to know what Dr. Tweedy would substitute for milk
when at last food had to be given, and what he would do if,
after prolonged abstinence from food, a patient still persisted
in having fits.
METHOD OF RADICAL EXTIRPATION OF THE CANCEROUS UTERUS, BASED ON A SERIES OF 48 CASES.

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[Read in the Section of Obstetrics, February 17, 1911.]

The universal acceptance of Wertheim’s hysterectomy for cancer of the uterus is a curious phase of modern surgery. Before Wertheim read his paper in Leicester, vaginal hysterectomy held the field almost undisputed. The restrictions of this operation were such that patients seldom presented themselves at a sufficiently early stage of the disease to warrant its performance. Gynaecologists were thus reduced to a condition of apathetic despair. In spite of efforts at selection, the operator often found himself labouring blindly in a clumsy endeavour to clamp blood vessels to remove a uterus too much involved by cancer to be held securely in the grip of catch forceps. Little wonder, then, at the pessimism and despair exhibited.

As one of those privileged to listen to Wertheim’s address in 1905, I remember how deep was the impression produced. An impression certainly not the result of suggesting radical extirpation by abdominal section, for others had advised and practised this before him. Mackenrodt, Kelly, Werder, and others had all competing operations. Their methods never became popular because of intrinsic difficulties, the time occupied in per-
forming them, the pessimism of the authors, and, above all, the terrible primary mortality which followed in the practice of others attempting them.

Wertheim's claims were modest, and consisted chiefly in the expressed statement that his operation enabled him to increase the percentage of operable cases. He did not indicate the determining factors which separated operable from inoperable, but proceeded to a description of his operation step by step, and stage by stage, in a manner so convincingly simple that it left his hearers determined to test this method at the first available opportunity.

It was the modesty of claim, indefiniteness of indication, and precision of description which enabled Wertheim's operation to obtain universal acceptance, until now we speak of a "Wertheim" as a synonym for any wide abdominal extirpation of a cancerous uterus, without regard to the manner in which it is performed.

Berkeley, in collecting the experience of British operators with this procedure, found the greatest difficulty in determining what should be considered the special point characteristic of Wertheim's hysterectomy. He decided that the use of clamps on the vagina before its severance constituted this distinctive feature. This, too, we must conclude, is really his claim to originality, and surely never before has an operation become classical on such meagre grounds. The clamps are not necessary to success, and indeed they cannot be applied in many advanced cases still well within the range of operability. Thus, in 48 operations I was unable to apply the clamps in 25 on account of tearing off of the uterus from the cancerous cervix.

Wertheim originally advised that the ureter be sought from behind as a preliminary to his operation. This is
not always easy, particularly when pus tubes and adhesions from intestines necessitate much manipulation. In such cases it is well to make a free incision into the peritoneum over the ureter just after it has entered the pelvis, and determine its position by sight and touch. It may be surrounded and controlled with a silk ligature, not tied. Its course can then, with care, be well defined. In my hands loose ligatures on the ureters have never done any harm. The danger of disturbing the ureters from their beds has been much exaggerated, and in the past has led to incompleteness of operation.

After the ureters are found the bladder is pushed well down in front. To effect this the round ligaments are tied and cut close to the pelvic wall. This opens the anterior layer of the broad ligament, and the peritoneum above the bladder is now divided transversely. If not involved in inflammatory or cancerous processes, the bladder can be readily wiped down with, perhaps, the aid of a few scissors' snicks in the middle line. Should there be involvement with malignant disease a laborious dissection with scissors and knife becomes necessary, as wiping the bladder down causes extensive laceration of its structure. Although going down easily in front and at either side of the median line, the bladder has a persistent tendency to climb up on and cling to the side of the cervix at a point where the ureters enter. This must be well liberated and pushed downwards and to the side to permit wide dissection of the underlying parametrium, which is often involved in palpable cancer.

The bladder, rectum, and ureters are wonderfully resistant to the inroads of uterine cancer, and in this region particularly I have been struck with the extent of the infiltration above and below the ureter without its actual involvement. This is not always so, and in one
of my patients I had to resect four inches of ureter before finding a sufficiently healthy portion to implant in the bladder. Death from peritonitis followed the tearing away of the ureter on the third day, after a fit of coughing.

To avoid tension on the ureter many devices have been suggested. The best of these consists in anchoring the bladder up to the ureter rather than stretching the ureter down. This, in conjunction with firm stitching with fine silk, may be successful, but never again shall I close a case with the least tension on the ureter. It would be much better to insert it into the bowel or bring it out through the abdominal wound. Insertion of the ureter into the bowel is a problem of considerable difficulty in cancer, for in my experience the portion of the bladder first involved is that which surrounds the ureteral orifice. This precludes excision of a piece of bladder mucous membrane with the ureter, without which ascending infection is said to be a certainty. I do not know whether it has been suggested to utilise a length of Fallopian tube to make good the deficiency in the ureter, but such an expedient seems to be within the range of possibility. Another suggestion said to avoid infection is to stitch the ureter into the coats of the bowel opened only down to the mucous membrane. Then the mucous membrane is incised in a tongue-shaped manner, the apex of the incision being about one and a half inch below the ureteral orifice. When the muscular and peritoneal coats are stitched around the ureter, its orifice will be provided with a flap valve, kept open by the flow of urine, and these factors tend to prevent ascending infection.

To return to the steps of the operation, after pushing down the bladder the finger is forced through the broad ligament from behind, going just above the ureter.

At the next stage—namely, the tying and division of
the infundibulo-pelvic ligament—it is easy to go wrong. If it is done in a nibbling manner the ureter retracts into a mass of tissue from which it will be isolated with difficulty. The infundibulo-pelvic ligament should be clamped, so that the end of the clamp goes down just to the exposed and isolated ureter. In this way very complete removal of the parametrium is possible without danger to the ureter.

If the parametrium is not involved insinuation of a finger between the ureter and the uterine artery is comparatively easy. I have not, however, found this possible when the tissue is infiltrated to any extent. In such cases the structures overlying the ureter must be dissected slowly and carefully until the spouting uterine artery indicates its severance. It is well not to be too ambitious when working through this infiltrated tissue, for the friable artery is apt to break away time and again. Enough of its structure must be left to tie between the forceps and the iliac artery. It is in cases such as these that the loose ligature around the ureter is of such value. Because of its tortuous course it is never safe to sever tissues until fully cognisant of the position of the ureter.

In early cases of cancer the uterus is easily pulled up over the pubes and the sacro-iliac ligaments are tied and cut without difficulty. The peritoneum between them is divided and the rectum pushed well down. If the uterus is fixed by advanced cancerous disease it is often quite impossible to reach the sacro-iliac ligaments until after removal.

In less advanced cases the parametrium can and should be ligatured. This obliterates the large veins and prevents troublesome oozing. Wertheim's clamps are now attached to the vagina well below the cervix. With these the uterus and vagina are pulled well up to permit
amputation with long, curved scissors. When extensive involvement is present it is at times impossible to push the bladder and rectum sufficiently free to apply the clamps. It is then much better to amputate the uterus as low as possible through the cancerous cervix. In such cases the value of preliminary disinfection by curettage, the actual cautery and a vaginal plug steeped in formalin is manifest. Such preliminary treatment is undertaken on three or four consecutive days before operation. It does not require general anaesthesia, but the last preparation should be done immediately before the operation whilst the patient is being anaesthetised. When the uterus has been removed it is comparatively easy to excise the remaining cancer tissue, cutting down on the finger placed in the vagina from above. Before doing this the formalin plug should be pushed out of the vagina from above and a new plug of iodoform gauze inserted.

If all the infiltrated tissue cannot be removed with the knife and scissors the Paquelin or electric cautery is very valuable for its scarring effect.

Wertheim recommended plugging the vagina and sides of the pelvis with iodoform gauze after the vagina had been narrowed to some extent by lateral catgut sutures, the peritoneum being finally closed over the gauze. This plug is thus outside the abdominal cavity, drains the cellular tissue, stops haemorrhage, and is easily removed through the vagina. The tendency of modern operators appears to be to dispense with the plug. In an early case it is no more necessary than after complete hysterectomy for myoma; but those men who think they can dispense with it altogether have not yet encountered the most advanced degrees of operable malignancy. At times it happens that the advance of the disease gives rise to an obliterating arteritis, and the uterine artery can be
divided without haemorrhage ensuing. In these cases oozing, difficult or impossible to stop with ligatures, is at times observed. For these the iodoform gauze plug is invaluable. A long strip is doubled and pushed through the vagina from above, and the ends are packed firmly into the raw surface left by the removal of the parametrium. The peritoneum is sewed over this. If any cancer tissue escapes into the pelvis during the operation Douglas's pouch is plugged with iodoform gauze, and the end brought out through the lower angle of the abdominal wound.

The difficulty of preventing general peritonitis from the opening up of cancer tissue is very great, but by no means impossible if sufficient care is taken to isolate the area of operation. For this purpose the patient is placed in the exaggerated Trendelenburg position, the intestines pulled well out of the pelvis, and kept in the upper abdomen by two or three large rolls of gauze bandage six inches wide. These bandages are best soaked in hot saline solution (115° to 118° F.), and made to envelop the viscera. Douglas's pouch is also protected with two or three small gauze wipes. These measures, together with re-sterilisation of soiled instruments, complete change of gloves and abdominal dressings after the removal of the cancer, will ensure against peritonitis, but not always against sepsis, for in my experience suppuration of the abdominal wound follows these operations more frequently than all other forms of abdominal section put together.

It has been suggested to stitch the peritoneum to the skin as a preliminary. I have tried it. It prolongs the operation, and I am doubtful of its efficacy. This statement also holds good in respect to many other devices brought to my notice from time to time.
I am a strong advocate for the use of buried fine silk ligatures and sutures prepared after Kocher's method. They are perfectly safe in early cases, but have no place whatever in advanced cancer. Catgut should be used here even for the abdominal wall, and in the latter situation I re-enforce by silk-warm gut mattress sutures through the skin and aponeurosis, tied on the skin over buttons at each side of the incision.

The gauze in the pelvis brought out through the lower angle of the wound is a valuable addition to our armamentarium for dealing with all forms of pelvic infection. It has the great merit of separating the septic focus from contact with the intestines until adhesions wall off the infected area from the peritoneal cavity. Then there is provided a channel for the escape of fluid. The plug may safely be left in three to five days, and on its removal any septic secretion can be sucked up through a glass catheter attached to a syringe. If such secretion is present a small Kocher's tube is inserted, and remains until the discharge stops or becomes free from micro-organisms.

Much has been said about cystitis after Wertheim's operation. It occurred in six of my cases, but always yielded to treatment, and never was a serious complication.

Bladder injuries are not uncommon. In the majority of instances the finger, wipe, or scissors causes a palpable opening. This happened three times. In six cases leakage occurred some days after operation, due to sloughing and not to indirect injury at the time. These fistulae are sometimes uretero-vaginal and sometimes vesico-vaginal. When injury to the bladder occurs during operation immediate repair is the obvious treatment. In two cases this tear was so low down that it could not possibly be reached through the abdomen. In these I attached
Extirpation of the Cancerous Uterus.

catgut ligatures to the upper border of the bladder wound and pulled them out through the vagina to have the leaking point well down. One healed spontaneously, and the other was easily closed by a secondary vaginal operation.

Usually a fistula due to sloughing heals spontaneously. Only once had I to operate, and this was in a patient who had very extensive involvement of the tissue between the bladder and uterus. Several days after operation a large vesico-vaginal fistula developed and showed no disposition to close. I attempted the usual vaginal operation between the third and fourth weeks. I was utterly unable to bring down the fistula, and failed even to close it primarily. The anterior vesical wall was prolapsed through the fistula, which was about the size of a shilling. The patient refused a second operation, and went out, but returned in a few weeks because of the discomfort from continuous dribbling of urine. On this occasion the condition was completely cured by abdominal section. I separated the bladder from the vagina, opened the top of the bladder to reach the fistula from within, and freshened the edges, then enlarged the incision to make it continuous with the fistula, and sewed them up as one wound.

My technique for the removal of the parametrium and glands differs in no way from the accepted views of the present day.

The point of greatest interest in these cases of uterine carcinoma centres around the question of operability and inoperability. From the description given it is apparent that fixation of the uterus, pain, purulent discharge, infiltration of the broad ligaments, and cachexia, I do not consider contra-indications to operation. In patients with serious involvement of the rectum and involvement
of the bladder with pyuria, recovery from immediate operation is not likely to give much relief to symptoms or prolong life. These alone are the cases I refuse operation. Extreme fatness is a hindrance but not an absolute contra-indication to the abdominal operation. Cachexia may point to involvement of the liver, but not necessarily, and even were the liver involved to a slight extent I do not see that it constitutes an insuperable barrier to the removal of a cancerous uterus. Contrary to the popular belief, cancer may be almost the least painful of mortal ailments. At autopsies I have seen most extensive malignant disease undiagnosed during life and causing an absolutely painless death. When cancer ulcerates it causes pain, horrible fetor, and destroys the appetite by absorption of toxins. The result is the most dreaded form of disease. To save such pain and distress is to me a justification for operation even if metastases are already present.

Much harm has resulted from the compilation of statistics which aim at demonstrating the curability of the disease. The man who has a large percentage of absolute cures must have obtained them by refusing to operate on the majority of patients seen. In the care for his reputation as a brilliant and fortunate operator, he assigns to a hopeless outlook and a lingering, painful death numbers of poor women who look to him for relief. I have been told that a high operative mortality will deter people from seeking treatment for other and curable diseases; that it is a shame to subject the patient and her friends to the anxiety of a major operation which cannot be promised to give considerable prolongation of life. Sophistries such as these may be dismissed without discussion. Has it ever fallen to any of us to operate for cancer in a woman who would refuse a second operation
if it offered the same amount of relief? For myself I can say never. On the other hand, hope, relief of suffering, and amelioration of symptoms, distressing to the patient and her friends, amply reward the operator even if life is not prolonged to any extent. Thus, one of my patients died thirty-three days after operation from continued local growth and toxaemia, but, while unable to sleep from pain before operation, she had complete relief and no return of pain before death. Even a stronger argument is that no one can say how much benefit will be afforded, and to what extent life will be prolonged. The apparently simple cases often recur very rapidly, and sometimes in very advanced cancer, where it is almost certain that palpable masses of malignant disease have been left behind, the patient recovers and remains well for months and even years. In this connection it is important to remember that cancer of the uterus may extend by the lymphatics or by continuity, but not always by both together.

This explains why recurrence may soon follow early malignancy of the cervix with an absolutely mobile uterus, while a long period of immunity may result in cases where the broad ligaments are extensively involved. It would appear almost as if the severity of the inflammatory action locked the lymphatics and prevented permeation of the cells. It is also possible that an antibody is developed during the growth of cancer, and that the removal of the main mass will raise the patient’s resistance to an extent sufficient to destroy the remaining malignant disease. This is plausible, and seems to be supported by a certain amount of clinical evidence.

I cannot terminate this paper without a warm expression of thanks to my two former clinical assistants in the Rotunda Hospital, Drs. J. K. Osborne and P. J. Keelan.
To them is entirely due the credit of compiling the statistics and personally communicating with the doctors or the patients on whom I operated. This was voluntary work on their part, and was prosecuted with enthusiasm and persistence.

**STATISTICS.**

48 cases. 9 deaths. Percentage age mortality—18.7 per cent.

**PATHOLOGY OF CASES.**

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Cases</th>
<th>Deaths</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Squamous-celled carcinoma of cervix</td>
<td>33</td>
<td>8</td>
<td>24.24</td>
</tr>
<tr>
<td>Adeno-carcinoma of body</td>
<td>11</td>
<td>1</td>
<td>9.1</td>
</tr>
<tr>
<td>Carcinoma of ovary and involvement of uterus</td>
<td>2</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Papilloma</td>
<td>1</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Distinction between adeno-squamous-cell case not made</td>
<td>1</td>
<td>0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

**RESULTS.**

39 patients discharged; 27 communicated with in November and December, 1910.

*Adeno-carcinoma.*—10 discharged. 5 have died since. 4 are still alive, 1 result unknown.

**DEATHS (5).**


, , November, 1907. Died November, 1908.

, , October, 1908. Died February, 1909.


Pain recurred six to eight weeks before death in three cases.
Extirpation of the Cancerous Uterus.

STILL LIVING (4).

Operated May, 1907.
  .. September, 1908.
  .. June, 1909.
  .. September, 1910.

Squamous-celled Carcinoma.—25 discharged, 9 have died since, 9 are still living, 7 result unknown.

DEATHS (9).

  .. March, 1907. Died June, 1907.
  .. April, 1908. Died May, 1909.
  .. May, 1908. Died March, 1909.
  .. August, 1908. Died April, 1909.

Three of these patients suffered pain before death. One for a week, one for two months, and one for nine months after twenty-seven months' freedom from recurrence.

STILL LIVING (9).

Operated May, 1906.
  .. August, 1907.
  .. July, 1907.
  .. June, 1908.
  .. July, 1908.
  .. May, 1909 (recurrence December 10).
  .. October, 1909 (recurrence November 10).
  .. July, 1910 (recurrence probable).
  .. July, 1910 (recurrence November 10).

No information could be obtained about the four other patients on the list.

Fistulae.—Vesico-vaginae, 5; uretero-vaginae, 1; faecal (abdominal), 1.

Ureters.—In four cases the ureters were not isolated
during the operation because of extensive involvement. In six cases only the right ureter could be isolated.

*Stated duration of symptoms.*—Longest, three years; shortest, three weeks. Average, seven and one-third months.

*Parity.*—Carcinoma of cervix, one nullipara; average number of children 5. Adeno-carcinoma—seven multiparae: four had borne one to five children.

**Professor Alfred Smith** said that Wertheim did well when he followed the general surgeon's method in operating on the breast. He always felt that the removal of the glands was a great advance in the operation on the breast. The operability of cases must be considered. He said the anatomists had not given much information as regards the direction of the lymphatics. The surgery of the ureter was of extreme importance. In regard to the different methods of carrying out implantation of the ureter into the bladder he mentioned the one particular case where he had damaged the ureter. The case was not one of cancer of the uterus. He tried to implant the ureter into the bladder. The patient died, and he did not know whether it was due to improper implantation or not. The danger is, as Dr. Tweedy remarks, the retraction of the ureter, and the plexus which goes to nourish the ureter may be damaged in the manipulation. He mentioned Dr. Latzko's method. The operation was a very simple one. He makes a relatively big incision into the bladder, but he does not stitch the ureter to the bladder. He anchors the bladder to the stump of the suspensory ligament of the ovary. He draws the bladder well over to the side of the damaged ureter. He leaves the damaged ureter in the bladder, where he says it becomes adherent, and no trouble follows. He (the speaker) said there is often a difficulty in recognising the ureter, but on tapping the ureter one will often get the vermicular action quite plainly and distinct. He thought this one of the most important features in detecting it. In regard to the preliminary treatment of cancer of the cervix,
he thought a bathing cap made of rubber was one of the finest methods he knew of. The cap is fitted on to the cervix and stitched there. This would prevent implantation of the cancer cells. In reference to the spread of peritonitis he did not think Dr. Tweedy's method could be improved upon for preventing it. Dr. Tweedy raised the point as to the justification of operating on cases which were considered inoperable. He (the speaker) mentioned a case which he had at present in hospital, and the patient told him she wanted no operation, but preferred to die.

Dr. Purefoy said the number of cases open to operative treatment has been enormously extended by Wertheim's method. He said, providing the patient was willing, operation should be attempted on any case where the patient is likely to survive the shock thereof. We may console ourselves with the reflection that though the indurated tissue is no doubt often cancerous it is not invariably so. Glands enlarged and hard when removed have often been shown under the microscope to be free from cancerous tissue.

Sir William Smyly said that Wertheim's method is still the best, and it would be best for beginners at least to stick closely to the rules laid down by him in a work just published founded upon an experience of five hundred operations. It appeared that his methods differ now very little from those advocated at the Belfast meeting of the British Medical Association five years ago. The cause of ureteral fistula appears to be still an unsolved riddle. Wertheim had varied his methods with the different theories as to causation, but seems to have had about the same number of fistulae in each hundred cases. With regard to the preparation of the patient before operation, he read recently that it was unnecessary, and only caused pain and haemorrhage; but on thinking it over he thought it a great error to omit the preparation of the cervix, because should the vagina be opened the patient would undoubtedly get peritonitis. Wertheim lays great weight on draining the subperitoneal spaces, and unfortunate results were due to this drain closing up. He no longer tries to expose the ureters at the beginning of the operation, but looks for them after dividing the infundibulo-pelvic ligaments.
He does not try to separate the bladder down to the vagina at the beginning of the operation, but he separates the bladder from the uterus, and after the ureters have been fully exposed, the bladder from the vagina. By doing so there was less risk of injuring the ureter, and it was possible to go further out to the sides, and in cases where the bladder is fixed to the uterus or vagina a finger can be passed from the side underneath the cancerous part, and so an idea obtained of how much cancerous tissue has to be cut through.

Dr. Thompson asked whether it would not be advisable to remove the kidney on the side of an injured ureter, as many people got on quite well with only one kidney.

The President said, with regard to the technique of the operation there were two modifications—one, originally taught by Wertheim, in which the first step was to separate the bladder from the uterus; the other by Bumm, in which the infundibulo-pelvic ligament was divided, and the peritoneum at the base of the broad ligament cut through, after which the ureter was easily seen. It seemed to him (the speaker) simple to find the ureter by this method, and it could then be traced into the cancerous mass. The only case where he thought this procedure was not preferable was where there was extensive involvement of the bladder wall, and this could be found out by cystoscopic examination. If the bladder wall was found to be clear he could not see that the two procedures were comparable—the one exposed with one cut of the scissors a long part of the ureter, while the other necessitated tunnelling under the broad ligament. In regard to five cases which he had recently seen, the first one was hopeless, and the patient died a fortnight after. As soon as he had divided the infundibulo-pelvic ligaments he found the whole of the pelvis from side to side perfectly solid. There were glands all over the place, and the ureter was dilated. If the operation had been done the ureter would certainly have been cut across. The second case was found to be hopeless by means of the cystoscope, the whole bladder wall being involved. The other cases he had shown at this meeting. In one he had taken a good piece of the rectum
away. The last case was a favourable one. As regards drainage through the abdominal wall he could not see the object of it. He had not drained in that way for a long time except in cases of general peritonitis.

Dr. Tweedy, in reply, said he did not aim at curability, but at the relief of symptoms. The statistics which went to demonstrate the curative powers of the operation were most fallacious, and men who were too careful of statistics must have refused operation on cases where relief could be obtained. He was surprised at the great number of cases of ureteral fistulae and cystitis met with in Wertheim cases, and this in spite of the most elaborate aseptic precautions and preparation of the patient. The preparation can be carried a great deal too far. Personally, he thought a fortnight a shocking interval to leave a woman without operation, and tended to make the chances of recovery graver and less hopeful. Therefore, he would say an interval of two or three days should be the utmost to leave a patient without operating, as every hour is only adding to the chances of metastasis. He said Wertheim made a mistake in not using gloves, as in this operation especially gloves are required. If cancerous tissue gets on the hands the bladder, ureter, and cellular tissue around the ureter may be infected, and he could quite understand cystitis and ureteral fistulae occurring. Drainage of the cellular tissue is greatly advocated by Wertheim. On the other hand, many great authorities—for instance, Dr. Lockyer, of London—hardly use drainage at all. He does not operate on 90 per cent. of patients, but selects his cases. In other words, he looks for early cases of cancer. If it is an early case it is not necessary to drain; if a late case it must be drained. But early or late, gloves are used. It is necessary for Wertheim to drain, but not for Lockyer. Removal of the kidney has been done very many times. Of course it adds greatly to the shock of a patient who is already in a wretched condition. His objection to the President’s method was that he was afraid of going too deep down. The ureter retracts towards the cervix and gets buried in a mass of cancer tissue. He said he was very fond of draining through the abdominal
wound, and in this operation there was no better channel—the plugging in the subperitoneal spaces passes through the vagina, but was completely closed off from the pouch of Douglas, and this he drained with the gauze through the lower angle of the wound. He thought the great feature of Wertheim's operation was the complete shutting off of the peritoneum with drainage, and abdominal drainage was also at times a great advantage.
NOTE ON A CASE OF NATURAL DELIVERY FOLLOWING CAESAREAN SECTION.

By B. A. H. SOLOMONS, M.B., B.Ch., B.A.O., Univ. Dubl.;
Assistant Master, Rotunda Hospital.

[Read in the Section of Obstetrics, March 24, 1911.]

Most obstetricians in the past have had a dread of allowing a woman with a cicatrix in her uterus to deliver herself. The woman who was before you to-night has gone through this ordeal safely, and has had the honour for the second time in her life of being exhibited in the Royal Academy of Medicine in Ireland. Her history is a curious one.

She is aged thirty-three, has been married twice, and is a quintipara. By the first husband, an army man, she had the following issue:—(1) In September, 1899, a dead child was delivered by forceps in the Rotunda Hospital, after the second stage had lasted four hours, "the head engaging in the brim—a large caput succedaneum having formed: the foetal heart being 160 and the maternal pulse being 108." The description of the pelvis in the Ward Book was:—"Very prominent sacrum, conjugata vera 7 cm. Transverse diameter of inlet 10 cm." (2) In July, 1901, a live child was delivered by Caesarean section in Holles Street Hospital. The patient informed me that she had been previously exhibited, and upon searching the Transactions of this
Academy, (1) I found that Dr. Horne, in December, 1901, had reported some "Notes of a Case of Caesarean Section." In this he stated that the measurements then corresponded with those previously ascertained at the Rotunda Hospital. The child weighed 7 lbs., and the convalescence was uneventful.

By the second husband, a labourer, she had the following issue:—(1) In 1904, an abortion; (2) in 1908, a premature child, which died on the following day; (3) In December, 1910, a live male child, 6½ lbs. weight and 19 inches in length, was born naturally in the Rotunda Hospital. The patient was only nine hours in labour, although the membranes ruptured at the commencement. All preparations were made for operation. Internal pelvimetry, by means of Skutsch's instrument, showed conjugata vera to be 8 cm., the transverse diameter of the inlet to be 12.5 cm. The extern measurements were:—Inter-spinous diameter, 23.5 cm.; intercostal diameter, 24.5 cm. Extern conjugate, 16.5 cm. Thus it is seen that the pelvis had increased in size since the Caesarean section operation. Better conditions of life probably accounted for this.

I determined to find if natural delivery after Caesarean section had ever been reported, and after prolonged investigation failed to find a single case recorded. Many writers report cases of rupture following the operation, and this may be accounted for either by the site of the incision or by the variety of suture material used. Marbott (2) reports in 1906 a case in which rupture occurred when the patient fell into labour. In this case the uterus was adherent to the abdominal wall, whilst the incision had been previously stitched with chromicised catgut.

Munro Kerr (3) reports a case of rupture after fundal incision, and says that from his experience the fundal
incision is more likely to give way. Meyer (4) reports a somewhat similar case. Neither of these mention the suture material used. Many others report somewhat similar cases. In the case before you the uterus was sewn with silk. Most authorities agree that silk is the ideal suture, as the knots withstand the immediate strain of the contractions and retractions of the uterus. Myomectomy has now become by a process of evolution in the improvement of technique a simple operation, and Kelly and Cullen (5) in their "Myoma of the Uterus" recommend catgut as suture material. Women have borne children successfully when large interstitial myomata, together with part of the uterus, have been removed, where the Kelly-Cullen technique has been followed, but in these cases the sutures were not subjected to the strain which is made upon the uterus after Caesarean operation.

The question of sterilisation of the patient, together with the different opinions of gynaecologists, has been treated in the monograph by Dr. Amand Routh (6). Surely there should be no question of sterilisation in Caesarean section for contracted pelvis, when the operation may be performed a second time or when natural delivery may occur, as happened in the patient who was before you to-night.

The apparent rarity of natural delivery after Caesarean section impelled me to write this note. It seems evident that with such a case before us we should not rush into Caesarean section when we see a patient with a history of a previous Caesarean operation, when we know that this latter operation has been properly performed, but we should again carefully measure the pelvis, and if enlargement has occurred, we should observe the patient. If this woman becomes pregnant again, there seems to be but little reason why she should not deliver herself.
In conclusion, I must thank the Master of the Rotunda Hospital for permission to publish the case.

REFERENCES.

(1) Transactions of Royal Academy of Medicine in Ireland. Vol. XX.
(2) American Journal of Obstetrics. 1906.
(4) Centralblatt f. Gynakol. 1903.

Dr. Holmes said there must have been some disparity in the measurements considering there seemed to have been an increase of 1 cm. in the conjugata vera and 2 cms. in the transverse diameter. With regard to the weight of the children, the child born by Cæsarean section weighed 7 lbs., whilst the other weighed 6½ lbs. He thought the size of the child's head must be taken into consideration.

Dr. Tweedy said he did not think the pelvis had enlarged between the two births. The pelvis must have been wrongly measured the first time, as it is easy for those without much practice to go wrong in the use of Skutsch's pelvimeter. He considered it an extremely rash thing to have allowed the woman to deliver herself considering that the uterus was adherent to the scar, and the woman gave a history of a sinus for three years after the Cæsarean section.

Dr. Gibbon FitzGibbon asked, considering the child was 6½ lbs., was there any indication of its being premature. The fact of this woman having delivered herself naturally was not a point against sterilisation, and he thought that when a woman had to undergo a second Cæsarean section the question of sterilisation should be decided by the wishes of the patient, particularly when the children were living.

The President said he did not see why the uterus should rupture during labour if it was adherent to the back of the abdominal scar. An attempt was made to encourage the formation of such adhesions with the object of protecting against a possible peritoneal infection, and a considerable
number of patients must have come into labour, because after all the practice of performing Caesarean section before the patient had been some time in labour was one of quite modern growth. This practice he considered to be very good. If the uterine scar ruptures during labour, it would be immediately diagnosed, and would not be a serious matter. In regard to sterilisation, one must take into consideration the number of children the patient had. He would be inclined to carry out her wishes if she had children before. It is a recognised treatment to perform division of the tubes in cases in which the patient has had recurrent renal disease during pregnancy, and where there is a possibility of her having it again during the next pregnancy.

Dr. Solomons did not think the pelvis was wrongly measured considering that the measurements carried out in the Rotunda and Holles Street were found to correspond. The woman had been before the Academy of Medicine before, and no mention was made about a sinus or suppuration, and he did not attach much importance to her statement. As regards the maturity of the child, both its appearance and the history showed that she was up to her full term. He did not see why a uterine scar should prevent a patient continuing her labour. As regards sterilisation of the patient, he quoted Karl Hartmann's statistics, which showed that there was less danger in performing subsequent Caesarean sections than in doing it the first time. This seemed to be a strong argument against sterilising the patient.
NOTES ON TWO CASES OF CLINICAL INTEREST.

By HENRY JELLETT, M.D., F.R.C.P.I.;
Master, Rotunda Hospital, Dublin.

[Read in the Section of Obstetrics, March 24, 1911.]

During the present Session of the Academy of Medicine, a speaker, in a discussion on eclampsia, said that an eclamptic patient ought never to die during an eclamptic fit if proper precautions were taken by those looking after her. About three nights afterwards I was called up to see a patient who had just been brought into the hospital. She was dead when I saw her, and if she had not actually died during an eclamptic fit, she had apparently had a fit from which she passed directly into a moribund condition. The notes of the case are as follows:—

Case I.—J. S., aged forty, was admitted to the Rotunda Hospital shortly after midnight on January 8th last. She had had three convulsive attacks before admission, the first of which had occurred at 10 30 p.m., and the last while in the cab at the door of the hospital. At 12 20 a.m. she had a convulsive attack and was given half a grain of morphia. At 1 15 a.m. she had another convulsive attack; she got then a quarter of a grain of morphia; her stomach was washed out and was found to be empty; the rectum was washed out with good result. Three ounces of castor oil were poured into the stomach through the stomach-tube. A pint and a half of fluid was left in the rectum and three ounces of mist. senae co. At 2 20 a.m. her temperature was 96° F.,
her pulse 100, and her respiration 40. At 3.20 a.m. she was
given another quarter of a grain of morphia, because the
syringe had leaked when giving the previous dose. She was
then conscious and able to answer questions. A few minutes
after this the patient collapsed and her respiration became
very feeble and rapid. The sister said that she had not had
another fit, but when Dr. Freeland, my assistant, saw her
immediately afterwards she presented the appearance of
having had a fit during which respiration had ceased. Arti-
ficial respiration was performed and oxygen given, as also
hypodermics of ether and of brandy. The patient made a few
efforts at respiration, but never rallied. The time at which
she died is put down as 3.55 a.m., but I think she had
probably been dead then for some minutes.

As I thought it would probably please the friends of the
patient if an attempt was made to save the baby, I opened
the uterus at once and removed the child, but it had been
dead for some time and was in rigor mortis. In passing
through the abdominal cavity I found it full of blood fluid,
the origin of which at the time was not apparent. Subse-
quently a post-mortem examination was made by Dr.
Rowlette, and he reports as follows:

The abdominal cavity was full of free blood. There was
also an extravasation of blood behind the descending colon,
and this had burst into the peritoneal cavity. The blood
appeared to come from a branch of the inferior mesenteric
vein. There were also small hæmorrhages into the liver.
Microscopically the liver showed numerous areas of neerosis.
In some of these the liver cells were recognisable but stained
badly, while in others the cells had given place to débris.
The renal tubules showed swelling of the epithelium.

My assistant, Dr. Freeland, has tried to find any
record of a similar cause of death in eclampsia to the
foregoing, and I have also looked through a number of
text-books. We cannot find any case in which the
rupture of a blood-vessel in the abdominal cavity
occurred, and the nearest approach to it is the rupture of
a large hæmatoma which had formed in the liver. Rupture of the stomach and of the diaphragm during a convulsive attack has also been recorded.

The second case is of special interest to the general surgeon.

Case II.—A patient, M. K., aged thirty-six, was admitted to the hospital on the evening of February 4th. She was sent in by Dr. O'Connell Redmond, who had been attending her for the previous week on account of severe abdominal pain and vomiting. On admission her temperature was 100.6° F., and her pulse 100. The next morning she had a rigor at about 11 a.m., and her appearance was so very bad that I thought something must have ruptured in the peritoneal cavity. The uterus was the size of a seven months' pregnancy, and was in no way abnormal. I telephoned to Mr. Heuston, our consulting surgeon, and he very kindly came over a short time afterwards to see her. Her appearance had then quite changed and she did not look at all so ill. He examined the abdomen very carefully and could not detect any evidence of anything abnormal. There was no marked tenderness anywhere, nor any distension. The vomiting was less, but her temperature had risen to 102° F. There were strong uterine contractions at intervals, but they did not appear to cause pain.

At about 6 p.m. the same evening there was some smart hæmorrhage from the vagina. She was examined, and, the os being found to be fully dilated, the membranes were ruptured. The liquor amnii which escaped was very foul-smelling. The child was born alive almost immediately, and the placenta and membranes which followed shortly afterwards were also very foul-smelling. The uterus was douched and a culture taken. This culture, on examination, was found to contain large numbers of organisms, mostly saprophytes, but also streptococci. At the time I considered that the condition of the liquor amnii quite explained her symptoms. The same evening her temperature fell to 100° F., but her pulse was 124. The next morning her tem-
Two Cases of Clinical Interest.

Temperature was 98.6° F., and her pulse 96. In the evening they had risen respectively to 101.4° F., and 112. This did not seem unusual when one considered the condition of the interior of the uterus. The uterus was douched and plugged with iodoform gauze. The next evening her temperature was 102° F., and her pulse 120. She was again douched, and again the next morning. The next night—the third—her temperature had fallen to 100° F., and her pulse remained at 120. At this time she considered that she was better, and took her food fairly well. Her bowels acted regularly, and the lochia presented the normal characteristics. On the fourth day she was not so well, but her temperature was not above 101.5° F. in the morning, and had fallen half a degree in the evening. Her pulse remained steady at 120. She was douched once. The next day—the fifth—she was given 2½ million of streptococcus vaccine. The same evening her temperature rose to 103° F., and her pulse to 130.

The next morning she was obviously very ill, and though there was no positive sign of septic peritonitis, the possibility of its presence suggested itself to me. I douched her myself that morning, and explored the uterus with my hand to see if anything abnormal could be felt. The cavity was large, and the whole uterus felt very fixed, but no extrauterine swelling could be felt. That evening when I saw her she had obviously got septic peritonitis. I had her brought over to the theatre as quickly as possible, and opened the abdomen. The peritoneal cavity was full of pus, and she died almost immediately after it was opened.

Dr. Rowlette made the post-mortem examination the next day, and his report is appended:

Lungs healthy, but for a few old scars. No fluid in pleura.

Heart healthy. No fluid in pericardium.

Abdomen contains a large quantity of turbid fluid. Pus in pelvis, with loose adhesions. Great mass of adhesions in right iliac region—omentum, right tube and appendix being bound together. A gangrenous opening, size of a sixpence, is in side of appendix. Gangrenous patch also in omentum.
By Dr. H. Jellett.

Spleen large, but pale.
Liver very pale.
Kidneys normal.
Uterus, walls thick and soft. Interior clean and smooth.
Small blood clot.
Ovaries inflamed and suppurating.
Streptococci and saprophytes plentiful in fluid in abdomen.
Cultures from heart blood negative.

This case presents in a very striking manner the great difficulty which attends the diagnosis of intra-peritoneal conditions during pregnancy. Although when I saw the patient first her condition suggested an intra-peritoneal rupture, when Mr. Heuston saw her a couple of hours later there was nothing to point to such an occurrence, and I quite agreed with his suggestion that she was, perhaps, getting pneumonia. The condition of the liquor amnii then was apparently sufficient to account for her symptoms, and this idea was supported by her subsequent improvement.

Another point of interest is the fact that the child was born alive and healthy, and lived, in spite of the fact that it was for some days lying in a fluid swarming with micro-organisms. The latter must have entered the uterus through the uterine wall, and the fact that they did not gain any entrance into the foetal circulation shows how great a protective influence must be exerted by the covering-layers of the chorionic villi.

Howard Kelly, in his work on appendicitis, has an interesting article on appendicitis in pregnancy, in which he mentions a couple of cases of perforative appendicitis very similar to this. One recorded by Oppenheimer especially closely resembles it. Oppenheimer's patient was in the seventh month of pregnancy, and presented
symptoms of peritonitis. On the third day a living child was born. Three days later a large mass resembling a tumour of the kidney had developed, while necrotic masses were removed from the uterus. The patient died without operation, and the \textit{post-mortem} examination showed peritonitis resulting from perforative appendicitis and secondary infection of the placental site. Kelly himself considers that in most cases the foetus dies from general toxæmia or septicaemia, and if born alive dies from non-viability and infection. He also says that if the premature delivery occurs early in the attack a healthy child may be born, but that after the patient has become profoundly septic, or when infection of the uterus has occurred, the prognosis for the child is less favourable.

Dr. Tweedy said he was quite aware that certain people got apoplectic seizures even if they had not got fits. Haemorrhages into the brain are common in epileptic attacks. When he stated on a previous occasion that no woman should die in eclamptic fits he meant that a woman should not die of the fit itself. He said if septic microorganisms were found in the liquor amnii before labour, the woman should be delivered by Cesarean section and the uterus removed. This case went to prove that this treatment was the correct one. He thought that the presence of micro-organisms in the uterus was a clear indication of adhesions with the intestine or of some suppurating focus in the abdominal cavity.

Dr. Crofton said if the vaccine was mixed with 10 to 20 cc. of anti-streptococcus serum the streptococci are more or less sensitised, more easily taken up, and produce more "anti" substances with much less risk to the patient. The "antigenic" effect of the vaccine is not affected, and the mixture produces active as well as passive immunity. He thought before doing the operation of total extirpation of the uterus one should first try specific therapy.
Dr. Rowlette said he did not think the vaccine had anything to do with the patient’s death, as the dose given was very small. He doubted whether the putrefactive organisms were the most important, for saprophytic organisms were also found. Her abdomen was full of putrefactive fluid. He had not tried mixing the vaccine with the anti-serum, but he had given them side by side with no better result, but with an attack of neuritis in one case which was not serious. He did not consider that any vaccine treatment would have been of use in this case. With regard to the eclamptic case, although there were the typical changes of eclampsia, it was impossible to find where the haemorrhage came from, but it seemed to be from a branch of the inferior mesenteric vein.

Sir Wm. Smyly said that the second case had died from perforation of the appendix, and the only chance of saving her life would have been to have opened the abdomen and to have removed the appendix. An exact diagnosis could not have been made.

The President considered it too wide a statement that if bacteria are found in the liquor amnii a hysterectomy should be done. There was one point in this case in favour of this, for if this had been done one would have seen the perforated appendix. It was an analogy of sarcoma of the uterus in which there is pus inside, or myoma of the uterine cavity with an acute infection. He thought if one removed the myoma or the pus he should endeavour to treat the local uterine condition, and if this condition is a local one and there is no evidence of its spreading to the peritoneal cavity, he thought that the treatment in the first instance would be the local treatment of the infected uterine cavity from the vagina. The reason he said the epithelium of the chorionic layer protected the child was because there was no obvious evidence of foetal infection, and the epithelial layers of the chorion were found intact only at the placental site.
CLINICAL REPORTS OF THE ROTUNDA HOSPITAL FOR YEAR ENDING OCTOBER 31st, 1910.


[Read in the Section of Obstetrics, May 22, 1911.]

MATERNITY REPORT.

The Report for 1909-1910 is my seventh and last. Like its predecessors it shows continuous progress in the activities of the hospital. There were 2,524 admissions to the maternity wards and 2,222 deliveries. In my predecessor's last year the number was 1,694 deliveries—528 fewer patients than now. The morbidity was 2.61 per cent., a percentage practically the same as last year, and these two years mark the best results that I have been able to obtain. They show a distinct improvement as compared to that of my first year when the morbidity was 10.7 per cent. It must be remembered that these results have been obtained without structural alteration in the hospital, and by methods which can be, and are, applied in general practice. It will be interesting to note future results, to see if the structural improvements which are about to take place in the labour ward will have the effect of still further reducing the morbidity.
A word of warning is here necessary, for unless there is close supervision on the part of the Master and his assistants there will be the greatest tendency to slacken in the precision of recording the temperature and pulse. I experienced great difficulty in this particular during my first year, and indeed on one sister was never able to impress the importance of accuracy in this particular. A more recent experience will serve to illustrate my meaning. On taking up my appointment at Steevens' Hospital I was struck by the apparent excellence of the results in the maternity ward, as evidenced by the range of temperatures. It was not until I was in the hospital some months that it occurred to me to ask the method of taking temperatures. I then learned that no attempt was made to carry out the suggestions of the British Medical Association. The half-minute thermometer was not used. Axillary and not mouth temperatures were taken. No definite time was set apart for recording temperature and pulse, nor was there any rule as to the length of time the thermometer should remain in place.

Some time after this (having completely forgotten that I caused a change to be made) I remarked to the sister that the ward did not show the healthy condition to which I had become accustomed. The sister said the patients were doing as well as ever, the apparent difference resulting from the manner of taking the temperature.

The basis of our classification and our method for the diagnosis of eclampsia were fully described last year. All women who die after the sixth month, and who have had one or more fits during their illness, are classed as eclamptics. If recovery occurs they are not considered to have had eclampsia if they do not exhibit marked albuminuria, or if they give a history of previous fits un-associated with pregnancy. In the past we have not
kept a record of recovery from convulsions not due to eclampsia, and are, therefore, unable to say how many cases have been diagnosticated as epilepsy or hysteria. It is certain that no year has passed without one or more of these cases occurring. During the period covered by this Report three women, who had developed fits in the hospital and left the institution well, have been excluded from our eclamptic list.

Fourteen women were treated for eclampsia with no death, making a series of twenty-nine cases extending over two years and ten months without any maternal mortality. The suggestion has been made that these results depend on the fact that the disease in Dublin is of a milder nature than elsewhere. A little consideration shows how untenable is such a statement. Since the foundation of the Rotunda Hospital there is no record of such a number of cases spread over so long a period with no mortality. The mortality was 35.3 per cent. before Sir William Smyly re-introduced the morphine treatment. For my time the mortality was 8.11 per cent., six deaths in 74 cases, and there is no doubt that this comparatively small mortality could be materially lowered by adherence to the strict details of method we have followed for the past three years. Formerly nurses were permitted to care for the patient, but now, in severe cases, there is in addition a member of the staff or a specially instructed student.

Some of our patients died in the eclamptic fit, and on a former occasion I stated that this should not occur. Death is caused by suffocation due to falling back of the tongue and spasm of the glottis induced by a collection of mucus in the back of the throat—a condition not unknown in ether or chloroform anaesthesia. To prevent such an occurrence we keep the patient on her right side with the
cheek resting on the pillow. This allows the escape of secretion through the mouth. If respirations cease and cyanosis is marked, the attendant turns the patient on to her abdomen with her head and shoulders hanging over the edge of the bed, making the face look downwards. As a result of this manœuvre fluid pours out through the mouth and nose and inspiration immediately follows. It is sometimes necessary to aid the re-establishment of breathing by artificial respiration and inhalation of oxygen—a cylinder of which should always be kept beside an eclamptic patient.

All of our fourteen patients recovered. Morphine, beginning with half a grain, followed at frequent intervals with one-quarter grain doses, was given. Six patients received stimulation as represented by atropine, digitalin, whisky by rectum, and hypodermics of ether. One had scopolamine with the morphine. Eight had gastric lavage and purgatives by stomach tube, ten rectal lavage, and nine sub-mammary infusion of sodiumbicarbonate solution. Six had linseed meal poultices to the loins. One patient required artificial respiration. All forms of eclampsia are represented—ante, intra, and postpartum—with combinations of each.

Three patients were delivered with forceps when the os was fully dilated; one woman had twins, both of which were delivered with forceps. Labour was never induced. Starvation was rigidly enforced. No fluid (water, croton oil, &c.) was ever placed in the mouth of an unconscious patient.

Last year I drew attention to the remarkable association which seemed to exist between the ingestion of food and the convulsive seizures. "In nearly every case efforts to empty the stomach and bowels have been rewarded by the removal of large quantities of undigested
Clinical Reports of the Rotunda Hospital.

and indigestible material, frequently of a vegetable nature. Thus, potato skins, lumps of apparently raw cabbage, currants, and orange pulp have been removed by gastric and rectal lavage. Their removal is usually associated with benefit." Since this was written our attention has been focussed on this point, and I now believe myself to be in a position to state that eclampsia is due to food acting as a poison, and that no food can be given with safety when convulsions have manifested themselves. We knew this as a matter of experience last year, but as this experience had not been carefully recorded it is worthless to prove the accuracy of our observations. The following cases are so remarkable that it is impossible to ignore their significance.

L. C. had eight ante-partum convulsions followed in forty-two hours by forceps delivery. She was conscious for forty-one hours before delivery, which occurred at 6 55 p.m., March 17th, 1910. Two hours after delivery she was given one ounce of milk, and received four pints in all within the next twenty-eight hours. At 1 30 o'clock a.m. on March 19th, the patient showed every sign of severe intestinal toxæmia, a rapid small pulse, marked abdominal distension, sweating and mental aberration, amounting almost to delirium. She had one or two irregular convulsions, which resembled hysterical manifestations more than eclamptic fits. At 2 30 a.m. she had a severe convulsion, followed by two more within an hour, after which her pulse rose to 170, and was for a time so fast and small as to be practically uncountable. A large quantity of very sour curd was washed out of the stomach, and thorough rectal lavage brought away considerable faecal matter and flatus. Following this she recovered consciousness for thirty-six hours, during which time she got no food. Then followed the third group of convulsions, amounting in all to more than 100. Her bowels had not moved for thirty-one hours; abdominal distension was again a marked feature.
So far as we know, she received nothing in the way of food during this time, and we must, therefore, conclude that milk curds were still retained to some extent in the intestines, for the recurrence of abdominal distension could be accounted for only in this way.

A. R. had four ante-partum fits, followed in twelve and a half hours by forceps delivery, at 1 30 p.m., September 15th, 1910, after which she regained consciousness in six hours. Sixty-nine hours after regaining consciousness she was given one ounce of milk, five ounces at the end of one hour, and again five ounces in three hours. Half an hour after the last dose there was a recurrence of severe convulsions—three within an hour. They yielded to our usual treatment, and she remained free from them for another thirty-six hours. She was conscious for thirty-three hours. Four ounces of whey were then given, and within three and a half hours following this another group of five convulsions occurred.

Our best results have followed since the danger of giving food has been kept clearly in mind, and the practical conclusion arrived at is that a patient may be permitted to abstain from food for days if necessary. Heart failure will more certainly result from toxaemia than from inanition.

**CONTRACTED PELVES.**

We record 21 cases of contracted pelvis, each carefully measured with Skutsch's pelvimeter. This is the largest number that has ever been reported in the hospital in a single year. Sir William Smyly long ago predicted an increase in the frequency of contracted pelvis as a result of the greater prevalence of bottle-feeding in Ireland. This may have some bearing on our present figures, but I am inclined to attribute it to a greater watchfulness on the part of the Assistant Masters and Staff. We never record
contractions unless they are greater than the first degree—that is, unless the true conjugate is less than 3¾ inches. This excludes a number of cases where it is customary to induce premature labour, cases in which we consider we obtain better results in permitting natural labour to occur. Five patients with conjugate diameters ranging from 8 to 9 cm. delivered themselves naturally of full-term children weighing from 5½ lbs. to 7½ lbs., the largest child through the 8 cm. pelvis. One of these cases resulted in natural delivery by the vertex after a transverse presentation had been changed to a vertex by external version; labour had just started when this was done. The membranes ruptured ten hours before delivery, and the second stage lasted only one hour. The foetal heart was 132 at the beginning of the second stage, up to which time the head had not fixed by its largest diameter. When the head was born the cord was twisted very tightly about the child’s neck. The child was born dead with an extensive cerebral haemorrhage.

One other patient delivered herself normally of a 7¾ lb. child. This was the second spontaneous labour after Döderlein’s pubiotomy in 1907. Before the pubiotomy the pelvic measurements were 7.5 cm. c. v. and 12 cm. transverse. She refused to permit herself to be measured after the birth of her child, and we, therefore, are in ignorance as to the present size of her pelvis.

Delivery by the breech was accomplished in seven cases. One of these had placenta prævia, for which the usual treatment was adopted. Version was performed four times for prolapsed cord in contracted pelvis. All these children were born alive. One of them, a 5½ lbs. child, delivered with great difficulty through a 6½ cm. simple flat pelvis, had the whole side of its head crushed in by the promontory. This depression was raised with
one blade of a bullet forceps. The child died three days later, and the autopsy showed the skull in good position apparently undamaged, and no marks of injury to the brain. This furnishes a splendid example of the safety of the method which I introduced several years ago. In the other cases the true conjugate varied from 8 to 9½ cm., and the children from 5¼ to 8½ lbs.

Two dead children were perforated—one in a woman with a 6 cm. pelvis, the other after forceps had failed to deliver. Her conjugate was 9 cm.

Three children were delivered with forceps, one dead. The woman was sent in from the extern maternity with membranes ruptured thirty hours: c.v. 7½ cm. The other two were both cases of general contraction.

Classical Cæsarean section was performed once. There were six cases treated by one of two methods, to which I particularly wish to call attention—one, true, subcutaneous pubiotomy, and the other extra-peritoneal Cæsarean section. The latter I have performed twice this year and once the year before.

In subcutaneous pubiotomy Bumm's sharp needle is pushed from below upward without any preliminary cutting. It is a simpler, more aseptic, quicker, and less bloody operation than that of Döderlein. In the latter the large shoulder of the needle pushes back against the bladder, and is very likely to injure the delicate plexus of veins. It is also impossible to insinuate the blunt and rather clumsy needle end between the periosteum and the bone, and this end almost always bursts its way through these delicate vessels, exciting free haemorrhage.

The two open incisions also constitute a complication, for they do not always heal by first intention, and are a frequent source of morbidity in the puerperium. The avoidance of haemorrhage converts a serious operation into
one that cannot be surpassed in simplicity. The extensive lacerations which mysteriously arise in the vulva and vagina, and which have been noted by all operators, cause the most serious complications of pubiotomy. They are due (as I have definitely proved) to the rapid bursting out of haemorrhages caused by needle injuries. This haemorrhage can be avoided by the careful use of a sharp needle.

In respect to the two cases of extra-peritoneal Cæsarean section no other operation would exactly have taken its place under the circumstances, and men are in error who consider that it has no indications apart from classical Cæsarean section. When Cæsarean section and pubiotomy are contra-indicated, the former by prolonged labour with membranes ruptured, the latter when the os is not fully or almost fully dilated, extra-peritoneal Cæsarean section has its special indication. Also, in those cases where classical Cæsarean section would be indicated but for the suspicion of infection as a result of vaginal examinations before admission to the hospital, extra-peritoneal Cæsarean section is the alternative to perforation. Pubiotomy is preferable if the size of the pelvis and the condition of the os permit it. The advantages of the extra-peritoneal operation are—(1) The avoidance of perforating a living child, whose death in no way ensures against maternal death from sepsis. (2) The intestines are shut off from the field of operation. (3) The amount of blood lost is very slight, and the scar is not in a dangerous position should subsequent pregnancy occur. (4) There is no possibility of adhesions forming between scar and intestines, or of suppuration in the scar causing a flow of septic material into the general peritoneal cavity. (5) It can be performed safely after the membranes have ruptured and labour is far advanced; in fact, a well-formed lower uterine segment makes the operation easier. Much has been made
of the opening up of the cellular tissue and its liability to serious infective processes. Such strictures, though true of Döderlein's operation, do not apply to that of Selheim, and in the operations I have performed there was no more opening up of cellular tissue than obtains in classical Cæsarean section.

**HYSTEROTOMY CASES.**

E. L. was admitted from the extern department twenty-five hours in labour, with membranes ruptured and a well-marked lower uterine segment. Eight different men had made vaginal examinations. The head was unfixed and markedly over-riding. I had performed a pubiotomy previously on this woman, and recognised at that time that the degree of contraction, 6.5 cm. C.V., constituted a contra-indication to the operation. In a subsequent pregnancy, version and perforation of the aftercoming head had been performed in the extern department. This was obviously a case where classical section exposed the woman to an added risk of sepsis, and under the circumstances there seemed no alternative but hysterectomy. A living child was born. That the fear of sepsis was not unfounded was shown by the fact that the abdominal wound suppurated. The patient made a good recovery, and was exhibited at the Section of Obstetrics of the Royal Academy of Medicine in Ireland, at the meeting at which I showed my pubiotomy cases.

M. G. was delivered by symphysiotomy in 1903. Two subsequent pregnancies terminated in normal delivery. Pregnant for the fourth time, she was admitted in strong labour with the head unfixed. We again awaited normal delivery, allowing labour to go on for twenty hours. She was in Walcher's position continuously for nine and a half hours with a tight abdominal binder. By this time the os was fully dilated, there was œdema and congestion of the vulva and vagina, the maternal pulse 86, and the temperature 99°. Bandl's ring reached almost to the umbilicus; the head showed no signs of fixing; a large caput had
formed, and the foetal heart had risen to 170 between pains.

Pubiotomy could have been performed in this patient as the conjugate vera was 8 cm., but we feared abnormal adhesions of the bladder because of her former symphysiotomy. She left the hospital perfectly well on the eighteenth day.

The greatest change in the treatment of sepsis has been in the free employment of small doses of vaccines in acute cases. Formerly we administered these vaccines in chronic cases alone. The results are dealt with in the Pathological Report.

Scopolamine has been used for the last two and a half years of my Mastership. Last November my Assistants reported 100 cases of scopolamine anaesthesia in primiparae. We are still strong advocates for intelligent administration.

Other cases of interest are Cæsarean section and hysterectomy for myoma obstructing labour; removal of very large ovarian cyst at full term and delivery by forceps within twenty-four hours of a living child; cure of spina bifida by operation; two cases of prolapse of the cervix complicating pregnancy and labour; and a placenta weighing 4 lbs. It is also worth noting the great success that has attended the treatment of prolapse of the cord. It furnishes an admirable indication of the splendidly efficient work performed by my Assistant Masters. To them, too, I am indebted for all the difficult and more important work expended on this Report. I return them my best thanks, and sever our working partnership with much regret.
### Table No. I.—Maternity Department.

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### Table No. II.—Nature and Number of Cases Treated in the Extern Maternity.

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| Twins                |       |       |       |       |       |       |       |       |       |       |       |       | 7     |
| Prolapse of funis    |       |       |       |       |       |       |       |       |       |       |       |       | 34    |
| Placenta previa      |       |       |       |       |       |       |       |       |       |       |       |       | 12    |
| Accidental haemorrhage|     |       |       |       |       |       |       |       |       |       |       |       | 9     |
| Post-partum haemorrhage|   |       |       |       |       |       |       |       |       |       |       |       | 6     |
| Lacerations of perineum |   |       |       |       |       |       |       |       |       |       |       |       | 22    |

| Operations—          |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Version              |       |       |       |       |       |       |       |       |       |       |       |       | 17    |
| Forceps              |       |       |       |       |       |       |       |       |       |       |       |       | 28    |
| Manual removal       |       |       |       |       |       |       |       |       |       |       |       |       | 13    |

| Children Stillborn   |       |       |       |       |       |       |       |       |       |       |       |       | 56    |
| Fresh                |       |       |       |       |       |       |       |       |       |       |       |       | 21    |
| Macerated            |       |       |       |       |       |       |       |       |       |       |       |       |       |

<p>| Infantile Conditions |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Hydrocephalus        |       |       |       |       |       |       |       |       |       |       |       |       | 5     |
| Anencephalus         |       |       |       |       |       |       |       |       |       |       |       |       | 2     |
| Spina bifida         |       |       |       |       |       |       |       |       |       |       |       |       | 1     |
| Meningocele          |       |       |       |       |       |       |       |       |       |       |       |       | 1     |
| Hare-lip and cleft palate | |       |       |       |       |       |       |       |       |       |       |       | 3     |
| Papyraceous facies   |       |       |       |       |       |       |       |       |       |       |       |       | 1     |</p>
<table>
<thead>
<tr>
<th>Name</th>
<th>Age and Para</th>
<th>Date of Delivery</th>
<th>Date of Death</th>
<th>Cause of Death</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>M. B.</td>
<td>35 years, X.</td>
<td>1910 Feb. 23</td>
<td>1910 Feb. 23</td>
<td>Post-partum haemorrhage; shock</td>
<td>Moribund when extern assistant arrived</td>
</tr>
<tr>
<td>M. D.</td>
<td>25 years, III.</td>
<td>March 24</td>
<td>April 9</td>
<td>Broncho-pneumonia; sepsis</td>
<td>—</td>
</tr>
<tr>
<td>B. R.</td>
<td>28 years, IX.</td>
<td>March 30</td>
<td>March 30</td>
<td>Accidental and post-partum haemorrhage; secondary collapse</td>
<td>Made primary recovery from shock after post-partum haemorrhage, and then collapsed in 3½ hours</td>
</tr>
<tr>
<td>K. K.</td>
<td>27 years, V.</td>
<td>April 15</td>
<td>May 2</td>
<td>Chronic heart and kidney disease</td>
<td>—</td>
</tr>
<tr>
<td>K. F.</td>
<td>29 years, VI.</td>
<td>June 12</td>
<td>June 12</td>
<td>Post-partum haemorrhage</td>
<td>Moribund when extern assistant arrived</td>
</tr>
<tr>
<td>A. K.</td>
<td>34 years, VII.</td>
<td>Sept. 23</td>
<td>Oct. 2</td>
<td>Sepsis</td>
<td>Incomplete fetid abortion cleared out, with temp. 102° and pulse 110</td>
</tr>
</tbody>
</table>
Table No. IV.—Showing Nature and Number of Cases Treated in Intern Maternity.

| Total admissions | 2,524 |
| Total deliveries | 2,222 |
| Primipara | 786 |
| Abortions and miscarriages | 75 |
| Hyperemesis | 4 |
| Hydramnios | 4 |
| Hydatidiform mole | 1 |
| Placenta weighing 4 pounds | 1 |
| Presentations— | |
| Occipito-posterior | 18 |
| Face | 4 |
| Brow | 2 |
| Breech | 55 |
| Transverse | 9 |
| Twins | 32 |
| Prolapse of funis | 19 |

| Haemorrhage— | |
| Accidental | 2 |
| Unavoidable | 10 |
| Post-partum | 33 |
| Prolapse of cervix | 2 |
| Haematoma of vulva | 1 |
| Rupture of vagina | 1 |
| Laceration of cervix (operative) | 1 |

| Laceration of perineum— | |
| Complete | 2 |
| Incomplete primipara | 458 |
| " multipara | 206 |
| Failure of primary union | 24 |
| Adherent placenta | 17 |
| Retained cotyledon | 2 |
| Ovarian cyst obstructing delivery | 1 |
| Myoma obstructing delivery | 1 |
| Contracted pelvis | 24 |

| Operations—con. | |
| Perforation and cephalo-tripsy | 2 |
| Decapitation | 1 |
| Forceps | 93 |
| Version | 20 |
| Eclampsia | 14 |
| Epilepsy | 3 |
| Mania | 1 |
| Melancholia | 1 |
| Puerperal ulcer | 4 |
| Phlegmasia | 1 |

| Morbidity— | |
| B. M. A. estimation | 4.33 |
| Rotunda estimation | 2.61 |

| Mortality— | |
| Maternal | 4 |
| Infantile, died in hospital | 27 |

| Stillborn— | |
| Recent | 26 |
| Macerated | 43 |
| Putrid | 2 |

| Infantile conditions— | |
| Anencephalus | 6 |
| Spina bifida | 4 |
| Cephalhaematoma | 7 |
| Fractured humerus | 1 |
| Ophthalmia | 1 |
| Talipes | 9 |
| Umbilical hernia (large) | 1 |
| Absence of hand (left) | 1 |
| Depressed fracture of skull | 2 |
| Icterus neonatorum (fatal) | 1 |
| Rupture of funis | 1 |
| Supernumerary thumbs | 1 |
| " toes | 1 |
| Secondary haemorrhage from cord | 1 |
| Brachial palsy | 1 |
| Undescended testicle (left) | 1 |
| Webbed toes | 1 |
| Dextrocardia, rudimentary lungs, absence of left half of diaphragm, intestines in pleural cavity | 1 |
Table No. V.—Accidental Haemorrhage.

<table>
<thead>
<tr>
<th>Name</th>
<th>Age and Para</th>
<th>Variety</th>
<th>Period</th>
<th>Result to Mother</th>
<th>Result to Child</th>
<th>Presentation</th>
<th>Treatment and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>M. N.</td>
<td>40, III.</td>
<td>External</td>
<td>Term</td>
<td>Recovery</td>
<td>Dead</td>
<td>Vertex</td>
<td>Plugged and tight binder; bleeding 3 hours; os admitted 1 finger, p. 120; plugs removed in 3 hours and delivery quickly followed.</td>
</tr>
<tr>
<td>M. H.</td>
<td>23, II.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Plugged and tight binder; profuse haemorrhage; pulse uncountable for a time; submammary infusion; child delivered 2 hrs. after plugs introduced; severe post-partum haemorrhage.</td>
</tr>
</tbody>
</table>
**Table No. VI.—Placenta Previa.**

<table>
<thead>
<tr>
<th>Age and Para</th>
<th>Variety</th>
<th>Period</th>
<th>Result to Mother</th>
<th>Result to Child</th>
<th>Presentation</th>
<th>Treatment and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>37, VII.</td>
<td>Marginal</td>
<td>34 weeks</td>
<td>Recovered</td>
<td>D.</td>
<td>Vertex</td>
<td>Bi-polar version.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sent up from</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>country with</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td>vagina plugged.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pulseless cord</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>prolapsed.</td>
</tr>
<tr>
<td>35, VI.</td>
<td>Lateral</td>
<td>Term</td>
<td></td>
<td></td>
<td>A.</td>
<td>Plugged twice</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>before admission.</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Plugs removed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Delivery unaided.</td>
</tr>
<tr>
<td>25, III.</td>
<td>Marginal</td>
<td></td>
<td></td>
<td>A.</td>
<td></td>
<td>Bi-polar version.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cord prolapsed</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>during version,</td>
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<td></td>
<td></td>
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<td>and was re-</td>
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<td></td>
<td></td>
<td></td>
<td>placed.</td>
</tr>
<tr>
<td>28, VII.</td>
<td>Lateral</td>
<td></td>
<td></td>
<td>A.</td>
<td></td>
<td>Bi-polar version.</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Cord prolapsed</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>during version.</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>Prolapse of cord</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>in all previous</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>labours. C. V.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9½ cm. Trans. 12 cm.</td>
</tr>
<tr>
<td>32, X.</td>
<td>Marginal</td>
<td>36 weeks</td>
<td></td>
<td>D.</td>
<td></td>
<td>Internal version.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Child delivered</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>in 25 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>without difficulty.</td>
</tr>
<tr>
<td>21, II.</td>
<td>Lateral</td>
<td>34 weeks</td>
<td></td>
<td>A.</td>
<td></td>
<td>Forceps when os</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>fully dilated as</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>foetal heart was</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>slowing rapidly.</td>
</tr>
<tr>
<td>32, XIII.</td>
<td>Marginal</td>
<td>28 weeks</td>
<td></td>
<td>D.</td>
<td></td>
<td>Bi-polar version.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Child died day of</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>delivery premature.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Post-mortem showed</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>congenital syphilis.</td>
</tr>
<tr>
<td>28, I.</td>
<td>Lateral</td>
<td></td>
<td></td>
<td>D.</td>
<td></td>
<td>Bi-polar version.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Child delivered</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3 hours later.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pulseless cord</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>prolapsed.</td>
</tr>
<tr>
<td>34, IX.</td>
<td>Central</td>
<td>32 weeks</td>
<td></td>
<td>Transverse</td>
<td></td>
<td>Bi-polar version.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Child delivered in</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1½ hours.</td>
</tr>
<tr>
<td>31, III.</td>
<td>Lateral</td>
<td></td>
<td></td>
<td>Vertex</td>
<td></td>
<td>Bi-polar version.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Child weighed</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2½ lbs. Haemorrhage</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>for six weeks.</td>
</tr>
</tbody>
</table>
Table No. VII.—Contracted Pelvis.

All internal measurements made with Skutsch’s Pelvimeter.

<table>
<thead>
<tr>
<th>Name</th>
<th>Age</th>
<th>Para</th>
<th>Pelvic Measurements</th>
<th>Mode of Delivery</th>
<th>Result to Child</th>
<th>Weight of Child</th>
<th>Result to Mother</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>P. X.</td>
<td>39</td>
<td>I.</td>
<td>8.5 12.4 19.5 26.5 23.5</td>
<td>Subcutaneous pubiotomy forceps</td>
<td>Alive</td>
<td>8</td>
<td>Recovered</td>
<td>Walked 17th day. Baby died 11th day of congenital syphilis. Sixty-four hours in labour, forceps failed to deliver. X-ray showed fibrous union. Measured after pubiotomy. Sent in from extern. Membranes ruptured 30 hours. F. H. 100. Head fixed while patient was being brought in cab.</td>
</tr>
<tr>
<td>C. N.</td>
<td>39</td>
<td>III.</td>
<td>7.8 13.4 16 23.5 23</td>
<td>Forceps</td>
<td>Dead</td>
<td>8</td>
<td></td>
<td>Sent in from extern 24 hours in labour. Examined by 8 different men. Infection of superficial wound. First labour pubiotomy. Second transverse version, perforation.</td>
</tr>
<tr>
<td>E. L.</td>
<td>28</td>
<td>III.</td>
<td>6.5 10 16.5 29 27</td>
<td>Extra peritoneal Cesarean section</td>
<td>Alive</td>
<td>9½</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>Age</td>
<td>Para</td>
<td>C. V.</td>
<td>Trans.</td>
<td>Ext. C.</td>
<td>I. C.</td>
<td>I. S.</td>
<td>Mode of Delivery</td>
</tr>
<tr>
<td>--------</td>
<td>-----</td>
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<td>-------</td>
<td>--------</td>
<td>---------</td>
<td>-------</td>
<td>-------</td>
<td>-----------------</td>
</tr>
<tr>
<td>E. B.</td>
<td>19</td>
<td>II.</td>
<td></td>
<td></td>
<td>16.5</td>
<td>24.5</td>
<td>25</td>
<td>Prolapse of cord, internal version and extraction</td>
</tr>
<tr>
<td>M. F.</td>
<td>22</td>
<td>I.</td>
<td>9</td>
<td></td>
<td>19</td>
<td>24.75</td>
<td>25.5</td>
<td>Vreech</td>
</tr>
<tr>
<td>M. K.</td>
<td>22</td>
<td>I.</td>
<td>9.2</td>
<td>12.4</td>
<td>18</td>
<td>26.5</td>
<td>25</td>
<td>Prolapse of cord, internal version and extraction</td>
</tr>
<tr>
<td>E. F.</td>
<td>24</td>
<td>I.</td>
<td>8</td>
<td>12.3</td>
<td>20</td>
<td>27</td>
<td>25</td>
<td>Spontaneous vertex</td>
</tr>
<tr>
<td>R. T.</td>
<td>34</td>
<td>VI.</td>
<td>6.2</td>
<td>13.2</td>
<td>17</td>
<td>28.5</td>
<td>27</td>
<td>Prolapse of cord, internal version, and extraction</td>
</tr>
<tr>
<td>Name</td>
<td>Age</td>
<td>Para</td>
<td>Pelvic Measurements</td>
<td>Mode of Delivery</td>
<td>Result to Child</td>
<td>Weight of Child</td>
<td>Result to Mother</td>
<td>Remarks</td>
</tr>
<tr>
<td>------</td>
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<td>---------------------</td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>C. V.</td>
<td>Trans.</td>
<td>Ext. C.</td>
<td>L. C.</td>
<td>L. S.</td>
<td></td>
</tr>
<tr>
<td>M. N.</td>
<td>27</td>
<td>I.</td>
<td>6</td>
<td>11.6</td>
<td>16.5</td>
<td>27</td>
<td>26</td>
<td>Peroration and cephalotrispy Spontaneous vertex</td>
</tr>
<tr>
<td>F. M.</td>
<td>25</td>
<td>I.</td>
<td>9</td>
<td>12</td>
<td>16</td>
<td>24.5</td>
<td>22.5</td>
<td>Spontaneous vertex</td>
</tr>
<tr>
<td>S. M.</td>
<td>28</td>
<td>VII.</td>
<td>9.2</td>
<td>12</td>
<td>19</td>
<td>28</td>
<td>27</td>
<td>Bi-polar version, placenta praevia, prolapse of cord</td>
</tr>
<tr>
<td>M. K.</td>
<td>40</td>
<td>XI.</td>
<td>9</td>
<td></td>
<td>22</td>
<td>32</td>
<td>28</td>
<td>Peroration and cephalotrispy Spontaneous vertex</td>
</tr>
<tr>
<td>B. M.</td>
<td>22</td>
<td>I.</td>
<td>8.2</td>
<td>11.2</td>
<td></td>
<td></td>
<td></td>
<td>Spontaneous vertex</td>
</tr>
<tr>
<td>E. S.</td>
<td>24</td>
<td>V.</td>
<td>7.6</td>
<td>12.2</td>
<td>18</td>
<td>25</td>
<td>23</td>
<td>Transverse bi-polar version Spontaneous vertex</td>
</tr>
<tr>
<td>S. M.</td>
<td>28</td>
<td>V.</td>
<td>6</td>
<td>9</td>
<td>16.5</td>
<td>31.5</td>
<td>30</td>
<td>Cesarean section</td>
</tr>
<tr>
<td>E. S.</td>
<td>21</td>
<td>I.</td>
<td>8.6</td>
<td>11.4</td>
<td>18</td>
<td>27.5</td>
<td>25</td>
<td>Forceps</td>
</tr>
<tr>
<td>J. W.</td>
<td>32</td>
<td>II.</td>
<td>8</td>
<td>10</td>
<td>18</td>
<td>27</td>
<td>25</td>
<td>&quot;</td>
</tr>
<tr>
<td>Name</td>
<td>Age</td>
<td>Para</td>
<td>Pelvic Measurements</td>
<td>Mode of Delivery</td>
<td>Result to Child</td>
<td>Weight of Child</td>
<td>Result to Mother</td>
<td>Remarks</td>
</tr>
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<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>M. O'S.</td>
<td>27</td>
<td>IV.</td>
<td>7 17 29 27</td>
<td>Subcutaneous pubiotomy forceps</td>
<td>..</td>
<td>7 5/8</td>
<td>..</td>
<td>Previous labours perforation. Labour this time 38 hours. Walcher's position 20 hours. Forceps failed.</td>
</tr>
<tr>
<td>M. C.</td>
<td>33</td>
<td>III.</td>
<td>8.2 13 18.5 27 24.5</td>
<td>Subcutaneous pubiotomy forceps</td>
<td>..</td>
<td>7</td>
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TABLE NO. VIII.—Forceps.

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<th>Indication</th>
<th>No.</th>
<th>Dead Children</th>
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<tr>
<td>Delayed second stage</td>
<td>66</td>
<td>2</td>
<td>1 macerated</td>
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<tr>
<td>Persistent occipito-posterior</td>
<td>4</td>
<td>0</td>
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</tr>
<tr>
<td>Delayed second stage, Brow</td>
<td>1</td>
<td>1</td>
<td>Extensive cerebral hemorrhage; heart beat 45 mins.</td>
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<tr>
<td>Eclampsia</td>
<td>4</td>
<td>4</td>
<td>Forceps on both of twins.</td>
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<tr>
<td>Mitral stenosis</td>
<td>1</td>
<td>1</td>
<td>Macerated</td>
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<tr>
<td>Primary inertia, Fetal indications</td>
<td>4</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Prolapse of cord</td>
<td>6</td>
<td>1</td>
<td></td>
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<tr>
<td>Contracted pelvis</td>
<td>6</td>
<td>1</td>
<td>3 after pubiotomy.</td>
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<tr>
<td>After abdominal section for ovarian cyst</td>
<td>1</td>
<td>0</td>
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<tr>
<td>Total</td>
<td>93</td>
<td>11</td>
<td>2 macerated</td>
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SUB-TABLE A.—Showing No. of Pregnancy:

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<td>IV.-para</td>
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<td>V.-para and over</td>
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SUB-TABLE B.—Showing Ages of Patients.

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<td>17-25</td>
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<tr>
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<td>93</td>
</tr>
<tr>
<td>Name</td>
<td>Age and Para</td>
<td>Condition on Admission</td>
<td>Date of Admission</td>
<td>Date of Delivery</td>
<td>Condition of Urine</td>
<td>No. of Fits</td>
<td>Treatment</td>
<td>Result to M'ther</td>
<td>Result to Child</td>
<td>Remarks</td>
<td></td>
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</tr>
<tr>
<td>M. McC.</td>
<td>26 years I.</td>
<td>Conscious</td>
<td>Jan. 30</td>
<td>Jan. 30</td>
<td>.. - 1 -</td>
<td>Morphine; purgatives</td>
<td>&quot; Alive</td>
<td>Fit during 3rd stage.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. B.</td>
<td>24 years I.</td>
<td>Unconscious</td>
<td>Feb. 9</td>
<td>Feb. 11</td>
<td>.. 6 -</td>
<td>Morphine; stomach washed out; bowel washed out; poultices to loins</td>
<td>&quot;</td>
<td>Delivery 11 hours after last fit.</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>M. B.</td>
<td>20 years I.</td>
<td>Conscious</td>
<td>Feb. 19</td>
<td>Feb. 19</td>
<td>.. - 2 -</td>
<td>Morphine; bowel washed out; purgatives; sub-mammary infusion sol. soda bicarb.</td>
<td>&quot;</td>
<td>Delivery 5 minutes after last fit.</td>
<td></td>
<td></td>
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<tr>
<td>K. B.</td>
<td>33 years I.</td>
<td>Unconscious</td>
<td>Feb. 22</td>
<td>Feb. 22</td>
<td>.. 3 2 2</td>
<td>Morphine; stomach washed out; bowel washed out (3); sub-mammary infusion sol. soda bicarb.; poultices to loins</td>
<td>&quot;</td>
<td>Delivered with forceps.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E. E.</td>
<td>26 years I.</td>
<td>Conscious</td>
<td>Feb. 20</td>
<td>Feb. 20</td>
<td>.. - - 1</td>
<td>Morphine; purgatives</td>
<td>&quot;</td>
<td>Fit 5 hours after delivery.</td>
<td></td>
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</tr>
<tr>
<td>L. C.</td>
<td>19 years I.</td>
<td>Unconscious</td>
<td>Mar. 14</td>
<td>Mar. 17</td>
<td>.. 8 - 100</td>
<td>Morphine; atropine; scopodamine; digitalin; whiskey; bowel washed out (3); stomach washed (2); purgatives by stomach</td>
<td>&quot; Dead</td>
<td>No fit for 42 hours, when delivered with forceps; 31½ hours later (73½ hours after last fit) 3 fits; then 56 hours of freedom, followed by</td>
<td></td>
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</tr>
<tr>
<td>Name</td>
<td>Age and Para</td>
<td>Condition on Admission</td>
<td>Date of Admission</td>
<td>Date of Delivery</td>
<td>Condition of Urine</td>
<td>No. of Fits</td>
<td>Treatment</td>
<td>Result to M'ther</td>
<td>Result to Child</td>
<td>Remarks</td>
<td></td>
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</tr>
<tr>
<td>C. C.</td>
<td>42 years 1.</td>
<td>Conscious; edema; 2 fits before admission</td>
<td>Mar. 17</td>
<td>Mar. 18</td>
<td>Solid with albumen</td>
<td>11 9</td>
<td>Morphine; oxygen; whiskey by rectum; bowel washed out (3); stomach washed out; purgatives through stomach tube; submammary infusion soda bicarb. solution; poultices to loins</td>
<td>Rec. Dead (twins)</td>
<td>&quot;</td>
<td>Delivered with forceps (both children) 14 hours after last fit.</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>M. F.</td>
<td>24 years 1.</td>
<td>Conscious; edema</td>
<td>Mar. 21</td>
<td>Mar. 22</td>
<td>&quot;</td>
<td>11</td>
<td>Morphine; atropine; digitalin; oxygen; brandy (hypo); ether (hypo); stomach washed out (2); purgatives by stomach tube; bowel washed out (2); poultices to loins; submammary infusion of soda bicarb.</td>
<td>&quot; Alive</td>
<td>Pulse over 170 early morning of March 23rd.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>Age and Para</td>
<td>Condition on Admission</td>
<td>Date of Admission</td>
<td>Date of Delivery</td>
<td>Condition of Urine</td>
<td>No. of Fits</td>
<td>Treatment</td>
<td>Result to M'ther</td>
<td>Result to Child</td>
<td>Remarks</td>
<td></td>
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</tr>
<tr>
<td>A. M'C.</td>
<td>30 years 1</td>
<td>Conscious</td>
<td>April 16 1910</td>
<td>April 16 1910</td>
<td>Solid with albumen</td>
<td>3</td>
<td>Morphine; submammary infusion soda bicarb. sol.</td>
<td>Rec.</td>
<td>Alive (Twins)</td>
<td></td>
<td>First fit 2 hours after delivery.</td>
<td></td>
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</tr>
<tr>
<td>B. N.</td>
<td>50 years 1</td>
<td>&quot;</td>
<td>June 13</td>
<td>June 13</td>
<td>&quot;</td>
<td>1</td>
<td>&quot; &quot; &quot;</td>
<td>&quot;</td>
<td>Alive</td>
<td>Fit immediately after delivery.</td>
<td></td>
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</tr>
<tr>
<td>A. R.</td>
<td>17 years 1</td>
<td>Conscious; oedema</td>
<td>Sept. 14</td>
<td>Sept. 15</td>
<td>&quot;</td>
<td>8</td>
<td>Morphine; atropine; digitalin; oxygen; artificial respiration (1); stomach washed out (3); purgatives through stomach tube; bowel washed out (4); submammary infusion soda bicarb. sol. (4); poultices to loins</td>
<td>&quot;</td>
<td>Dead P.M. showed congenital syphilis</td>
<td></td>
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</tr>
<tr>
<td>M. L.</td>
<td>30 years 1</td>
<td>Conscious</td>
<td>Sept. 20</td>
<td>Sept. 20</td>
<td>&quot;</td>
<td>3</td>
<td>Morphine; bowel washed out</td>
<td>&quot;</td>
<td>Alive</td>
<td>Four fits, then conscious for 75 hours, during which time delivery occurred; three fits after taking milk, conscious for 33 hours, then 5 fits after taking whey.</td>
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<tr>
<td>M. K.</td>
<td>23 years 1</td>
<td>Unconscious</td>
<td>Sept. 14</td>
<td>Sept. 23</td>
<td>&quot;</td>
<td>9</td>
<td>Morphine; stomach washed out (1); purgatives through stomach tube; bowel washed out (2); submammary infusion of soda bicarb. solution (1)</td>
<td>&quot;</td>
<td>&quot;</td>
<td>Last fit 8 days before delivery.</td>
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Table No. X.—Protrusion of Cord.

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<th>Name</th>
<th>Age and Para</th>
<th>Size of Pelvis</th>
<th>Result to Child</th>
<th>Weight</th>
<th>Result to Mother</th>
<th>Presentation</th>
<th>Treatment</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>M. C.</td>
<td>20 yrs.—I</td>
<td>Not measured</td>
<td>A.</td>
<td>5 3/8</td>
<td>Rec.</td>
<td>Breech</td>
<td>Traction on Foot</td>
<td>Second of twins.</td>
</tr>
<tr>
<td>K. D.</td>
<td>32 yrs.—II</td>
<td>.. ..</td>
<td>A.</td>
<td>8 1/8</td>
<td>..</td>
<td>Vertex</td>
<td>Forceps, Os fully dilated</td>
<td>Stopped pulsating when forceps applied.</td>
</tr>
<tr>
<td>E. B.</td>
<td>19 yrs.—II</td>
<td>8 cm. C. V.</td>
<td>A.</td>
<td>7 3/8</td>
<td>..</td>
<td>..</td>
<td>Internal version and extraction</td>
<td>Recognised shortly after membranes ruptured.</td>
</tr>
<tr>
<td>J. S.</td>
<td>37 yrs.—VII</td>
<td>Not measured</td>
<td>D.</td>
<td>5</td>
<td>..</td>
<td>..</td>
<td>Bi-polar version for placenta prævia</td>
<td>Pulseless cord prolapsed during version.</td>
</tr>
<tr>
<td>L. M. C.</td>
<td>25 yrs.—XII</td>
<td>Not measured</td>
<td>A.</td>
<td>4</td>
<td>..</td>
<td>Breech</td>
<td>Traction on foot</td>
<td>Extensive depressed fracture of skull.</td>
</tr>
<tr>
<td>R. T.</td>
<td>34 yrs.—VI</td>
<td>C. V. 6.2 cm. trans. 13.2 cm.</td>
<td>A.</td>
<td>5 5/8</td>
<td>..</td>
<td>Vertex</td>
<td>Internal version and extraction</td>
<td>Cord prolapsed during bi-polar version for placenta prævia.</td>
</tr>
<tr>
<td>I. B.</td>
<td>25 yrs.—III</td>
<td>Not measured</td>
<td>A.</td>
<td>7 1/2</td>
<td>..</td>
<td>..</td>
<td>Bi-polar version for placenta prævia. Reposition</td>
<td>Cord appeared when membranes ruptured.</td>
</tr>
<tr>
<td>E. D.</td>
<td>27 yrs.—II</td>
<td>.. ..</td>
<td>A.</td>
<td>7 1/4</td>
<td>..</td>
<td>..</td>
<td>Forceps, Os fully dilated</td>
<td>Cord prolapses at every labour. Prolapsed during version for placenta prævia.</td>
</tr>
<tr>
<td>S. M.</td>
<td>28 yrs.—VII</td>
<td>C. V. 9.2 cm. trans. 12 cm.</td>
<td>A.</td>
<td>8 3/8</td>
<td>..</td>
<td>..</td>
<td>Bi-polar version for placenta prævia. Reposition. Extraction when os fully dilated</td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>Age and Para</td>
<td>Size of Pelvis</td>
<td>Result to Child</td>
<td>Weight</td>
<td>Result to Mother</td>
<td>Presentation</td>
<td>Treatment</td>
<td>Remarks</td>
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</tr>
<tr>
<td>C. K.</td>
<td>30 yrs.—VIII.</td>
<td>Not measured</td>
<td>D.</td>
<td>8 1/2</td>
<td>Dead</td>
<td>Vertex</td>
<td>Forceps. Os fully dilated</td>
<td>See Mortality Table.</td>
</tr>
<tr>
<td>M. K.</td>
<td>30 yrs.—VI.</td>
<td>&quot;</td>
<td>A.</td>
<td>7</td>
<td>Rec.</td>
<td>&quot;</td>
<td>Pressure on fundus</td>
<td>—</td>
</tr>
<tr>
<td>C. K.</td>
<td>38 yrs.—VI.</td>
<td>&quot;</td>
<td>A.</td>
<td>7 1/2</td>
<td>&quot;</td>
<td>Forceps. Os fully dilated</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>M. B.</td>
<td>26 yrs.—II.</td>
<td>&quot;</td>
<td>A.</td>
<td>7 3/4</td>
<td>&quot;</td>
<td>&quot;</td>
<td>Cord pulsating feebly and slowly.</td>
<td></td>
</tr>
<tr>
<td>A. M.</td>
<td>31 yrs.—X.</td>
<td>&quot;</td>
<td>A.</td>
<td>5 1/2</td>
<td>&quot;</td>
<td>Shoulder</td>
<td>Bi-polar version. Re-position</td>
<td>Delivered 2 hours after version.</td>
</tr>
<tr>
<td>E. D.</td>
<td>27 yrs.—V.</td>
<td>&quot;</td>
<td>A.</td>
<td>8</td>
<td>&quot;</td>
<td>Vertex</td>
<td>Pressure on fundus</td>
<td>—</td>
</tr>
<tr>
<td>M. D.</td>
<td>24 yrs.—III.</td>
<td>C. V. 8 cm., tran. 12.8 cm.</td>
<td>A.</td>
<td>6 3/4</td>
<td>&quot;</td>
<td>Brow</td>
<td>Internal version. Subcutaneous pubiotomy</td>
<td>See Table of Contracted Pelves.</td>
</tr>
<tr>
<td>R. H.</td>
<td>34 yrs.—VIII.</td>
<td>Not measured</td>
<td>A.</td>
<td>6 1/2</td>
<td>&quot;</td>
<td>Vertex</td>
<td>Forceps. Os 3/4 dilated</td>
<td>Bi-lateral tear of cervix.</td>
</tr>
<tr>
<td>C. T.</td>
<td>30 yrs.—II.</td>
<td>&quot;</td>
<td>A.</td>
<td>5 1/2</td>
<td>&quot;</td>
<td>Breech</td>
<td>Traction on foot</td>
<td>Second of twins.</td>
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### Table No. XI.—Breech Presentations.

<table>
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<th>Para</th>
<th>Total</th>
<th>Dead Children</th>
<th>Remarks</th>
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<tr>
<td>Primipara</td>
<td>21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fresh</td>
<td>1</td>
<td>One impacted.</td>
<td></td>
</tr>
<tr>
<td>Macerated</td>
<td>1</td>
<td>Three were second of twins; one being complicated by prolapse of cord.</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2</td>
<td>Three were premature.</td>
<td></td>
</tr>
<tr>
<td>Multipara</td>
<td>34</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Fresh</td>
<td></td>
<td>Ten were second of twins.</td>
<td></td>
</tr>
<tr>
<td>Macerated</td>
<td>4</td>
<td>Three were first of twins. One born alive with anencephalus, died in 15 minutes. One with spina bifida.</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>4</td>
<td>Two premature, one with prolapse of cord.</td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>55</td>
<td>6</td>
<td>5 macerated.</td>
</tr>
</tbody>
</table>

### Table No. XII.—Twins.

<p>| | | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Both males</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Both females</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>11</td>
</tr>
<tr>
<td>One male and one female</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>11</td>
</tr>
<tr>
<td>Total</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>32</td>
</tr>
</tbody>
</table>

### Table No. XIII. A.—Morbidity.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cases</td>
<td>160</td>
<td>161</td>
<td>167</td>
<td>162</td>
<td>197</td>
<td>165</td>
<td>188</td>
<td>185</td>
<td>217</td>
<td>190</td>
<td>190</td>
<td>156</td>
<td>21</td>
</tr>
<tr>
<td>Cases Morbid</td>
<td>7</td>
<td>1</td>
<td>8</td>
<td>10</td>
<td>18</td>
<td>6</td>
<td>8</td>
<td>7</td>
<td>9</td>
<td>5</td>
<td>8</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

Total number: 93
Total percentage: 4.33
**Table No. XIII. B.**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cases</td>
<td>166</td>
<td>167</td>
<td>174</td>
<td>167</td>
<td>204</td>
<td>171</td>
<td>194</td>
<td>187</td>
<td>226</td>
<td>203</td>
<td>197</td>
<td>166</td>
<td>2222</td>
</tr>
<tr>
<td>Cases Morbid</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>12</td>
<td>6</td>
<td>7</td>
<td>3</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>6</td>
<td>58</td>
</tr>
<tr>
<td>Percentage</td>
<td>1.81</td>
<td>1.80</td>
<td>2.30</td>
<td>2.39</td>
<td>5.88</td>
<td>3.51</td>
<td>3.61</td>
<td>1.60</td>
<td>2.21</td>
<td>0.49</td>
<td>2.08</td>
<td>3.61</td>
<td>2.61</td>
</tr>
</tbody>
</table>

Total number: 58  
Total percentage: 2.61

**Table No. XIII. C.—Comparison of Morbidities.**

**PRIMIPARÈ.**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cases</td>
<td>63</td>
<td>51</td>
<td>61</td>
<td>52</td>
<td>64</td>
<td>69</td>
<td>75</td>
<td>74</td>
<td>82</td>
<td>86</td>
<td>58</td>
<td>46</td>
<td>781</td>
</tr>
<tr>
<td>Cases Morbid</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>7</td>
<td>9</td>
<td>2</td>
<td>7</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>48</td>
</tr>
<tr>
<td>Percentage</td>
<td>3.13</td>
<td>1.96</td>
<td>6.56</td>
<td>13.46</td>
<td>14.06</td>
<td>2.90</td>
<td>9.33</td>
<td>5.40</td>
<td>6.10</td>
<td>1.16</td>
<td>5.17</td>
<td>6.52</td>
<td>6.14</td>
</tr>
</tbody>
</table>

Total number: 48  
Total Percentage: 6.14

**MULTIPARÈ.**

<table>
<thead>
<tr>
<th>Total Cases</th>
<th>97</th>
<th>110</th>
<th>106</th>
<th>110</th>
<th>133</th>
<th>96</th>
<th>113</th>
<th>111</th>
<th>135</th>
<th>113</th>
<th>132</th>
<th>110</th>
<th>1366</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cases Morbid</td>
<td>5</td>
<td>0</td>
<td>4</td>
<td>3</td>
<td>9</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Percentage</td>
<td>5.15</td>
<td>0.00</td>
<td>3.77</td>
<td>2.73</td>
<td>6.17</td>
<td>4.17</td>
<td>0.88</td>
<td>2.70</td>
<td>2.96</td>
<td>3.54</td>
<td>3.79</td>
<td>2.72</td>
<td>3.29</td>
</tr>
</tbody>
</table>

Total number: 45  
Total percentage: 3.29
### Table No. XIV. — Causes of Morbidity other than Uterine.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bronchitis</td>
<td>1</td>
</tr>
<tr>
<td>Constipation</td>
<td>10</td>
</tr>
<tr>
<td>Influenza</td>
<td>1</td>
</tr>
<tr>
<td>Mastitis</td>
<td></td>
</tr>
<tr>
<td>Interstitial</td>
<td>1</td>
</tr>
<tr>
<td>Parenchymatous</td>
<td>2</td>
</tr>
<tr>
<td>Phlebitis</td>
<td>1</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>2</td>
</tr>
<tr>
<td>Puerperal ulcer</td>
<td>4</td>
</tr>
<tr>
<td>Pulmonary tuberculosis</td>
<td>4</td>
</tr>
<tr>
<td>Slough in thigh (hypodermic)</td>
<td>1</td>
</tr>
<tr>
<td>Suppurating abdominal wound</td>
<td>1</td>
</tr>
<tr>
<td>Active secondary syphilis</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>32</td>
</tr>
</tbody>
</table>

### Table No. XV. — Operative Cases, showing Morbidity.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forceps (both, est. 6 ; B.M.A., est. only 3)</td>
<td>9</td>
</tr>
<tr>
<td>Accidental haemorrhage (both, est. 1)</td>
<td>1</td>
</tr>
<tr>
<td>Post-partum haemorrhage (B.M.A., est. 1)</td>
<td>1</td>
</tr>
<tr>
<td>Manual removal of placenta (both, est. 3)</td>
<td>3</td>
</tr>
<tr>
<td>Placenta praevia (B.M.A., est. only 1)</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>15</td>
</tr>
</tbody>
</table>

### Table No. XV. A. — Percentage Operative Morbidity, B. M. A. Estimation.

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forceps</td>
<td>9.68 per cent.</td>
</tr>
<tr>
<td>Manual Removals</td>
<td>15.79 per cent.</td>
</tr>
<tr>
<td>Placenta Prævia</td>
<td>20.00 per cent.</td>
</tr>
</tbody>
</table>

### Table No. XV. B. — Rotunda Estimation.

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forceps</td>
<td>6.45 per cent.</td>
</tr>
<tr>
<td>Manual Removals</td>
<td>15.79 per cent.</td>
</tr>
<tr>
<td>Placenta Prævia</td>
<td>10.00 per cent.</td>
</tr>
</tbody>
</table>

### Table No. XVI. — Lacerated Perineums showing Morbidity.

<table>
<thead>
<tr>
<th>Source</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>B.M.A., estimation alone</td>
<td>16</td>
</tr>
<tr>
<td>Rotunda</td>
<td>2</td>
</tr>
<tr>
<td>Both estimations</td>
<td>18</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>36</td>
</tr>
</tbody>
</table>

8 of these associated with forceps.
The following Tables are based on those cases morbid by the B. M. A. Estimation:

Table No. XVII.—*Duration of stay in House of Morbid Cases.*

<table>
<thead>
<tr>
<th>Duration</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 10 days</td>
<td>45, including 3 deaths.</td>
</tr>
<tr>
<td>10-19 days</td>
<td>39, including 1 death.</td>
</tr>
<tr>
<td>20-29 days</td>
<td>7</td>
</tr>
<tr>
<td>39-40 days</td>
<td>1</td>
</tr>
<tr>
<td>40 and over</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>93</td>
</tr>
</tbody>
</table>

Table No. XVIII.—*Duration of Temperature.*

<table>
<thead>
<tr>
<th>Duration</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 5 days</td>
<td>69, including 1 death.</td>
</tr>
<tr>
<td>5-9 days</td>
<td>16, including 1 death.</td>
</tr>
<tr>
<td>10-19 days</td>
<td>5</td>
</tr>
<tr>
<td>20-29 days</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>91</td>
</tr>
</tbody>
</table>

Two patients died without having had fever.

Table No. XIX.—*Highest Temperature Recorded.*

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>100°-100.9°</td>
<td>31</td>
</tr>
<tr>
<td>101°-101.9°</td>
<td>21</td>
</tr>
<tr>
<td>102°-102.9°</td>
<td>19, including 1 death.</td>
</tr>
<tr>
<td>103°-103.9°</td>
<td>11</td>
</tr>
<tr>
<td>104° and over</td>
<td>9, including 1 death.</td>
</tr>
<tr>
<td>Total</td>
<td>91</td>
</tr>
</tbody>
</table>

Two patients died without having had fever.

Table No. XX.—*Treatment of Morbid Cases.*

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>No treatment</td>
<td>31</td>
</tr>
<tr>
<td>Vaginal douche</td>
<td>2</td>
</tr>
<tr>
<td>Uterine douche</td>
<td>48</td>
</tr>
<tr>
<td>Quinine only</td>
<td>4</td>
</tr>
<tr>
<td>Local treatment</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>93</td>
</tr>
</tbody>
</table>

Table No. XX. A.—*Uterine Douches.*

<table>
<thead>
<tr>
<th>Douches</th>
<th>Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>24</td>
</tr>
<tr>
<td>2</td>
<td>13</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>48</td>
</tr>
</tbody>
</table>

Of these 93 morbid cases 32 had incomplete membranes, and 17 had retention of lochia due to ante-flexion of the uterus.

For report of uterine cultures see Pathological Report.
Clinical Reports of the Rotunda Hospital.

Table No. XXI.—Maternal Mortality.

<table>
<thead>
<tr>
<th>Name, Age and Para</th>
<th>Admitted</th>
<th>Delivered</th>
<th>Died</th>
<th>Cause of Death</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>M. D., 24 yrs. I.</td>
<td>May 3 1910</td>
<td>May 3 1910</td>
<td>May 17 1910</td>
<td>Sepsis; infarct of spleen</td>
<td>Sudden onset of fatal attack after 4 day normal temperature — —</td>
</tr>
<tr>
<td>C. K., 30 yrs. VIII.</td>
<td>June 26</td>
<td>June 26</td>
<td>June 26</td>
<td>Rupture of vagina; haemorrhage</td>
<td>—</td>
</tr>
<tr>
<td>M. O'B., 38 yrs. II.</td>
<td>July 27</td>
<td>July 27</td>
<td>Aug. 4</td>
<td>Acute dilatation of heart; oedema of lungs</td>
<td>Got out of bed 7th evening after normal puerperium died in 10 min. —</td>
</tr>
</tbody>
</table>

GYNÈCOLOGICAL REPORT.

There were 504 patients admitted to the Gynæcological Wards, which number, combined with those of the maternity, make 3,028 admissions throughout the year.

One hundred and sixty-one abdominal sections were performed, and there were twenty cases in which the abdomen was opened through the vagina. Sixteen of these were vaginal fixations. We performed fourteen abdominal myomectomies. Several of these necessitated the almost complete division of the uterus, and the recovery in all cases was uneventful. Two of these patients, who had come to the hospital because of sterility, have since been successfully delivered.

We had ten Wertheim operations with one death. I think this operation should be performed when practicable in all cases of uterine cancer, whether of the body or cervix.

We operated for the cure of complete tears fourteen times, with uniform success after the first operation.
STATISTICAL RETURNS OF THE GYNAECOLOGICAL DEPARTMENT.

Table I.—Showing nature and number of Operations.

<table>
<thead>
<tr>
<th>Operation</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Abdominal Section</strong></td>
<td>160</td>
</tr>
<tr>
<td><strong>Vulva and Perineum</strong></td>
<td></td>
</tr>
<tr>
<td>Elephantiasis excision</td>
<td>1</td>
</tr>
<tr>
<td>Carcinoma</td>
<td>1</td>
</tr>
<tr>
<td>Kraurosis</td>
<td>1</td>
</tr>
<tr>
<td>Hymenectomy for atresia</td>
<td>1</td>
</tr>
<tr>
<td>Lacerations of perineum (91)</td>
<td></td>
</tr>
<tr>
<td>Complete</td>
<td>14</td>
</tr>
<tr>
<td>Incomplete</td>
<td>77</td>
</tr>
<tr>
<td><strong>Urethra</strong></td>
<td></td>
</tr>
<tr>
<td>Caruncle</td>
<td>2</td>
</tr>
<tr>
<td><strong>Vagina</strong></td>
<td></td>
</tr>
<tr>
<td>Fistula, vesico-vaginal</td>
<td>3</td>
</tr>
<tr>
<td>Anterior colporrhaphy</td>
<td>23</td>
</tr>
<tr>
<td>Anterior colpotomy</td>
<td>17</td>
</tr>
<tr>
<td>Posterior colpotomy</td>
<td>3</td>
</tr>
<tr>
<td>Dilatation</td>
<td>1</td>
</tr>
<tr>
<td><strong>Rectum</strong></td>
<td></td>
</tr>
<tr>
<td>Hæmorrhoids excision</td>
<td>2</td>
</tr>
<tr>
<td>Whitehead</td>
<td>1</td>
</tr>
<tr>
<td>Carcinoma resection</td>
<td>1</td>
</tr>
<tr>
<td><strong>Cervix</strong></td>
<td></td>
</tr>
<tr>
<td>Trachelorrhaphies and amputations (85)</td>
<td></td>
</tr>
<tr>
<td>Schroeder</td>
<td>73</td>
</tr>
<tr>
<td>Emmet</td>
<td>6</td>
</tr>
<tr>
<td>Sänger</td>
<td>5</td>
</tr>
<tr>
<td>Circular</td>
<td>1</td>
</tr>
<tr>
<td>Posterior division</td>
<td>12</td>
</tr>
<tr>
<td><strong>Uterus</strong></td>
<td></td>
</tr>
<tr>
<td>Curettage (simple)</td>
<td>108</td>
</tr>
<tr>
<td>Combined with other operations</td>
<td>160</td>
</tr>
<tr>
<td>Polypus</td>
<td>12</td>
</tr>
<tr>
<td>Ventral suspension</td>
<td>56*</td>
</tr>
<tr>
<td>Vaginal suspension</td>
<td>16</td>
</tr>
<tr>
<td>Alexander Adams</td>
<td>3</td>
</tr>
<tr>
<td>Ventral fixation</td>
<td>1</td>
</tr>
<tr>
<td>Ventral fixation of stump</td>
<td></td>
</tr>
<tr>
<td>of cervix after hysterectomy</td>
<td>2</td>
</tr>
<tr>
<td>Myomectomy</td>
<td></td>
</tr>
<tr>
<td>Abdominal</td>
<td>14</td>
</tr>
<tr>
<td>Morelement</td>
<td>1</td>
</tr>
<tr>
<td>Hysterectomy</td>
<td></td>
</tr>
<tr>
<td>Supra-vaginal</td>
<td>15</td>
</tr>
<tr>
<td>Complete</td>
<td>9</td>
</tr>
<tr>
<td>Wertheim</td>
<td>11</td>
</tr>
<tr>
<td>Cæsarean section</td>
<td>2</td>
</tr>
<tr>
<td><strong>Tubes and Ovaries</strong></td>
<td></td>
</tr>
<tr>
<td>Ovariectomy</td>
<td>13</td>
</tr>
<tr>
<td>Resection of ovary, with other operations</td>
<td>13</td>
</tr>
<tr>
<td>Resection of tube, with other operations</td>
<td>11</td>
</tr>
<tr>
<td>Salpingectomy</td>
<td>6</td>
</tr>
<tr>
<td>Salpingo-oöphorectomy with other operations</td>
<td></td>
</tr>
<tr>
<td>Double</td>
<td>5</td>
</tr>
<tr>
<td>Single</td>
<td>9</td>
</tr>
<tr>
<td>Salpingo-oöphorectomy alone</td>
<td></td>
</tr>
<tr>
<td>Double</td>
<td>1</td>
</tr>
<tr>
<td>Single</td>
<td>11</td>
</tr>
<tr>
<td>Tubal pregnancy</td>
<td>3</td>
</tr>
<tr>
<td><strong>Miscellaneous</strong></td>
<td></td>
</tr>
<tr>
<td>Appendicectomy</td>
<td>5</td>
</tr>
<tr>
<td>Herniotomy (4)</td>
<td></td>
</tr>
<tr>
<td>Femoral</td>
<td>1</td>
</tr>
<tr>
<td>Inguinal</td>
<td>1</td>
</tr>
<tr>
<td>Umbilical</td>
<td>2</td>
</tr>
<tr>
<td>Amputation of Breast</td>
<td>1</td>
</tr>
<tr>
<td>Excision of retroperitoneal tumour (tubercular)</td>
<td>1</td>
</tr>
<tr>
<td>Nephropexy</td>
<td>1</td>
</tr>
<tr>
<td>Colostomy</td>
<td>1</td>
</tr>
</tbody>
</table>

*Of the ventral suspensions 35 were unaccompanied by any other operation.

Patients 504
<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Date</th>
<th>Age</th>
<th>Disease</th>
<th>Operation</th>
<th>Result</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>K. R.</td>
<td>31.5.'10</td>
<td>35</td>
<td>Epithelioma of cervix</td>
<td>Wertheim</td>
<td>Recovered</td>
<td>2-para, the last an abortion 3 months previously.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Single, nullipara; 2 ovarian cysts, each the size of a fetal head.</td>
</tr>
<tr>
<td>2</td>
<td>L. B.</td>
<td>25.6.'10</td>
<td>48</td>
<td>Adeno-carcinoma of body</td>
<td>&quot;</td>
<td>&quot;</td>
<td>15-para, the last 17 years previously; wound suppurated; leakage of urine on coughing.</td>
</tr>
<tr>
<td>3</td>
<td>E. W.</td>
<td>19.7.'10</td>
<td>61</td>
<td>Epithelioma of cervix</td>
<td>&quot;</td>
<td>&quot;</td>
<td>1-para, the last 28 years previously; too great involvement for ordinary Wertheim; only one ureter seen.</td>
</tr>
<tr>
<td>4</td>
<td>M. C.</td>
<td>15.7.'10</td>
<td>58</td>
<td>&quot;</td>
<td>Pan-hysterectomy</td>
<td>&quot;</td>
<td>9-para, the last two years previously; wound suppurated superficially.</td>
</tr>
<tr>
<td>5</td>
<td>K. M.</td>
<td>9.8.'10</td>
<td>40</td>
<td>&quot;</td>
<td>Wertheim</td>
<td>&quot;</td>
<td>10-para, the last 23 years previously.</td>
</tr>
<tr>
<td>6</td>
<td>M.M'A.</td>
<td>19.8.'10</td>
<td>60</td>
<td>&quot;</td>
<td>&quot;</td>
<td>Died 24.8.'10</td>
<td>See Table No. IV.</td>
</tr>
<tr>
<td>7</td>
<td>E. D.</td>
<td>24.8.'10</td>
<td>44</td>
<td>&quot;</td>
<td>&quot;</td>
<td>Recovered</td>
<td>6-para, the last 5 years previously; 2 days after operation leakage of urine occurred; a large fistula was closed 3 weeks later. No full term children; 2 abortions.</td>
</tr>
<tr>
<td>8</td>
<td>J. D.</td>
<td>6.9.'10</td>
<td>40</td>
<td>Adeno-carcinoma of body</td>
<td>&quot;</td>
<td>&quot;</td>
<td>3-para.</td>
</tr>
<tr>
<td>9</td>
<td>G. R.</td>
<td>26.9.'10</td>
<td>60</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>9-para, the last 19 years previously.</td>
</tr>
<tr>
<td>10</td>
<td>A. H.</td>
<td>30.9.'10</td>
<td>51</td>
<td>Epithelioma of cervix</td>
<td>&quot;</td>
<td>&quot;</td>
<td>Single.</td>
</tr>
<tr>
<td>11</td>
<td>S. H.</td>
<td>4.10.'10</td>
<td>40</td>
<td>Sarcoma of body</td>
<td>Pan-hysterectomy</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
<tr>
<td>No.</td>
<td>Name</td>
<td>Date</td>
<td>Age</td>
<td>Disease</td>
<td>Result</td>
<td>Remarks</td>
<td></td>
</tr>
<tr>
<td>-----</td>
<td>------</td>
<td>-------</td>
<td>-----</td>
<td>--------------------------------------------------</td>
<td>--------</td>
<td>---------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>K. B.</td>
<td>9.11.'09</td>
<td>40</td>
<td>Large interstitial myoma, 3 ins. diam.</td>
<td>Recovered</td>
<td>3-para; the uterine cavity was opened in the removal of this myoma.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>E. M.</td>
<td>3.12.'09</td>
<td>28</td>
<td>Large myoma (interstitial)</td>
<td></td>
<td>Nullipara; about ½ of the uterus was removed, along with a myoma about 3 times the size of the uterus. This patient became pregnant 3 months later.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>C. M.</td>
<td>22.2.'10</td>
<td>35</td>
<td>2 myomata (interstitial)</td>
<td></td>
<td>Single; large myoma springing from posterior wall, also one in right broad ligaments; cysts of both ovaries.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>K. P.</td>
<td>8.3.'10</td>
<td>37</td>
<td>Myoma, $3 \times 2\frac{1}{2}$ ins. (interstitial)</td>
<td></td>
<td>Single</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>D. C.</td>
<td>6.5.'10</td>
<td>32</td>
<td>Myoma, $4 \times 4$ ins. (interstitial)</td>
<td></td>
<td>Single; the scar occupied the whole of the anterior wall.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>D. B.</td>
<td>24.6.'10</td>
<td>37</td>
<td>Pedunculated subserous myoma</td>
<td></td>
<td>Single</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>W. M.</td>
<td>22.7.'10</td>
<td>36</td>
<td>3 interstitial myomata</td>
<td></td>
<td>Nullipara.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>N. R.</td>
<td>2.8.'10</td>
<td>37</td>
<td>1 large myoma removed</td>
<td></td>
<td>Nullipara; several small myomata, none larger than a small marble were left.</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>E. D.</td>
<td>16.8.'10</td>
<td>30</td>
<td>Multiple interstitial myomata</td>
<td></td>
<td>Nullipara; cavity of uterus opened, in which a 6 weeks' fœtus was found.</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>J. H.</td>
<td>12.8.'10</td>
<td>38</td>
<td></td>
<td></td>
<td>Nullipara.</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>L. H.</td>
<td>23.8.'10</td>
<td>38</td>
<td></td>
<td></td>
<td>Nullipara; uterine cavity opened.</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>C. M.</td>
<td>9.9.'10</td>
<td>40</td>
<td>1 myoma (interstitial)</td>
<td></td>
<td>Nullipara.</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>L. F.</td>
<td>6.10.'10</td>
<td>28</td>
<td>3 myomata</td>
<td></td>
<td>Nullipara; 2 of the myomata were interstitial, the third growing into the layers of the broad ligament.</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>A. F.</td>
<td>18.10.'10</td>
<td>26</td>
<td>Large subserous senile myoma</td>
<td></td>
<td>This patient was pregnant, and did not abort after the myomectomy.</td>
<td></td>
</tr>
</tbody>
</table>
TABLE No. IV.—Mortality.

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Age</th>
<th>Date of Operation</th>
<th>Died</th>
<th>Cause of Death</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>K. M.</td>
<td>25</td>
<td>6.1.'10</td>
<td>14.2.'10</td>
<td>Sloughing of spleen after subphrenic abscess</td>
<td>Patient sent in on account of abdominal pains. Six months pregnant. Exploration showed tumour just below ensiform. A large quantity of pus was evacuated. Delivered the day following the operation. A slough came away from the wound 2 weeks after the operation; this was the spleen.</td>
</tr>
<tr>
<td>2</td>
<td>C. L.</td>
<td>38</td>
<td>15.2.'10</td>
<td>21.2.'10</td>
<td>Abdominal cancer</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>D. H.</td>
<td>37</td>
<td>8.4.'10</td>
<td>14.4.'10</td>
<td>General peritonitis</td>
<td>Double salpingectomy for very advanced peritonitis. Rectum injured. Patient did well for 6 days, when she got violent abdominal pain and died on the 7th. Post-mortem showed general peritonitis, and a hole in the rectum which was made during the separation of adhesions had sloughed.</td>
</tr>
<tr>
<td>4</td>
<td>M. M'A.</td>
<td>60</td>
<td>19.8.'10</td>
<td>24.8.'10</td>
<td>Congestion of lungs</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>A. C.</td>
<td>36</td>
<td>—</td>
<td>11.10.'10</td>
<td>Septicaemia</td>
<td>Patient came to hospital moribund. She had had an incomplete abortion 3 weeks previously.</td>
</tr>
</tbody>
</table>
ABSTRACTS.

SECTION OF OBSTETRICS.

Friday, October 28, 1910.

The President (Dr. H. Jellett) in the Chair.

The late Lombe Atthill, M.D., F.R.C.P.I.

Sir William Smyly proposed—

"That the Obstetric Section of the Royal Academy of Medicine in Ireland desire to convey to Mrs. Atthill and the other members of the family of the late Dr. Lombe Atthill their sorrow at the loss of so respected and esteemed a member of this Academy, to whom the Obstetrical Section of this Academy is especially indebted."

He said the late Dr. Atthill was a most enthusiastic upholder of that Section of the Royal Academy of Medicine in Ireland. He was also a President of the Academy. He had been a member of the old Obstetrical Society long before the Academy was thought of. Dr. Atthill was not one of those modern gynaecologists who were under the impression that they could not learn anything from anybody else. He was a most regular attendant at the meetings of that Section, and almost always joined in the discussions. The enthusiasm which he cast into his work infected all who came in contact with him. He (Sir William) remembered how, when acting as Dr. Atthill's assistant at the Rotunda, his example and precepts stimulated him to an interest in obstetrics and gynaecology. Dr. Atthill had been spared to them for very much longer than the ordinary span of human life, and up to last
summer he was still full of interest as to the progress of medicine, and as to the improvements and advances in obstetrics at the Rotunda Hospital.

Dr. Horne said he rose with deep feelings to second the resolution. As an old assistant, with Sir William Smyly, he could bear testimony to Dr. Atthill's great power, and the care he took of obstetrics and gynaecology. It was he and the late Dr. Kidd who were the pioneers of gynaecology in this country. When he became Master of the Rotunda, gynaecology was practically unknown. He was the first to establish a gynaecological department, and he sent forth a little book which was, he might say, almost the first light in the British Isles that they had on gynaecology.

The President put the resolution, which was passed in silence.

Specimens—(a) Intramural Myoma. (b) Myomatous Uterus associated with Pregnancy.

The President exhibited specimens of the above. The first specimen was, he said, of interest as showing how much endometrium could be removed during a myomectomy and still leave a uterine cavity. While the myoma shelled out quite easily, he found as it came away that he brought away the whole of the anterior wall of the uterine cavity with it. The mucous membrane could be seen in the specimen. He hoped to have brought down a microscopical section of the tumour to show any changes that had taken place, but, unfortunately, the specimen was sent too late. The section was a frozen one, and the mucous membrane fell off. The second specimen of myoma associated with pregnancy was one of greater interest. The myoma was situated in Douglas' pouch, and the pregnancy lay above and in front of it. The first question that suggested itself was, why the specimen was on the table. It was not there through any mistaken diagnosis, or want of advice to the patient to keep it. She had been sent up to him complaining of myoma. He found that she was three months pregnant, and advised her to go home and have an operation after her confinement. She came back in a fortnight and asked if the tumour would
get any bigger, and if the operation would be more dangerous at full term. His opinion was that it would probably get bigger, and that the operation would be slightly more dangerous. She would not wait, and the doctor who sent her advised her to have the operation at once. He thought he was quite justified in conforming with the patient's wishes, and that she had a right to decide the matter for herself.

Dr. E. Hastings Tweedy, referring to the specimen of total extirpation in pregnancy, suggested it might have been possible to remove the myoma and close the uterus, as in a Cæsarian section. It had been done on several occasions, and it appeared to him that there would have been a chance of successfully doing it in that case. He would like to know if the President, at any portion of the operation, had contemplated it. It would not have prevented a subsequent hysterectomy if he had failed to enucleate it from its bed.

The President, in reply, said he had contemplated the possibility of an enucleation. In a similar case he did enucleate a myoma out of a pregnant uterus, and the woman went on and aborted in a fortnight, but in it the myoma was above the pregnancy. In the present case it was below the pregnancy. The uterus was also much more vascular, and taking this into consideration, together with the position of the tumour, he did not consider it advisable to do an enucleation, particularly as the patient was anxious to have the operation done with the least possible risk. If it had been above the pregnancy he should have enucleated it.

*Carcinoma of the Fallopian Tube.*

Dr. E. Hastings Tweedy said that his specimen was one of a rare malignancy of the Fallopian tube. In September last, Dr. Alban Doran asked him if he had ever seen malignant disease of the Fallopian tube, and he replied, Never. Dr. Alban Doran said there had been only one case reported in Ireland, and only one hundred in literature. At the very time they were speaking, the patient was in hospital, and presented a most typical example of the condition. Her menstrual history was irregular. She had missed two
periods. She was thirty, and had had one child eight years ago. She had had repeated haemorrhage two months previously, which had ceased. The tumour was to the right, and behind, the uterus. They diagnosed tubal pregnancy, and it looked like it when they opened the abdomen. A hand was passed down into Douglas's cul-de-sac, and a large tumour was removed: this was only organised blood-clot. On pursuing the operation further they pulled up the right tube, in which there was a fungating mass which had made adhesions to both ovaries and to the small intestines. He removed it, only taking a small piece of the tube, and leaving both ovaries. She was anxious to have another child. Dr. Rowlette reported carcinoma of the ovary. He advised her to undergo another operation three weeks after the first. She said she hoped she would not lose her womb. He said he thought she would. She wept a good deal, but he was very firm, and said there was no use operating at all unless she gave him a free hand. She consented, and on again opening the abdomen everything appeared normal. He did not feel justified in doing very much. He took away the ovary at the side of the cancer, and the tube, and part of the tube at the other side, and left her one ovary and a good stump of Fallopian tube. She had been crying ever since because he did not remove her womb.

Dr. Rowlette said the specimen was very friable. On handling it came asunder, and it was at first very difficult to get a section to judge from. There was no doubt that the growth was carcinoma. It showed the appearance which was generally found in cancers of the tube very exactly. He handed round some microphotographs of Mr. Alban Doran's which might almost have been taken from the tumour exhibited. Some parts of the tumour had lost altogether the adenomatous or papillomatous look which the picture showed, and the cancer cells were so closely packed as to suggest that the growth was sarcoma. Several sections, however, from different parts showed a distinctly carcinomatous structure.

The President said the specimen was one that not much could be said about, on account of its extreme rarity. He
congratulated Dr. Tweedy in this case for doing a theoretical wrong in order to comply with the wishes of his patient. He himself had done the same in the other case; but in both cases he thought they had practically done quite right.

Dr. Tweedy, in reply, said he had not the faintest notion that the cancer would ever return, and if it did, he had not the faintest notion where it would return. It was adherent to both ovaries, intestines, and Douglas's cul-de-sac. He could not eviscerate the woman, and he could not find the part of the intestine where it was adherent, when he re-opened, nor the part of the ovaries. There was nothing to show any lesion in the abdomen when he re-opened, and he felt the removal of the uterus would be an ineffectual operation.

Some Continental Experiences.

The President (Dr. H. Jellett) read a paper on above. See page 267, ante.

Scopolamine-morphine Anaesthesia in Labour.

Dr. J. R. Freeland and Dr. B. H. Solomons read a paper on above. See page 288, ante.

**Friday, November 25, 1910.**

The President in the Chair.

Exhibits.

(a) Four Pounds Placenta. (b) Two Cases of Hydrocephalus.

Dr. Freeland exhibited a four pound placenta from a woman who had had four normal full-term living children. After delivery, on May 25 of this year, he was sent for on account of the size of the uterus. He expressed the placenta, and when delivered it measured 10 inches across, and the placenta, membranes, and the blood contained in the placenta weighed four pounds. It was large and pale, very soft, and friable. The child weighed six and a quarter
pounds, was normal in every way, and while in the hospital was perfectly healthy as far as they could see. It showed the usual initial loss of half a pound, and then a slight increase, and went out on the eighth day weighing six pounds. The child died after the fifth week, and the mother said it had wasted shortly after leaving hospital, and died with a wheezing on its chest. She had promised to bring it back, but had not done so. As far as the mother was concerned there was no demonstrable heart or kidney disease, and nothing to indicate specific disease; but under the microscope the placenta showed what was regarded as the characteristic appearance of a syphilitic placenta. He showed comparative sections of the aborescent normal placenta and of the thickening and loss of vascularity in the other. The normal relation between the placenta and child weight was 1 to $5\frac{1}{2}$ or 6. It was said that if the placenta weighed more than one-fifth the weight of the child it was almost certainly due to syphilis. The largest record he could find of a syphilitic placenta was 1,950 grammes reported by Audebert (Jul. de Méd. de Bordeaux, 1908); he could not say if the child was alive. The largest placentae reported were those connected with ascites and dropsy of the child in connection with renal disease of the mother. In some cases reported by Cohn (Zeitschrift Geb. und Gyn., 1888), the largest placenta weighed 2,900 grammes, and the child 3,100, but these were either born dead or died almost immediately.

The two specimens of hydrocephalus illustrated two methods of delivery. In the case of the larger child, he went to see the woman in the Extern Service a year and a half ago. He found the os fully dilated and the head showing at the vulva. The face was palpable on a level with the umbilicus. The patient had been in the second stage some hours, and was showing signs of distress from delay. He punctured the scalp as it appeared at the vulva, and a large amount of fluid escaped. After the head was reduced in size, pressure was put on the fundus, and it came out without difficulty. In addition to having hydrocephalus, the child had five toes and a big toe on each foot, and five
fingers and a thumb on each hand. The smaller child was from a woman who had had four normal children before. In this case the membranes were ruptured, and the head free above the brim, with the brow presenting; the foetal heart was 144. He performed version with rather more difficulty than he expected, the cord being wound around both legs and the body. The child was dead when the turning was finished, and when the breech had been delivered it was necessary to divide the cord to allow the shoulders to advance. The head was too large to pass the brim, there was a lumbar spina bifida, and the top was cut off this to allow the fluid to escape, but none came; an ordinary gum elastic catheter was passed up the spinal canal, but could not be made to enter the skull. A catheter and stylet was then passed, and considerable force was necessary to make this enter the skull, the obstruction being just about the level of the foramen magnum. Twelve ounces of fluid came away, and the child was easily delivered. It had talipes of both feet and a short left leg.

Professor Alfred Smith said the history of the case of large placenta was not a typical syphilitic history. The typical history was first a dead child in the fifth month, then a dead child in the seventh month, then a dead child at full term. Possibly afterwards a child would be born alive, then develop a rash and die. Whereas in the case before us all four children were born alive at full term, none of them developed any syphilitic rash. He pointed out the possibility of an error in diagnosis.

Dr. Tweedy said that there was very little literature concerning syphilis in the placenta among British writers. In fact the case before them was the first of the kind that had been brought before the Academy. He regretted to say that the Rotunda Pathological Laboratory had added nothing to the general information on the subject, and he thought it was probably the first time in Dublin that anybody had gone to the trouble to tease out chorionic villi and look for themselves for what had been reported by foreign writers as occurring in syphilitic placenta. It would be most important if they could definitely take up a placenta and
say that the woman had syphilis or that the child was syphilitic. Some English writers stated that clubbing of the villi and the obliterating inflammation of the vessels was not pathognomonic of syphilis, but the specimens showed a typical condition resembling a known syphilitic placenta. He had previously been under the impression that a syphilitic placenta was small, greasy and shrivelled, and it had been a revelation to him to find that a big placenta was even associated with syphilis. With regard to the specimen of hydrocephalus with the catheter stuck in the spinal cord, he had seen pictures with fluid spouting out the moment a hole was put in the spine, and that was the idea he had in his mind of what would have occurred. It was worth remembering that when they had difficulty with the after-coming head, it was always wise to palpate and see the condition of affairs, though it was not always easy to do so.

The President said he thought it was Dr. Ballantyne, of Edinburgh, who advised the method of relieving hydrocephalus by puncture of the spinal canal. If he (Dr. Ballantyne) was also responsible for the picture of the spouting catheter, referred to by Dr. Tweedy, it probably had reference to external hydrocephalus; and he wondered if in the case before them it was not internal. With regard to the syphilitic placenta, he thought it was too optimistic to say that they could diagnosticate the conditions by the percentage of weight. There must be other factors, and though in a large number of cases their attention might be drawn to the condition by the proportion, he did not think they could take it as an absolute guide. The section under the microscope was very similar to that shown by Professor Whitridge Williams in his work on Obstetrics.

Dr. Freeland, in reply, said the case from which he had prepared the teased specimen had come into his hands only two days previously. The child was born alive, but lived only a few minutes. It weighed only three and a half pounds, while the placenta weighed two pounds. The liver weighed one-sixth, instead of one-thirteenth, of the body-weight. The child had ascites and typical epiphyses at the knee. It lived only a few minutes. The mother’s first
child was born two years ago, and was living and perfectly healthy. She herself had never had any symptoms of syphilis, but he had not seen the husband. He did not know whether the hydrocephalus was internal or external, but they would open the head later and see.

[Subsequent examination showed internal hydrocephalus. The catheter passed into the posterior extremity of the left lateral ventricle, through about one-quarter inch of brain substance.]

Some Failures and Successes from my Case Books.

Dr. J. Spencer Sheill read a paper on this subject. See page 303, ante.

Friday, January 6, 1910.

The President in the Chair.

A Series of Cases illustrating the Operation of Pubiotomy (with skiagrams).

Dr. E. Hastings Tweedy exhibited six of nine patients on whom he had performed pubiotomy. The President exhibited one. The three patients not shown lived in the country and could not be brought up to the meeting. They in no way differed from those shown. The most recent operation had been performed eight weeks previously, and four years had elapsed since the first was performed. All the patients walked without discomfort or limping, and had made uneventful recoveries.

The President said that the case of pubiotomy which he showed was done shortly after his election to the Rotunda. He had not performed the operation before or seen it performed, and, therefore, as he found it easy and the result appeared to be excellent, he considered that other people ought not to find any difficulty. Dr. Hayes’s skiagram showed the condition of the bones very clearly.

Dr. Hayes showed photographs of the cases. The first
patient was Mrs. C. The line of incision through the body of the left pubic bone could be traced in the skiagram. There was bony union. The next negative was of a patient named Mrs. K., who was a patient of Dr. Jellett. The line of incision in this case was very well marked. It ran obliquely downwards and inwards towards the symphysis. There was no union in this case so far, but she was able to walk about already. The next case was Mrs. N. In this the negative showed a separation of the fragments by about three-quarters of an inch in the left pubic bone, through which the incision was made. This patient has, of course, fibrous union. It was a question whether there was any absorption of the separated fragments, but certainly there was a great deal of separation between them. The next case, Mrs. G., had a symphysiotomy. The pubic articulation was indistinct, apparently from callous formation. The separation between the adjacent portions of the os pubis was more marked below than at the upper margin. The next case, Mrs. D., had a pubiotomy and symphysiotomy. The pubic articulation was indistinct, apparently from callous formation. The incision through the left pubic bone could be seen to run vertically downwards. It could also be seen that the separated portion was in three fragments. Whether this was a fracture it was impossible to say, but it did seem something like a comminuted fracture. The articulation at the symphysis was indistinct in this case also. The next case was Mrs. O'T. The line of incision ran downwards and inwards. The upper and inner fragment of the left os pubis has been cut off, resulting in fibrous union. This case was almost a symphysiotomy. The next case was Mrs. L. The line of incision cannot be traced in this negative. There was no doubt of bony union here. The next case was Mrs. S. In this the incision went through the inferior ramus of the left pubic bone, and there was also bony union.

Professor Alfred Smith said that he had never seen so many living specimens and skiagrams. In reference to the skiagrams shown, in one of these there was a case of bony union which had a subsequent normal delivery. This was very interesting, as it showed what did really occur.
Abstracts.

In this case there was no evidence that there was any increase in the size of the pelvis.

Sir William Smyly said that the operation recommended itself to him very strongly. He certainly thought it a superior operation to symphysiotomy. In some cases one is limited to the operation of pubiotomy or extra-peritoneal Caesarean section. It was both instructive and interesting to see these women here to-night and how well they walked about.

Dr. Gibbon FitzGibbon said—In regard to one of the cases shown in Dr. Tweedy's series, in which he did a symphysiotomy, he remembered the case being done when he was Assistant Master in the Rotunda. That woman had had three children since, the second and third being born by the natural efforts, and one of these weighed 9lbs.; but in the fourth pregnancy an extraperitoneal Caesarean section had to be done. He asked was there any condition of the pelvis shown in the skiagram to account for this? The interval between the symphysiotomy and the section was four or five years, and he would like to know whether there was callous formation or other change in the pelvis which prevented the natural delivery of the fourth child.

Dr. Holmes said that Dr. Tweedy's splendid series of cases completely proved that pubiotomy was an operation which was going to remain as a definite treatment in midwifery. With regard to union there was considerable doubt as to whether bony union was better than fibrous with regard to future delivery.

Dr. Neill said he knew a case of pubiotomy, and he had delivered the same patient on two previous occasions of healthy living children by induction of premature labour.

Dr. Tweedy said he was extremely obliged for the instructive remarks in reference to this operation. He was very thankful to Dr. Hayes and Dr. Freeland for bringing down these cases, knowing the great difficulty there was in doing so. Dr. Hayes threw himself most heartily into the matter, and it would be a very different exhibit if not fortified by the photographs. Not only was the operation successful, but it was the easiest operation one could
perform. He was a great believer in the education of modern general practitioners, and believed that any well-informed general practitioner who dared attend a midwifery case in a proper manner was quite competent to perform this operation. Over and over again it has been shown that the subsequent trouble was not due to the pubiotomy but to the tearing of the cervix, tearing of the vagina. The ordinary operations undertaken by the general practitioner were more difficult than the operation of pubiotomy.

_A Case of Cesarean Section for Eclampsia._

Dr. Katherine M. N. Maguire read a paper on above. See page 330, ante.

_The Treatment of Eclampsia._

Sir William J. Smyly read a paper on above. See page 336, ante.

_Friday, February 17, 1911._

_The President in the Chair._

_Adeno-carcinoma of the Cervix (Wertheim)._ The President showed a specimen which was taken from a middle-aged woman. The cervical ring was practically complete all round. On passing a curette into the cervical cavity fragments were taken away, but it was not until the cervix had been divided high up that a specimen could be got for microscopical examination. It was a case of adeno-carcinoma of the cervix which simulated a case of cervical myoma occurring in the same situation. There was nothing in the abdomen to be felt, and the diagnosis had to be made by splitting the cervix high up. The operation was a very extensive one. On opening the abdomen the ovaries were found to be affected. The growth extended very far out to the sides of the pelvis. The ureters were dissected out of a mass of cancerous tissue. It was a case in which recurrence would be expected very soon. The patient left
hospital a short time after the operation. About two months afterwards she returned to the extern department complaining of pain in the region of the vulva, where a ring of infiltration was found. She was taken into the house and examined under an anaesthetic, and no sub-peritoneal extension could be felt. He removed a piece of tissue near the vulva, which tissue was found to be cancerous, the same as there was in the uterus. It was very satisfactory that there was no recurrence in the broad ligament. He took away about three-quarters of the remaining part of the vagina, and he thought the patient would be able to go out in a short time.

Secondary Abdominal Pregnancy, Fourth Month.

Dr. Gibbon FitzGibbon showed a case. The patient was sent into Mercer's Hospital for abdominal tumour. The history was a typical one of ectopic gestation. She was aged thirty-five, had two children, aged nine and seven and a half years. At the second confinement the child was very large, the presentation was a transverse one, and there was great difficulty in the delivery. Subsequently the patient evidently suffered from pelvic peritonitis or cellulitis. She had not been quite well for about five years after that, but the two years previous to her admission to hospital she had been in fair health. As regards her present illness she menstruated some time during September. About the 20th of November she was seized with severe pain in her abdomen and fainted. A few days after that she had profuse and continuous haemorrhage which lasted for ten days, and intermittent haemorrhage for a fortnight more. She came into hospital on the 26th of December, but nothing could then be done on account of the condition of her mouth. The tumour could be felt running from the left anterior superior spine to half way between the symphysis and the umbilicus. On making a vaginal examination he could make out the uterus in front, but owing to tenderness no bi-manual examination could be made. On the 14th of January he opened the abdomen. The whole pelvic region was matted together: the intestines were adherent to the left broad ligament, and
also to the anterior abdominal wall. The adhesions were fairly easily broken down. He clamped across the tube between the tumour and the uterus, and cut down on the side of the uterus and shelled out the tumour. The placenta lay in front of the sac and ran up to the side of the uterus. Its blood supply came from five or six vessels in the angle between the base of the broad ligament and the uterus. On taking out the tumour there was nothing between the foetus and the intestines except the foetal membranes. The front of the sac was formed by the anterior layer of the broad ligament. There was some oozing low down behind the uterus, for which a gauze drain was inserted. Four days after the operation a typical lochial discharge commenced and went through the usual stages. The uterus at the time of operation was the size of a medium orange, and evidently contained a decidual formation, but no pieces were passed. The drain was taken out in forty-eight hours, and the patient made an uninterrupted recovery, and went out on the twenty-sixth day after the operation. On examining her before leaving the hospital the uterus was in front and mobile, and the thickening in the left side of the pelvis had cleared up almost completely.

Dr. Purefoy wanted to know why Dr. FitzGibbon had called it secondary abdominal gestation. He wanted to know whether he (Dr. FitzGibbon) had ever read of primary abdominal gestation. He would like to know with what structures the placenta was continuous, and on what structures the placenta had developed. There was a possibility of development of the decidua outside the cavity of the uterus.

The President said a case of primary abdominal pregnancy was recorded by Dr. Hurst. In this case the entire pregnancy structures were represented by a few layers of chorion.

Dr. FitzGibbon said the entire pregnancy was closed up in an apparently closed sac. All through the abdomen there were pieces of very old brown leathery-looking blood clot distributed over the small intestine and high up in the abdomen. This showed there had been bleeding into the
abdominal cavity. The placenta was formed between the sides of the uterus running up over the top of the specimen. The rest of the placenta seems to run over the top and front of the sac.

Diseased Placenta.

Dr. Spencer Sheill showed a diseased placenta. The patient was in her fourth pregnancy. In the first pregnancy the child was within two months of term, but was born dead. The second pregnancy was premature. The third went to term, but the child died of convulsions an hour after birth. In her fourth pregnancy he attended the patient, who was in her eighth month. The child was born dead. The placenta was small and thin. Two-thirds of it were hard and fatty-looking and one-third was normal in appearance, and looked perfectly healthy to the naked eye. It showed recent ante-partum haemorrhages. The pathological report made by Dr. Boxwell was as follows:—"The placenta is small, thin, and fibrous. On section it showed white areas of necrosis. Haemorrhages are numerous, and there is a remarkable fibrosis of the blood vessels leading to more or less complete obliteration over considerable areas. The villi are atrophied." He thought the diagnosis was probably syphilis, but syphilitic placenta were said to be larger and paler. Under the microscope could be seen marked endarteritis and proliferation of the connective tissue. He considered the reason the placenta was small was that the syphilitic process had expended itself more on the blood vessels, whereas in large placenta it may exercise inflammatory changes, and the connective tissue changes were more pronounced.

Dr. Tweedy said small placentae in syphilis were not uncommon, and were usually found with a dead fetus, while in the large placenta the fetus is usually born alive, and Dr. Sheill's case was an example of this where the placenta was small and the fetus dead.

Dr. Purefoy said a syphilitic placenta associated with a dead infant was smaller than normal. He was of opinion that in a syphilitic placenta the structural changes in the
blood vessels were such as would enable one to diagnosticate the changes as syphilitic. He thought macroscopically he would be puzzled to say whether it was not a placenta structurally deformed as a result of kidney disease. Of course, the history leaves no doubt that the cause was syphilis.

Dr. Crofton said as regards diagnosis it could be cleared up by doing a Wassermann. If this was positive the patient had syphilis, and could be treated accordingly.

Dr. Sheill said there was no evidence of kidney trouble either as regards tenderness, enlargement of the kidney, or presence of albumen. In reference to the statement that where the child is dead the placenta is small, he thought books did not agree with that statement. As to the changes in the blood vessels permitting of diagnosis he thought there was an element of doubt. It was said that the microscope alone made the diagnosis whether the syphilis was paternal or maternal. Where it was confined to the villi it was paternal, but where it was confined to the stroma it was maternal.

Forty-eight Cases of Extensive Abdominal Resection for Uterine Cancer.

Dr. E. Hastings Tweedy read a paper on above. See page 350, ante.

Friday, March 24, 1911.

The President in the Chair.

Malignant Ovaries.

Dr. Tweedy showed malignant ovaries which developed in an elderly unmarried woman. Her symptoms were those of hysteria. She was seen by several doctors, who noticed a lump in the abdomen which was considered to be a myoma. Operation was considered inadvisable. When he (the speaker) examined the case he found the woman suffering from constipation, weakness, and loss of flesh. The tumour
was very palpable, hard, and nodular, precisely like a myoma, but taking into consideration that it was doing the patient harm, and had been noticed only within the last six months, he had no hesitation in calling it a malignant tumour. When he opened the abdomen he found two tumours growing, one on either side of the uterus; the latter was small and adherent. The tumours had all the appearance of primary carcinoma. One tumour was lying almost detached, and was fixed in Douglas's cul-de-sac in close communication with the ovary. It seemed to have been detached from the ovarian tumour, and had made extensive adhesions to the rectum. He removed it in its entirety, together with two inches of the upper portion of the rectum. He then started to stitch up this rectal incision, and, having closed it, he found she had scybalous masses in the bowel. His house-surgeon, in removing these masses, had gone through the rectum. This accident he (the speaker) believes is much commoner than is supposed. His house-surgeon did not think he was using any force. The bowel was stitched up one and a half inches from the anus, and iodoform gauze packed around the infected area. He put in a tube to encourage discharge, which came away copiously for two or three days. She did uncommonly well, and he did not like to remove the plug, but kept it in for seven days, and fed her on albumen water, one and a half pints daily, and at the end of five days added half a pint of whey. On the day after taking out the plug a faecal fistula formed. The bowels were then opened. The faecal fistula has now nearly dried up, and her temperature and pulse are normal.

Sir Wm. Smyly said some years ago he was called in consultation to a woman upon whom a doctor had tried to separate adhesions by Schultz's method. Two fingers went through the rectum, and the woman died of peritonitis. At that time gloves were not in vogue. He (the speaker) thought gloved fingers were much more unlikely to go through the bowel. In a tubercular rectum the fingers will go through with great ease. He operated on a case of tubercular tubes. On passing his fingers into Douglas's
pouch to separate adhesions he found he had gone through the rectum unconsciously. He stitched up the wound, and four weeks later faeces came away through the abdominal wound.

Dr. Crofton said the tumour was of a very malignant nature, the cells were in a tremendously active state of division, and hetero-mitoses were very well marked.

The President asked why the gauze had been left in for seven days.

Dr. Tweedy said if the gauze is taken out within twenty-four hours or forty-eight hours great difficulty will be found in its removal. After four or five days it is an easy matter to pull it out. Theoretically, adhesions are supposed to form around the gauze in forty-eight hours, but this is only partially true, and in many cases adhesions form around the gauze only at the end of three days or longer.

A Case of Natural Delivery after Caesarean Section.

Dr. Solomons read a paper on above. See page 368, ante.

Notes on Two Cases of Clinical Interest.

Dr. Jellett read notes on two cases as above. See page 373, ante.

Friday, May 12, 1911.

The President in the Chair.

(a) Recent Specimen showing Ureter Implanted in Bladder; (b) Tubercular Uterus.

The President exhibited specimens of the above. The first was from a case in which he operated by Wertheim's method for malignant disease of the cervix. In the course of the operation, in cutting through a piece of cancer that lay close to the bladder, he found he had cut through the ureter. On examining it he found the ureter apparently impervious, and
entirely occupied by cancerous tissue. Later in the operation he cut off the lower end of the ureter where it was still blocked, until he got to a piece of healthy ureter. He then adopted an expedient mentioned by Professor Alfred Smith at a meeting of the Academy, of drawing the bladder up to the ovarian pelvic ligament and cutting a small hole in the fundus of the bladder; and carrying the ureter into the bladder. The cancer was extremely extensive, and in separating the bladder wall from the anterior wall of the cervix, it was found that the bladder was involved. He sutured it up, and closed it completely, and it remained closed for nearly a fortnight. Then it broke down owing to the extension of cancer. The method of suturing was one which was available in cases in which the ureter was left somewhat short. The second specimen was one of very considerable rarity. It was only after it had been cut in several places by Dr. Rowlette that he was able to determine it to be tuberculous of the uterus. The large lump in the specimen, at the time of the operation, exactly resembled a suppurating myoma. It was a mass of tiny cysts containing pus. Both tubes were occluded, and contained a small amount of fluid. On examination of the tubes the tubercular nature was easily determined. The last case which he saw was in the Rotunda during the Mastership of Sir William Smyly, when he cut sections of scrapings, and found large cells. In the present case the endometrium was apparently healthy. The symptoms of the patient were extremely marked. She was thin. She had repeated haemorrhages and violent pain. When he examined her he could not make a diagnosis. The uterus appeared to be enlarged at the fundus, but did not give the feeling that would lead them to expect the condition that they found. At the time the tubes were removed they were of the same consistency as intestines. He did an exploratory laparotomy. They thought it was a sub-serous myoma that could be shelled out, but on discovering the condition they decided it was hopeless to leave the uterus in the state in which they found it. The patient made a very good recovery.

Dr. Rowlette said the specimen as it then appeared was
not quite as like a myoma as it was at first when he cut into it. The patches which now looked very caseous were fluid, so that it did not suggest a tubercular condition, and he took it to be a myoma. The entire uterus, with the exception of that one portion, appeared to be quite healthy. It was only on cutting the sections of the tubes that any suspicion of tubercle arose; he found tubercles in the walls of the tubes. He made further examination of the tumour, and it required a great many sections before he got one that was definitely tubercular. A section under the microscope showed giant cells. There was very little muscle tissue present through the mass. What was present was exactly like the normal uterine tissue, so that one was led to the conclusion that it was a tuberculous granuloma, and that no myoma was present in the uterus.

Professor Alfred Smith said the demonstration of the success of the implantation of the ureter was to him very gratifying. He noticed that when implanting the ureter into the bladder sutures were used. His idea was that when the bladder was anchored so that it could not retract, if they made an opening sufficient to allow the ureter to drop into the cavity of the bladder, all that was necessary was merely to close on each side the angles of the bladder wall. The rapidity with which the operation could be performed was noticeable. It was interesting to him that there was no evidence of hydronephrosis. Where they had a leakage through a ureter, they would have the kidney secreting, and hydronephrosis coming on. If they cut the ureter and ligatured at once, the tension in the kidney reached a certain standard and the kidney ceased to functuate.

Dr. E. Hastings Tweedy said the tubercular specimen was very interesting. Tubercular tubes were common. In unmarried women who got pus tubes, it was more likely that they would be tubercular rather than any other form of infection. It was difficult to understand how it arose. It did not seem to have got up through the cervix, and the tubes seemed to be tolerably healthy. He supposed they must assume that the tubercle came as an infection from the blood, but one would think the tubes or the internal os
would be the place to be primarily infected. With regard to the patency of the ureter, experiments on rabbits did not bear out the view formerly held and expressed by Professor Smith. In rabbits whose ureters were absolutely tied, hydronephrosis arose, but when the least leak was allowed hydronephrosis did not arise.

Dr. Ashe asked if the second case was a married woman, and how old. He knew a case in which a husband had had a testicle removed for tuberculosis. The wife had her tubes and uterus removed for tubercular disease.

The President, in reply, said he was certain that he used a fixation suture in the case of implantation. His method was to pass the suture through the bladder wall, and pull the ureter down through the opening. He was afraid no one could express any opinion about the condition of the lower part of the ureter that remained. There were three parts to the ureter: the first from the kidney to the malignant disease, the second where it passed through the disease, the third where it was in the bladder wall. The first part was left, with the exception of the lower portion. Then as much as possible of the portion that traversed the disease was taken away. The patient had been married over nine years, but had never been pregnant. She was thirty-one, and looked about twenty.

*Rotunda Reports, 1909-10.*

Dr. E. Hastings Tweedy read the Rotunda Hospital Reports for 1909-10. See page 380, *ante.*

Dr. Gibbon FitzGibbon congratulated Dr. Tweedy and the Hospital on the Reports which he had read. When Dr. Tweedy took up the Mastership at the Rotunda he started a non-operative treatment of eclampsia, and had maintained it since. The general tendency in the literature now, especially in America, was to revert from the operative treatment, though it was largely landed at the time when Dr. Tweedy instituted his non-operative treatment. Dr. Tweedy had said that only contracted pelvis under $3\frac{3}{4}$ inches was recorded. There were a certain number of cases above that which were still contracted pelvis. These used to be treated
by induction of labour. Some of them must be looked upon as contracted, and require some other treatment than being left to deliver themselves. If they required operative treatment, why should they not be included in the list of contracted pelvis? In the Gynaecological Report the case of tetanus was put down to the catgut. It would be interesting to know how it was prepared. He had come across a case in which he had no doubt it developed as a result of the catgut, which was prepared by alcoholic sterilisation. He would like to know if Van Horn's catgut stood the test, as it was largely used at present.

Professor Alfred Smith said it was difficult to discuss the Report without having first read it through. He was struck with the number of patients who now went with perfect safety to the Rotunda for delivery. When he was Assistant Master the number was nothing like it. The management was to be congratulated on maintaining the high standard which had always characterised the Dublin school. Any one who had known the previous results in the treatment of eclampsia, could not but pause and consider if the lavage treatment was not the best. He had criticised the treatment in its earlier stages; he had thought Dr. Tweedy was claiming too much; but he seemed to have gone on in his series of cases, and his results were highly creditable. With regard to pubiotomy, Dr. Tweedy had at one time spoken strongly in favour of a particular route and a particular needle, and now he spoke just as strongly in favour of another route and another needle. He (Professor Smith) doubted if they had reached finality in the operation. He did not use catgut unless prepared by his own staff. It was iodised catgut he used, and he considered this method of preparation absolutely efficient.

The President took the opportunity to congratulate Dr. Tweedy on his Report, and to thank him for the efficient and admirable condition in which he found the Hospital when he took it over from him. There was no human being who followed a human being who did not desire some variations, but he did not think any one could say anything other than that the Hospital was in a wholly admirable condition in
every department. In his opening paragraph Dr. Tweedy had referred to the possibility of improvement in the results as an outcome of the opening of the new labour wards. The results up to the present were as good as they could be, but he confessed that it was an astonishment to him how they were so. They were passing through the wards one thousand per year more patients than when they were built. He differed from Dr. Tweedy in that he did not think they should endeavour to conduct the maternity wards of a large hospital on the same lines as one conducted private maternity practice. The conditions were different in every respect. The number of patients was different. The number of examinations made was different. The tendency of infection, once brought into and established in a ward, to perpetuate itself, was entirely different. The conditions of hospital practice limited them in the use of the teaching capacity of the hospital. The number of vaginal examinations had to be limited considerably in order to keep morbidity to the lowest bounds. It was a question if they were entitled to try to bring down the morbidity in the hospital, if the result was to raise the mortality outside. If students were cramped in the number of examinations, that might be an excellent thing for the morbidity of the hospital, but it would certainly move in the direction of increasing the mortality of students' practice when they became qualified practitioners. No one could express any opinion as to the treatment of eclampsia other than that Dr. Tweedy's results were as perfect as they could be. He had not yet seen his way actually to follow Dr. Tweedy with regard to chloroform. He thought it was beneficial in preventing the effects of violent stimulation of the patient during certain procedures which might have serious consequences. Washing out the stomach when the patient was on the verge of eclamptic seizure was not altogether devoid of risk, and in regard to the matter of chloroform being a toxic agent, one had got to look at other results, and he understood that the person whose results ran Dr. Tweedy the closest was Dr. Stroganoff, who did not allow even a catheter to be passed without giving chloroform. That did not prove that chloroform had not its disadvan-
tages, but it did prove that it was not a toxic agent. Dr. Tweeddy said he had definitely proved that food may be the causal agent of eclampsia. If every disease in which patients were killed by food could be attributed to food, they would get the aetiology straight off of a great number of cases. He had demonstrated that food was prejudicial, but that was different from establishing it as the causal agent. He did not follow him when he said that all haemorrhages in the operation of pubiotomy were caused by a blunt needle. The separation of the bone was capable of causing some of them.

The Report could hardly he surpassed, both as a record of work done, and a description of the manner in which it has been done.

Dr. Tweeddy, in reply, expressed his indebtedness for the manner in which the President had spoken. He had no doubt that the Report would be surpassed when the President came to make his report seven years hence. He had not the least doubt that the new labour wards would be one of the methods by which the new Master would lower the morbidity of the Hospital. Although the Rotunda Hospital was the safest place in the world for delivery, they had not yet reached bed-rock as regards morbidity. When he took up his duty as Master, he felt he inherited a very old institution, and he said to himself the Rotunda Hospital was doomed the day that architectural perfection became the all-important item in maternity practice. They could not compete in money or structure with some of the great places that were supported by Government. Men were taught in the Rotunda to go into general practice. Surely the worst way to teach them was to impress them with the importance of brick and mortar. Their nurses had too short a training for private practice. They left the Rotunda at six months, and were fairly good, but at the end of six years a great number of them were hopeless. The argument of the Master that he did not think they were entitled to lower the morbidity of the patients at the expense of the students was one that could be used against all humanitarians. With regard to vaginal examination, these were not discouraged at all. He thought the examinations were made with the
utmost safety if they used sterilised finger stalls. It had been his observation that chloroform had a profound influence on the liver, and there was an enormous amount of evidence in support of it. Stroganoff, of St. Petersbourg, who had had results almost identical with his own, did not use chloroform in the way that they understood it. He gave a whiff of chloroform before a catheter was passed or a tube passed. Personally he did not see the least objection, though he did not think it necessary, and now, if he was treating eclampsia, he would prefer to give ether in small quantities just before passing the tube. Their patients were saturated with morphia, and that would take to some extent the place of chloroform. He thought a normal child would always pass naturally with a pelvis over $3\frac{3}{4}$ inches, but great complications occurred in those cases. It was a serious thing to measure a woman. He would not measure one who delivered herself naturally. In the Rotunda they sterilised in Jellett’s box and soaked in iodine. He resorted to the Jellett’s box until he got tetanus. Then he added Professor Smith’s method, and he need hardly say, iodine would not kill a tetanus bacillus. In Steevens’ Hospital they used formalin catgut and had not any trouble. The paraffin method was complicated, but gave splendid results. As to his alleged change of front with regard to pubiotomy, the greatest fallacies were the supposed truths recorded from memory. All he said was, that as compared with any other operation, pubiotomy done in any way was to be preferred. With the sharp needle it was easier, with care, to avoid hæmorrhage and subsequent tearing than with a blunt needle.
SECTION OF PATHOLOGY.

THE FRINGES OF THE CANCER PROBLEM.

By W. SAMPSON HANDLEY, F.R.C.S.;
Assistant Surgeon, Middlesex Hospital.

[Read in the Section of Pathology, November 4, 1910.]

Being connected with a hospital where for over a century there had been every opportunity for observing cancer, as it contained wards for inoperable cases, which could remain until released by death, I think it would be more interesting to those present, and it would be more congenial to myself, if, instead of embarking on the sea of speculation, I brought before them some observations which I had been able to make, and left them to do the speculating thereon. I believe that the cancer problem is best approached by tackling its fringes, rather than by a frontal attack on its central mystery. I would, therefore, speak mainly on dissemination. Until a few years ago the theory which held the field was the embolic theory, according to which cancer particles, passing along the lymphatics, got into the blood stream, and were carried all over the body, and gave rise to a crop of metastases. There was reason to believe that this theory, while containing an element of truth, was on the whole erroneous, and I have attempted to bring forward evidence in favour of what I call the permeation theory. By permeation I mean the growth of cancer along the lymphatic vessels as
a continuous line of cells, the cells growing just like tendril shoots by their own power of growth. The process of dissemination were best seen in the parietes, where they were most easily watched. The main highway of dissemination was the lymphatic plexus. My view is that the growth extends centrifugally in all directions independent of the lymph stream, growing along the fine lymphatics of the plexus. They would notice that although the cancer cells might be embolised in an early stage along the trunk lymphatics to the axillary glands, yet I believe that those cancer cells were destroyed when, after passing through other glands they reached the blood-stream. That view had received support from the work of Schmidt, who described the destruction of cancer cells in the small arteries of the lungs. Although embolism could not carry cancer cells out of the area in which they originated, permeation was capable of doing so. The fact that permeation could cross the boundaries between adjoining lymphatic areas place the whole body at the mercy of the process if time enough was given. I show a slide of a microscopic section of a permeated lymphatic taken from the deltoid region of the arm in a case of breast cancer. Turning to particular forms of growth, I may direct attention to melanotic sarcoma considered as the type of a malignant growth disseminated by the blood stream; but even in that form of growth, lymphatic permeation played a very important part. The black colour of the growth dispensed with any artificial stain in demonstrating permeation. The growth started from the chromatophores, branching connective tissue cells full of pigment. It really was a sarcoma, and not a carcinoma, as was thought a few years ago. I may mention a case of melanotic sarcoma of the heel in a woman aged thirty-five. The primary growth had been excised, and did not
return; but very soon a mass of glands developed in the inguinal region, and soon afterwards nodules made their appearance on the skin around the inguinal glands, and spread in every direction. One might consider the earliest secondary deposit in the inguinal region as a primary growth for the purpose of finding out how the dissemination occurred. I took a strip down the thigh, and froze it, and cut it into slices, and obtained the specimen from which the slides were made. The larger nodules were on the end of the strip nearest the inguinal glands. They became smaller until finally, at the other end of the strip, they could only see a network of black lines. These were permeated lymphatics. At the farthest end of the strip there was no invasion of the blood vessels, but nearer the glands they found the veins invaded, and then the arteries. That invasion took place because the lymphatics ran in company with the veins, and when the lymphatics were infected, it was only a matter of time for the veins, and later the arteries, to be invaded. To demonstrate the process of permeation, and in order to show that what I pointed out as lymphatics were really lymphatics, and not blood vessels, I show a slide with a cord of black growth accompanying the artery and vein, the latter being perfectly normal, which shows that permeation of the lymphatics preceded the invasion of the veins and arteries. After a time the growth distended and ruptured the lymphatics, and the melanotic growth infiltrated the vein. When the vein was once invaded it was very likely that the lymphatic permeation in melanotic sarcoma had done its most important work, and that the growth then disseminated by the blood stream; but sometimes the distribution of the metastases showed that lymphatic permeation was the important agent practically all through in distributing the growth.
In breast cancer the clinical evidence of dissemination in the superficial layers was the presence of subcutaneous nodules. They used to be said to be due to embolism, but there was one fact which practically disposed of that contention—that was, that they always appeared first close to the primary growth, and spread from it centrifugally. They recalled the mode of spread of a tertiary syphilide, but it was entirely unlike the chance distribution of secondary deposits by a random process of embolism. (A slide was exhibited which showed the nodules practically all included in a circle from the centre of distribution.) Particles of clot containing septic organisms distributed by embolism were apt to find a lodgment in the arteries of the limbs, and if cancer were distributed by embolism it might be expected that secondary deposits would not infrequently be found in the distal portions of the limbs. But the freedom of the limbs from secondary deposits was practically an invariable rule in breast cancer and in other forms. (A slide showed that the secondary deposits near the primary growth were older than those farther away, as indicated by their ulceration.) The same rule applied to secondary deposits in bone: they never occurred below the elbow and knee. I have only found one exception, in which the knee was ankylosed, and the growth extended by continuity from the femur to the tibia. Such evidence was, however, only prima facie. The question could only be settled by sections taken in various directions radially from the primary growth. (Several such slides were then exhibited.) The deposits at the level of the nipple could be traced a long way down upon the deep fascia, much farther than they could be traced on the skin. That was a strong argument against thinking that the cancer spread in the plane of the skin, and a strong argument in favour
of removing rather less skin and considerably more deep fascia than formerly. I exhibit slides of the microscopic growing edge of carcinoma, which I do not think had been previously detected, situated in the region beyond the remotest visible nodules. It was purely microscopic, and in the region where it lay there was no interstitial invasion of the tissues by cancer cells. The microscopic growing edge of a breast cancer was situated in the deep fascia, simply because the easy highway of growth lay there. (A slide was shown demonstrating permeation which spread against, as well as with, the lymph current, and then invaded the net work of capillaries.)

There was one fact in studying permeation which baffled me for a long time. Although I could find the permeated lymphatics at a long distance from the growth, yet at points nearer to the growth I could not find any such permeated lymphatics. I think that was why the importance of permeation failed so long to be recognised. But I have been able to trace out the reason, and to demonstrate a series of changes by which a permeated lymphatic was ultimately changed into a fibrous cord containing no cancer cells. I show a slide giving a cross section in the abdominal region in a case of breast cancer, close to the growing edge, almost the remotest deposit. The lymphatic was not distended. There were no inflammatory cells around it. The small tributary lymphatic was also free from cells, and obviously the reason was because the cancer found it easier to grow along the main route rather than turn up the side stream for the time being. Another slide shows similar permeated lymphatics with a normal blood vessel between, and no infiltration. As one passed up towards the primary growth, it was found that the permeated lymphatics looked larger, because they were being distended by the continued growth of the cells.
Other slides show varying degrees of distension, until the lymphatics became so distended that the cancer cells found it difficult to nourish themselves. Coincident with the degeneration which took place, a few inflammatory round cells appeared in the neighbourhood of the permeated lymphatic. The distension could not go on indefinitely, and the mass of cells finally burst the lymphatic. Then the mass of inflammatory cells organised into fibrous tissue, and they saw a mass of degenerate cancer cells enclosed in a layer of newly organised fibrous tissue. Such tissue contracted down on the degenerate cancer cells, and finally squeezed them out of existence. (Slides were shown of varying degrees of this process which he called perilymphatic fibrosis.) It accounted for many things in connection with cancer—for the absence of permeated lymphatics from the region immediately round the primary growth, and also for the whole train of symptoms due to puckering around the original growth. It accounted for the contraction of the nipple, for the small size of the affected breast, and for the brawny arm of breast cancer which was due to the entire separation of the lymphatic system of the arm from the lymphatic system of the rest of the body. This could not be brought about merely by blocking the lymphatic trunks, for a collateral circulation would take place; but if in the whole district all the lymphatics had been turned into fibrous cords, the lymph could only return slowly by percolating the tissue spaces.

As to visceral dissemination, how did breast cancer reach the interior of the body? I think it went by one of two routes, either by infiltrating the chest wall immediately under the growth or by infiltrating, the epigastric parietes at a point immediately under the ensiform cartilage. That was suggested to me first,
because there were so many cases in which after death secondary deposits were present in the abdomen and not in the chest. That was a condition of affairs which the embolic theory failed to account for. It seemed to me that possibly the solution might be the direct infiltration of the parietes, and I was able to prove that such was really the case. (Slides were demonstrated showing the various stages of this process.) The extension of permeation in the fascial plexus led to the formation of nodules upon the rectus sheath in the epigastric angle. Next the muscle itself and the fibrous tissue of the linea alba were infiltrated by the growth, which was thus carried to the subperitoneal fat and to the subperitoneal lymphatic plexus. Cancer cells then escaped into the general peritoneal cavity, and implanted themselves upon the liver, or falling into the pelvis there gave rise to secondary deposits.

With regard to stomach cancer, sometimes it invaded the parietes at the umbilicus. I show a slide from the case of a young man in whom malignant disease was diagnosed because of the presence of three tiny nodules close to the umbilicus. In another slide the centrifugal spread is manifest, the assumption being that it spread, like breast cancer, chiefly by permeation. It was difficult in stomach cancer to trace permeation, but I have been able to overcome the difficulty in some degree by employing a stain called mucicarmine, which was a specific stain for mucus. (A slide was shown which demonstrated cancer cells.)

I should have liked to go into the question of the natural cure of cancer. I think the most important point of my observations, from the practical point of view, was that they showed the presence in cancer of processes of cure going on along with the advance of the disease; and the
same tendency of cancer to spontaneous cure in a centrifugal manner could be traced in the primary growth, which, after ulcerating, was sometimes replaced by a mere scar.

Professor O'Sullivan moved a vote of thanks to Mr. Handley, expressing the obligation of the Section for a clear statement of views illustrated by beautiful examples. He thought the doctrine of the permeating spread of cancer was not a very recent one. It was held by Weigert, who had said that cancer went by direct extension along the lymphatic paths. What had been shown, however, as to the spread of melanotic sarcoma was entirely new to him. One of the most interesting specimens was, perhaps, the one showing the sarcoma filling the lymphatics, the artery and vein being unaffected. Mr. Handley had arrived at a very interesting conclusion relating to the way in which a cancer was disposed of in the immediate neighbourhood of the primary growth, which had almost a terrible interest both to the surgeon and also to the histologist, who had to discover if the operation had been carried sufficiently far. It suggested that it would be necessary for them, instead of examining for traces of cancer on the outskirts of the portion of tissue removed, to see whether there were traces of fibrosis of the lymphatics, which would be a much more difficult thing to be sure of. What they had been told threw a good deal of light on the question of what was sometimes called fibroid change in the wall of the stomach. Views had been put forward to the effect that a good many of those pyloric obstructions were due to inflammation, and had nothing to do with cancer. His experience had gone the other way. One often had to search a long time before finding any cancer cells at all in scirrhus cancer of the stomach. If they found such difficulty, was there any reason why they should not find it impossible? The fibrous portions of the stomach wall might be places where all the cancer had disappeared by the process described.

Dr. Walter G. Smith, in seconding the vote of thanks,
said a physician was necessarily, by his vocation, less concerned with the cancer problem than the surgeon. The physician's cases fell into two groups—those in which the disease could not be got at and was inoperable, and in which the physician's duty was little more than a meditation on death; and those in which the cancer might be judged possibly suitable for operation, in which case the physician had to mark down the game to hand it over to the surgical sportsman. When they considered the twin scourges of humanity, tuberculosis and cancer, it seemed that at present in their investigation they had to rely on the microscope and the experimental inoculation of animals. He was afraid they could not look to the allied science of chemistry to throw any light on either problem. So far as he knew, no chemical substance had been isolated from, or detected in, malignant growth, yet malignant growths carried their chemistry to distant parts of the body. Mr. Handley's observations appeared to him to be, if not inconsistent with, at least to throw great difficulties in the way of regarding cancer as a disease due to a specific organism. It had been frequently sought for and ascribed to animal and vegetable origin; and there was another possibility, that in that case, and also in yellow fever, the parasites were ultra-microscopic, and so eluded research. It was a great pleasure to him to second the vote of thanks to Mr. Handley, for he had not only given them an intellectual treat, but had lit a lamp which had thrown light on some of the dark corners of one of the gravest problems of pathology.

Professor E. H. Taylor supported the motion. He had followed Mr. Handley's work for some years. Two years ago he had met him in Brussels at the Surgical Congress, where his views were warmly accepted by the greatest surgeons in Germany and on the Continent generally. From the surgical standpoint he thought that the views so forcibly put forward by Mr. Handley had done a lot of good. He thought there was no operation for cancer which had shown such a definite advance as that for breast cancer. Mr. Handley's name was associated with others in the evolution of the operation. For some years he had practised the
operation spoken of by Mr. Handley, which aimed at removing the disease widely. No operation was thorough unless it aimed at removing the deep fascia.

Professor Mettam also supported the vote of thanks. He said his experience of cancer was limited to domesticated animals. The movement of the cancerous growth against the lymph stream was of great interest to him personally, partly because he was very sceptical as to the correctness of the present description of the lymphatic circulation. His impression had always been that the new growth was centrifugal, and the ultimate destination, if the animal lived long enough, was the blood stream. They were informed that the tubercle bacillus was able to move against the lymph stream. In tuberculosis of the udder of cattle, one way in which they could explain infection was that the virus had moved against the lymph current. It was conceivable that the cancer grew along the lymphatics, but he did not quite follow how the bud was cut off from the centre. The picture indicated that as they approached the primary focus there was an infiltration of round cells, fibroblasts which gave rise to new granulation tissue. He accepted the dictum that the irritation set up eventually formed tissue which cut off the new growth. This showed that the new growth was not quite independent of the primary growth. In his own observations he had not observed the dissemination of the secondary new growth in the subcutaneous tissue of the lower animals. In cases of carcinoma of the liver, he would have liked to hear if the secondary new growth followed the blood stream or the lymphatic stream of the liver. The latter seemed to journey backwards. He thought some one should look into the matter of the lymphatic circulation.

The vote of thanks was passed by acclamation.

Mr. Handley, in acknowledging the motion, said nothing could illustrate better the complexity of the subject of cancer than the speeches which had followed his remarks. Each approached it from an entirely different point of view, and all were interesting and important. One person could only hope to tackle a portion of the problem. He had suspected that the fibrotic lumps in the stomach spoken of by Dr.
O’Sullivan were extinct carcinomata, and Dr. O’Sullivan’s observations tended to confirm his suspicion. It looked as if cancer were not quite the incurable disease that it was thought to be. It looked as if there might be abortive cases of cancer which never obtained the clinical dignity of fully developed disease. He wished to disclaim having discovered the process of permeation. It had been known for a long time; but he was responsible for the name. It used to be called lymphangitis carcinomatosa, and was regarded as a pathological curiosity. The reason why its importance was not recognised was, he thought, that the fibrotic process had not been described or detected. Until that process was detected it was impossible by means of permeation to explain dissemination, because permeated lymphatics were absent from the region just round the primary growth, where it would seem they ought to be specially present. He was specially pleased to hear of Mr. Taylor’s satisfaction with his operation for breast cancer. Referring to Professor Mettam’s remarks, he did not think that one could transfer experience in human cancer to that in animals, or indeed vice versa. There seemed to be great differences between the two. He was not an expert on the varieties of cells found in the blood and lymph, but his colleague, Professor Bonney, had confirmed his work, and he could appeal to him when he spoke of the cells as fibroblast. Professor Mettam had not observed such extensive subcutaneous deposit as he had; but, of course, in man such extensive deposits were rare, and he showed the cases which illustrated the spread more strikingly than the commoner cases of limited dissemination. The subject of lymphatic anatomy was a very important one, and he believed there were considerable discoveries to be made by the anatomist who devoted himself to it. He had looked out a volume of anatomy of 1,200 pages, and the amount devoted to lymphatic anatomy—20 pages—hardly showed its relative importance. He thanked them for their kind reception. It had been a great privilege to address the Section.
I wish to apologise to the Section for bringing this report before it, as reports at the best of times are rather dry reading. The only excuse I can make is that it is an attempt to put on record the class of work that was being carried on in the Pathological Department of one of the general hospitals in Dublin. The report is incomplete, but I hope it will have the effect of encouraging the publication of similar reports of the pathological departments of other general hospitals in the city, where a large amount of good work was done, and much useful material investigated during the year. I hope it will promote the interchange of specimens between the different hospitals, and so in combined action keep the standard of teaching well up to, if not above, the modern standard.

I do not intend to read the whole report but only to touch on matters which might prove interesting, and to give a few experiences in teaching during the year. The report is divided into two main divisions—(1) Dealing with the examinations made, and (2) the teaching of the department.

(1) The number of examinations made was placed under the different headings, and here I was met by a difficulty
which I am sure has been experienced by others—namely, the lack of an altogether satisfactory method of collecting material with regard to future identification of specimens, and a satisfactory method of reporting results. This difficulty was usually experienced when a number of specimens came from the wards for examination, and where insufficient data had been given as to what particular examination was required. The method I have adopted was to have coloured cards printed with headlines, which had to be filled in and sent to the laboratory with the specimen. When the examination was made the report was written out in the book, a specimen of which I have brought with me. Its pages consisted of a double sheet with perforations, one part being kept in the block and the other sent to the ward. This latter sheet corresponded exactly in size to the chart and case sheet, so that all could be conveniently filed together. There was a space for the name of the house surgeon and one for the clinical clerk, which was invaluable as it indicated the persons to whom application should be made in the event of further information being required about the case. This method had been found to work fairly satisfactorily up to the present, but the system required modification in the case of examinations made for the out-patient department. Vaccine, serum, and tuberculin treatment was carried out largely by the department, but it had been gradually passing into the hands of the general hospital staff, the materials being supplied from the laboratory and advice given if required. The resident medical officers and clinical clerks were encouraged as far as possible to make their own cultures, vaccines, &c., and on the whole advantage had been taken of this. Under this heading I wish to record my humble appreciation of the good effect of the Practical Pathology recently introduced into the Third
Professional Examination. Since then the resident pupils who had passed this examination were able to take an active part and an intelligent interest in Clinical Pathology. In passing I may mention that good results were obtained from Bacillus coli communis vaccine, particularly in cases of cystitis due to this organism. In acute cases it was found better to combine serum and vaccine treatment. For example, in acute appendicitis a preliminary dose of anti-coli serum was given to neutralise the existing toxic products, followed later by the vaccine so as to stimulate the formation of anti-bodies. It was interesting to note that tuberculin T. R. was found to give best results in genito-urinary and gland cases, whereas tuberculin B. E. gave best results in bone cases. B. E. gave bad effects in genito-urinary cases, which improved on changing to T. R. With regard to diagnostic tuberculin the ophthalmic reaction had been almost altogether superseded in the hospital by the safer and, I think, more reliable cutaneous reaction, which, on the whole, gave satisfaction. The inoculation method was not used, though it was recognised by many authorities to be the most reliable test. Numerous cases of special interest were met with during the year, but time does not allow of a detailed account of them. Among them might be mentioned hypernephroma, pyonephrotic kidney, spleen removed by operation from a case of splenic anaemia, aneurysm of the aorta.

Autopsies.—Only 23 autopsies have been performed, and it was very disappointing that more could not be obtained, though special encouragement had been given to resident medical officers to obtain them. A very satisfactory post-mortem book had been designed, and was at present in use. The printed headings reduced the amount of writing to a minimum, and at the same time it could be read almost at a glance; it tended to make the examina-
tions more systematic, and prevented the omission of important things. Under this heading an interesting observation had been made with regard to the prevalence of the trichocephalus dispar. This parasite was common enough in the tropics and at home among children; but in the cases examined the majority were adults. In only one case, a child, was there an appendicitis, and though a careful examination had been made no ova or parasites could be discovered actually in the appendix. In this latter case oxyurus vermicularis was found in the caecum as well as trichocephalus dispar.

Museum.—An apology must be made for dignifying this small room by such an important name, but I hope some day to see it extended, so that the name applies more to what I hope it will be rather than to what it is at present. It consists of a collection of specimens exemplifying the commoner pathological conditions, and has been put to good use by the students, who bring in their books and study the specimens as they read the descriptions. A small typed catalogue is provided, which just names the specimens without any detailed account, but this I hope to elaborate at a future date. Among the exhibits is a collection of cultures of some of the more important pathogenic micro-organisms. There is also a set of test-tubes containing specimens of the crude materials used in the manufacture of culture media with some of the ready-made culture-media in common use. There is also a collection of vaccines, sera and tuberculin, to be seen, which have the effect of familiarising the student with these preparations and give him at a glance the range covered by this most important branch of prophylaxis, diagnosis and treatment. A small collection of calculi has been made, from which I show a salivary calculus from Wharton's duct and a rhinolith, both of which were re-
moved by operation. From a case containing various other specimens I exhibit a tse-tse fly and some culex mosquitoes, which were kindly sent to me from the laboratory, Royal Army Medical College, London, as also some microscopic specimens of protozoa—e.g., trypanosome and spirochete.

(2) The second part of the report dealt with the teaching given during the year, and gave an idea of the field covered. An attempt was made to give as systematic a course as possible and at the same time to keep in line with, and to take full advantage of, the large amount of material available in the wards and from the operation theatre. The staff had to be thanked for their kind co-operation in this respect and for their encouragement and assistance in carrying out the various investigations. It was also a source of gratification to find the museum material had been frequently utilised by the staff to illustrate their lectures. I now come to a point which I consider of great importance in view of the extraordinary rapid progress in scientific medicine which had revolutionised teaching during the last few years, and which still continued at the present moment throughout the world. The things which might be particularly alluded to were the studies in immunity and in tropical diseases. In my opinion our ordinary professional examinations did not specially insist on a knowledge of recent research. I have been teaching for the past six or seven years, and I think that most men of larger experience would confirm the opinion I have formed that the average medical student would not take a very great interest in the subject-matter outside his examination work. I think that if they knew that at least one question at the oral or written examination would be asked on recent research they would take a little trouble to keep in touch with modern progress.
I would not have the answering of this question essential for a pass, but I think it would give an opportunity for the progressive student to score extra marks, and it would develop a habit in students of reading recent publications—a thing much to be desired. Under the heading Post Graduate work special facilities were given to practitioners who might have a few days to spare at vacation time, though not enough to take out a full course, and to brush up their clinical methods, and to inspect the more modern methods of treatment with which they might not have been in touch. The teaching of nurses did not properly come into the domain of the laboratory work, but several lantern demonstrations have been given illustrating the commoner parasites and bacteria and a few rough experiments showing the multiplication of bacteria on suitable soil. In this way the principle of asepsis was demonstrated in a practical manner.

Dr. Parsons and Professor McWeeney both spoke appreciatively of Dr. O'Farrell's work in the development of his department, and Professor McWeeney suggested some improvements in the tabulation of the post-mortem book. As regards Dr. O'Farrell's suggestion re asking questions on recent research in pass examinations, he said he could hardly expect any student to answer intelligently on the subject of "complement fixation." He had found very few qualified medical men competent to deal with it.

Dr. T. G. Moorhead, in referring to Dr. O'Farrell's remarks on vaccine treatment, said he had been using tuberculin in disease of the kidney, bladder, and epididymis with success; but in a case of tubercular cystitis the result was less satisfactory. He was interested to hear of the different results from the use of different preparations of tuberculin used, and asked a question as to the dosage. He had no great hopes of teaching the higher branches of
pathological research to students where there was such difficulty in impressing the very elements.

Dr. T. P. C. Kirkpatrick emphasised the importance of tabulating information. At present it was difficult to obtain accurate information from the various hospitals in Dublin when any particular form of disease was being investigated. Anything calculated to induce men to take accurate notes would be welcome; and if this method of recording and reporting cases was adopted on an extended scale, it might be possible to establish a general hospital report. The number of interesting cases occurring in any one hospital in a year was so limited that a single hospital report was not of any great value. But if the reports of all the hospitals were kept and collated their value would be greatly enhanced.

Dr. O'Farrell, in reply, said that many students did try to keep abreast of the times by reading medical journals, and he thought that if more help and encouragement were given them they would turn to their scientific papers with as much pleasure as they now turned to an ordinary magazine. In answer to Dr. Moorhead's question as to the dosage of tuberculin he said he began with $\frac{1}{5000}$ of a milligramme, but never went higher than $\frac{1}{1000}$ milligramme. In the case of bacillus coli the dose was from 10 to 25 millions.
BACILLUS PARATYPHOSUS B. AS AN ACCIDENTAL POST-MORTEM FINDING.

By E. J. McWEENEY, M.D., F.R.C.P.I; Professor of Pathology and Bacteriology, University College, Dublin.

[Read in the Section of Pathology, January 13, 1911.]

The case was that of a man, aged thirty-four, who died of purulent peritonitis for which no cause could be found post-mortem. There was neither ulcer nor perforation of the intestine. The peritoneal exudate yielded Staphylococcus albus only. The heart-blood and spleen yielded the bacillus now described, in pure culture. Morphologically and culturally it was a typical Paratyphosus B, save for its "weak" behaviour on media containing dulcite and arabinose from which it produced gas slowly and in small amount as compared with a genuine strain. The serum reactions had been very kindly tested by Dr. Bainbridge, of the Lister Institute, who found that it was agglutinated by Paratyphosus B. serum up to a dilution of 1 in 10,000. There could be hardly any doubt, therefore, as to its identity. As to the mode by which it had obtained access to the heart-blood, I may refer to several cases in which this bacillus had been isolated from the stools of apparently healthy persons. Numerous "carrier" cases that continued to harbour the bacillus for months or years after recovery from paratyphoid had also been recorded. It is probable that shortly before death the bacillus had migrated from the intestine into the blood. Unfortunately the contents of the bowel were not examined.
Regarding the position of the paratyphoid bacilli "A." and "B." in the typho-coli group, I am now inclined to the view that between the Shiga bacillus of dysentery, on the one hand, and the saccharose-fermenting races of B. coli on the other, there was an unbroken chain of intermediate forms, distinguishable by their fermentative activities. Even within the limits of a single colony, in certain cases, certain individuals possessed fermentative powers which other individuals lacked. Extreme variability in this respect was the biological keynote of the Typho-coli group.

Dr. O'Farrell pointed out that B. paratyphosus a. had been found in drinking water in Johannesburg. The determining cultural characteristic taken being the time taken for formation of gas.

Dr. Mervyn Crofton queried the necessity for such a troublesome process as "sugaring" out organisms each into their own particular category, at any rate for vaccine purposes. He considered that if the probable infecting agent was found, its group determined, and its specificity tested by the index, investigation had gone far enough for practical therapeutic purposes. He suggested further that an associated pyorrhoea alveolaris might have been the primary source of the infection in this case, as an organism very similar to paratyphosus had been found with other organisms in this condition.

Professor Mettam said that the great interest of Prof. McWeeney's paper for him lay in its bearing upon the question of meat poisoning. He had recovered an organism closely resembling Paratyphosus B. from the spleen of an animal dead from no obvious cause. He injected 10 cc.ms. of a broth culture of this organism into the jugular vein of an aged cow he had in his possession, expecting to see signs in a few days of acute diarrhoea. On the fourth day the cow aborted; on the seventh she died, and he recovered the para-
typhoid bacilli from the stomach, intestine, and thigh muscles. The experiment showed that paratyphosus was pathogenic for the food-producing animals. He had also found it in fowls, and he thought it must have a very wide distribution. He wished to know whether paratyphosus was a common infecting agent in man; whether it occurred associated with \textit{B. coli} in the intestine without producing symptoms and then became suddenly pathogenic; and whether meat so infected and eaten reproduced the disease in man.

Dr. McWeeney replied, and referred to the "Journal of Tropical Medicine," which gave an account of the Paratyphoid A. discovered in water. Continuing he said when it became a question of injecting it into a human subject, at the risk of waiting a few days before injecting a vaccine, he preferred to have accuracy as to the organism injected. He had a general impression that the injection of mixed organisms was rather objectionable and calculated to give rise to disappointing, if not positively serious, results. He thought that nowadays the opsonic index was too much neglected. It showed, when carefully carried out, whether there was any relation between the organism isolated and the state of the patient's humours, and if he were the patient he should prefer not to be vaccinated unless the organism had been accurately isolated. Professor Mettam's remarks were very interesting. He (Dr. McWeeney) had sent him the Limerick strain of the Gaertner bacillus which he injected into a calf, with the result that the calf died in seven hours of what must have been a tremendously severe intoxication. Regarding his observation as to the presence of this organism in the muscles of animals, he had found this to be so. He had always included a tube inoculated from the muscles, and had not failed to obtain a cultivation of the bacillus. Doubts were beginning to arise in the minds of a good many as to whether the paratyphoid bacillus was responsible for a great many symptoms attributed to it. In the Lister Institute recently an epidemic had occurred among the guinea pigs. They were swept off by an infection, and on making bacteriological and other examinations
nothing but Paratyphoid B. was found. Artificially-inoculated guinea pigs did not convey the disease to healthy animals placed with them. It was found, moreover, that filtration of the serum of animals which had died of the actual infection did not rob it of its infective properties. It was capable of producing the infection although bacterially sterile, and the *materies morbi* must, therefore, have been an ultra-microscopic "filter-passer."
CONGENITAL CYSTIC KIDNEY.

By K. E. L. G. GUNN, F.R.C.S.I.,
Surgeon to the Adelaide Hospital.

[Read in the Section of Pathology, February 24, 1911.]

This is the name most frequently given to the condition of which I show a specimen to-night. The term polycystic kidney is more correct, as the congenital nature of the disease is by no means universally accepted.

Cystic kidneys of this sort are sufficiently uncommon to be of interest, being found on an average once in 700 autopsies. The disease presents such a striking appearance that it can never be passed over at a post-mortem examination, even though the condition may not have been suspected during life.

Many specimens have been shown at this Section, and we are most of us quite familiar with the condition, this being from the eighth patient I have seen with this disease. In spite of a great deal of work done in connection with polycystic disease of the kidney we know very little about it.

Let me briefly recount the facts that are known in so far as I am familiar with them, then some of the theories advanced, and let us see how they fit in with the rather vague clinical features of such cases.

The disease occurs, or at least manifests itself, at two periods of life—at birth, and between forty and sixty years of age. Isolated cases are found at any age, but the
Congenital Cystic Kidney.

great bulk occur at the two periods I mention. Out of over 400 cases recorded, about 60 per cent. were found between the ages of forty and sixty.

It is difficult to believe that a disease which develops so late in life is congenital—it is not difficult to suppose that the form seen at birth or soon after is congenital. Are the two the same disease?

I am not familiar with the infantile form, but I believe macroscopically the kidneys are alike in this and in the form occurring late in life. The microscopic appearances vary so much that they are not easy to compare.

There are, however, some points of difference between the two. In the infantile cases, cysts occur more frequently in other organs, chiefly in the liver, and other congenital defects are often found. They do not occur in one sex more than the other. If the child is not born dead, death soon occurs.

In the later forms cysts in other organs occur much less commonly. They have been found, however, in the liver, ovary, testicle, uterus, broad ligament, bladder and the choroid plexus. The disease is much more common in women than in men. Evidence of other congenital defects is rare. The patient may live a long time with this disease.

The polycystic kidney presents a very typical appearance. At first the cysts are mainly on the outer surface of the organ; they vary in colour from white to dark purple, or from yellow to green. They contain a glycerine-like fluid, with numerous epithelial cells. The fluid is never urine, but may contain almost any of its constituents, as urea, calcium oxalate, uric acid, albumin, phosphates, &c. The cystic growth affects the whole kidney, so as the organ enlarges it preserves to some extent its shape. The cysts seem to occur in the con-
voluted tubules and are lined with a cylindrical epithelium which in places shows signs of proliferation. Healthy renal tubules may lie between the cysts, but more often the renal tissue left shows signs of chronic interstitial changes. Other changes may occur:

*Hæmorrhage* into the cysts.

*Septic infection* of one or more of the cysts occurs in about 10 per cent. of all cases.

In a few cases *tuberculous infection* has been present.

In advanced cases the disease is nearly always bilateral, but more advanced on one side than the other.

When we catheterise the ureter of such a kidney we get a pale urine of low specific gravity, but otherwise it presents nothing abnormal; only in one-third of the cases is albumin present.

The heart is commonly hypertrophied, the pulse increased in tension.

The disease often affects two or more members of the same family.

Such are the more important facts. What are the theories of origin?

1. That the disease is a new growth.

This theory was first advanced by Malassez, and is held by a host of others who compare the growth to an ovarian cystoma. Some, like Ritchie, look upon the foetal form as congenital and quite separate from the adult form which is believed to be an adenoma.

2. That the disease is inflammatory.

Virchow held this view, that the cysts were really retention cysts, resulting from the gradual blocking of the urinary tubules, as the result of contracting fibrous tissue.

Unfortunately, inflammation is almost never found in the adult form, in the early stages of polycystic kidney, and but rarely in the infantile form. Again, the cystic
Congenital Cystic Kidney.

kidney that results from extensive interstitial fibrosis is not in the least like the polycystic kidney.

3. The third theory is that of Koster, who believes that all the cases are congenital. Huber has shown that the urinary tubule is developed from two separate structures, a renal vesicle and a collecting tubule, which eventually unite to form a single canal. If this union be imperfect, it is not difficult to understand the cyst formation to be of congenital origin. It is difficult to fit in with this theory the long period of life during which the disease is rare. Busse endeavours to explain this by suggesting that in the adult form the disturbance in development is slight, while in the infantile form it is of a much higher grade.

4. Lastly, a combined theory has been suggested—that the condition in the first instance is an embryonic malformation, and in this a cystomotous growth occurs.

To me none of these theories are satisfactory. The manner in which the disease occurs in several members of the same family, the great frequency with which it occurs in both kidneys—the remarkable similarity of all the specimens, are to my mind all strongly in favour of its being embryonic in origin. What the factor or factors are that prevent the disease developing for the first thirty years of life, and then allow of its rapid development, I do not know, and I have no suggestions to offer on this point.

A word in conclusion about the clinical features. The disease may be divided into three stages—

Stage I.—The cysts are developing in one or both kidneys, but the patient suffers no inconvenience and presents no symptoms.

Stage II.—Pain appears from pressure on surrounding organs, and symptoms of chronic Bright's disease come on.

Stage III.—Uraemic symptoms ending in death.
It is impossible to say how long the first stage may last. Diagnosis only becomes possible when the kidney has attained a fair size. After diagnosis has been made patients have lived as long as twelve years.

The second stage seldom lasts longer than two years, often less. The third stage may last from a few hours to possibly a month or two.

The disease has been responsible for sudden death—that is, death coming on in an hour or two from the first symptom, in persons apparently healthy.

Polycystic kidneys are sometimes only found at an autopsy on such a case.

Acting on the assumption that the disease is a new growth, polycystic kidneys have been removed in the hope of checking the spread of the disease to the second kidney, but in many cases these hopes have not been realised. I know of one lady, well five years after such an operation, but I have since lost sight of her. Seven years is the longest spell of life recorded after operation.

It is noticeable that patients with this disease take a general anaesthetic as a rule very badly.

Stromberg, who has done a good deal of operative work, gives four indications for operation:—
1. Profuse bleeding from the kidney.
2. Pus forming in the kidney.
3. Tumour becoming so large that it causes much pain or dangerous pressure on other organs.
4. Rupture of one or more cysts into the peritoneum.

The removal of such kidneys by operation will give the pathologist opportunities of examining the tumour in its earlier stages, and this combined with more careful examinations of urine obtained by means of the ureteral catheter, may in time throw light on what is still a very obscure subject.
For much of the information in this paper I am indebted to Watson's work on the kidney.

Dr. O'Kelly said Mr. Gunn had mentioned that, according to Virchow, cystic disease of the kidney was the result of fibrotic change, but that this change was usually absent when the kidneys were examined. In this connection two cases which recently came under his notice were of interest. In these the kidneys contained many large cysts, and the lesion of chronic interstitial nephritis was present. The cysts were much larger than those usually found in "granular" kidneys, but not so numerous as in cases of cystic disease. The difficulty, which he had not solved, was whether the kidneys were to be regarded as cystic kidneys with chronic interstitial nephritis or as granular kidneys with unusually large cysts. Both kidneys were involved in each case. There was no cystic change in the liver.

Dr. Boxwell was struck by the comparative rarity of cystic kidneys; judging from Mr. Gunn's statistics "one in seven hundred autopsies." Congenital cysts had been mentioned and inflammatory retention cysts. But there was a much commoner form, where the cysts were single or multiple, often very large, and thin-walled, but where there was no evidence of inflammation. These kidneys were continually turning up at autopsies. Were these in an early stage of the condition shown by Mr. Gunn? He had recently seen a very similar change in a sheep's kidney.

Professor A. H. White said he could not look upon this cyst-formation as a tumour growth at all. He thought it was due either to congenital malformation or to a combination of this with subsequent chronic inflammation and degeneration.

Mr. Gunn, in reply, said that perhaps he should have mentioned that the kidney he had shown was taken from a woman about thirty-six years of age, and there was no albumen in the urine before operation. The second kidney had appeared to be normal to the touch. Two days after
the operation the urine was apparently quite normal, and he thought interstitial nephritis was very rarely confined to one side, so that if the kidney which had been removed showed signs of inflammation the second kidney would not be secreting absolutely normal urine. Dr. Boxwell had asked him whether the large cysts one saw in kidneys were the same kind as those met with in the very earliest stage of cystic kidney. It was a multiple disease, and in some cases, where the patient had died, they had found a number of cysts scattered through the kidneys, one kidney being extensively diseased and the other only slightly. It was suggestive that so many cases occurred in women, and between forty and sixty years of age, about the time when the menopause came on.
I wish to call attention to certain changes that take place in pus after the administration of vaccines, and also to point out how these changes may be utilised by following them and administering the vaccine accordingly. From the first introduction of vaccines it was demonstrated that alterations took place in the serum shortly after the administration of the vaccines. The serum might be at first completely free of any of the protective substances, and after the administration of vaccine would be considerably enriched. Following on this, one would expect to find with the pus cells, if any of them were alive at all, a more decided manifestation of phagocytosis than one usually finds in the pus of ordinary abscesses. One of the first cases where this struck me was in connection with a very severe post-operative suppuration which continued for some time and gave great trouble. When the patient, a boy, came to me I made a vaccine and found a very virulent pus coccus. Looking at the pus beforehand, I found that the organisms were all outside the cells. After inoculation the pus cells were filled with the organism, so that on staining with methylene blue you would think you were dealing with a slide of gonorrhoeal pus. The staphylococci will be seen always in pair-formation within
By Mr. A. H. White.

the cells. You might find a number of cocci outside the cells as well as inside in the first slide. By examining the pus from day to day during the next couple of days you will find the proportion outside greatly diminished. Later on the reverse begins to happen; you find fewer organisms inside and a larger number outside. At this time a fresh inoculation is given, and a day or two after you find the organisms nearly all inside the cells. This state of affairs remains for a few days, and then a larger number of the organisms are seen outside. I had occasion to try and do something for a case where the condition was tubercular. The man suffered from psoas-abscess on both sides, and there was evidently septicæmia as well. On examining the pus I saw numbers of streptococci and other organisms. I naturally concluded that the streptococcus was the cause of the septicæmic temperature, and I made a vaccine of streptococci. It struck me, from the previous case, that it would be less troublesome if I worked by cultures every day, also examining films of the pus, and taking an occasional opsonic index. When the index was high I found that nearly all the organisms were inside the pus cells. When the effect of the inoculation began to die away the index began to fall, and I found that a large number of the cocci were outside the pus cells. In this particular case, besides the streptococci, there were two other kinds present, and a bacillus more like diphtheria than anything else.

I isolated all the organisms, and made vaccines of each. I started the second inoculation with, besides the streptococcus, two cocci, one an ordinary pus coccus; the other one of the viscous things, and then the curious bacillus so like diphtheria. I mixed them all, and gave a small dose. The effect was to drive nearly all the organisms
into the pus cells. They tailed off in a curious way—one organism would begin to appear outside, and when you saw none of the other organisms outside the cells this individual would grow readily, and would be readily enough recognised as outside. It struck me that I might be able to get all the organisms mixed together in a proportion that would ensure their appearance in the cells together, or their appearance outside the cells together, so that there would not be any great difficulty in continuing the inoculation in a routine fashion. I was able to do this after three or four terms of inoculations. I shall now state the results of one or two inoculation periods as regards growth. Taking one inoculation period when I was dealing with three different organisms: I made cultures on May 12th on serum and on agar. I took a little of the pus each day, keeping a platinum loop for the purpose. I put it into a serum tube that had condensation fluid in the bottom. I dealt similarly with the agar tube. Then I allowed the mixture to flow over the surface. One must experiment as to the amount of pus to be used, because you will find a number of organisms in one pus and very few in another. Doing so the day before inoculation, I got a profuse growth on the serum tube, including bacilli and two kinds of cocci. On the agar there was a mass of growth, with no chance of seeing any individual things, but it was interesting because the bacillus did not grow on the agar at all. The next day I inoculated with a mixture approximately of 25 million of these bacilli, 15 million streptococci, and 18 million staphylococci. On the day after, instead of having a profuse growth on the serum, I could count readily 56 colonies. On the agar there were no ordinary staphylococci, no bacilli, and only 8 streptococci. The next day it was 50 on the serum, and
no growth on the agar. The staphylococci and streptococci gave no growth. On the 15th the bacilli were much the same on the serum, and no growth on the agar. On the 16th the bacilli began to reappear on the serum, and nothing on the agar; 17th 108 colonies, 18th 500. On the 17th cocci began to reappear. These were increased on the next day. On the 19th I gave an inoculation as before. Corresponding to the appearance of the colonies on the serum and agar, examination of the films showed that when there was no growth on the agar there were no organisms outside the pus cells. This might look as if the organisms had been got rid of, but that is not the case. If the media were left for another day or two, colonies would be found. For the second inoculation I gave exactly the same dose, and found the bacilli diminished—60 colonies and 6 small colonies in the agar. 21st—No colonies on either tube; 22nd, a number of colonies of bacilli and a few streptococci. Seeing that I had not given enough bacilli to keep them in the cells, I gave an inoculation of bacilli only, with the result that the next day there were no bacilli, although there were a few colonies of the staphylococci and streptococci. The next time I inoculated I modified the lot, and in the course of two or three inoculations more I was able to get all the organisms working fairly well at the same time. No matter what views we may hold as regards the use of the index, if we could work inoculation in a comparatively simple way, to follow merely the films of the pus or cultures daily, which only involved a naked-eye examination, it would be a great matter in cases of mixed infection. This certainly can be done, more especially in those mixed infections which are reinforced by organisms from the intestinal tract. Almost all the surgical cases where operations have to be performed, such as sub-
phrenic abscess, it is difficult to get them to heal, as a result of the operation, and it would be very useful if by this simple method we could get rid of the infection by means of vaccines, and without any danger of giving overdoses. It is only within the last two or three months that, working in this way, I have got rid of severe infection occurring after appendicitis and a sub-phrenic abscess. The only modification that I ventured to make was that an actinomycotic part of the infection was not recognised till comparatively late, as the granules were the smallest that I have seen. After that I made it a point to give overdoses to induce extra suppuration to get rid of the infection.

Professor Scott congratulated the Section on having heard a paper which he considered one of the most important advances in opsonic work. The older method was accurate, but tedious and expensive. Professor White's method could be carried out with a very much smaller amount of energy, and while it might not tell everything, it would tell all that was wanted to be known in about half the cases. He considered the paper of almost epoch-making importance.

Dr. Boxwell said he had seen one of the cases referred to by Professor White. For nearly a year after the operation, one for appendix abscess with peritonitis, the patient, a robust-looking young woman before her illness, continued to discharge pus from a sinus in her flank. She was by that time reduced to a skeleton, and apparently at death's door. From the first inoculation she began to improve, and she was now practically well. He had had the privilege of seeing the cultures from day to day, and it certainly was amazing how Professor White seemed to control the organisms, herding them at will within the pus cells, by his inoculations. His process of control, as far as he was aware, was quite new, and was a great advance on anything he had heard of in the practical application of vaccines.
PATHOLOGICAL REPORT OF THE ROTUNDA HOSPITAL FOR THE YEAR ENDING 31st OCTOBER, 1910.

By ROBERT J. ROWLETTE, M.D., Univ., Dubl., Pathologist.

[Read in the Section of Pathology, May 19, 1911.]

The work of the Laboratory continues to increase at even a more rapid rate than the clinical work of the Hospital. In the year now under review 261 specimens were dealt with as against 143 in my first ten months in 1905.

Autopsies were performed in the case of seven adult patients, three of whom died in the maternity, four in the gynaecological wing. Brief notes are appended:

Case I. (Gynaecological).—K. M., aged twenty-five, died February 12th, 1910. Autopsy same day.

Patient had had pneumonia, and had, after discharge from hospital, developed a large subphrenic abscess, which was opened. A fortnight after the operation, a large necrotic mass, the size of one's hand, came away through the wound.

Autopsy.—Wound from ensiform to umbilicus, filling with granulations.

Right pleural sac—many adhesions, with one pint en-cysted turbid fluid. Large abscess buried in base of right lung. Extensive broncho-pneumonia.

Left pleura—adherent everywhere, and a little fluid. Abscess buried in base of lung.

Heart—small; mitral valve thickened.
Abdomen—Abscess-sac in left lobe of diaphragm, with sinus leading to wound and discharging green pus. Entirely shut off from rest of peritoneum, which, except in pelvis, is quite healthy. Adhesions in pelvis enclosing green pus in small quantity in Douglas's pouch. Abscess, size of hen's egg, in right ovary.

Spleen absent, except small piece, size of hazel nut.
Kidneys healthy.
Liver congested.

The absence of the spleen at the autopsy leaves no doubt that it had been the necrotic mass which puzzled us some weeks earlier.

Case II. (Gynaecological).—C. L., aged thirty-eight, died February 21st, 1910. Ovarian cyst removed twelve months ago.

Right pleura contains several pints of slightly bloody fluid. Pleura is infiltrated everywhere with cancerous tumours, some mere nodules, others large plaques. Diaphragm is most affected, and the parietal pleura more than the visceral. The lung is small and shrunken, being enclosed in a case of tumour material.

Left pleura and lung healthy.
Pericardium shows slight infiltration on right side.
Heart normal.

Abdomen—Liver is adherent to diaphragm and anterior abdominal wall, also to colon. The liver and diaphragm are welded together into a tumour, in the middle of which is a cavity containing a pint of bloody fluid, some of the blood having clotted. In abdominal wall near liver are several small tumours, also small tumours in peritoneum, near liver. Several small growths in liver. None elsewhere in peritoneum except in pelvis, where there are several small nodules.

Other organs healthy.

I recounted the history of this case in my last report—q.v. a. The patient had had a papillary cyst removed in

January, 1909. The masses found in the body at the autopsy showed a papillary structure.

Case III. (Gynaecological).—M. K., aged thirty-seven, died April 14th, 1910. Patient had an operation for removal of pus-tubes six weeks previously. There were extensive adhesions, and unfortunately the rectum became punctured during the operation.

Abdomen—General peritonitis, with large quantity of foul-smelling pus. A hole, size of a florin, has sloughed in rectum, with escape of faecal material into pelvic peritoneum.

Case IV. (Maternity).—M. D., aged twenty-four, died May 17th, 1910, a fortnight after confinement.

Right lung normal.

Left lung—Tubercular cavity in apex. Patches of tubercular pneumonia in upper and lower lobes. Large red infarct in lower lobe, occupying three-quarters of the lobe.

Pleural sac completely obliterated by adhesions.

Heart soft, pale, flabby, with fatty deposit in epicardium. Cavities empty. Valves normal.

No peritonitis.

Spleen very soft and diffuent, twice normal size, and containing several infarcts.

Kidneys and heart normal.

Uterus, size of four months’ pregnancy. Necrosis and gangrene of endometrium.

Case V. (Maternity).—C. K., aged thirty, died June 26th, 1910. Died two hours after delivery by forceps. Only lesion discovered—rupture of posterior wall of vagina and cervix, with consequent severe haemorrhage into peritoneum.

Case VI. (Maternity).—M. O'B., aged thirty-eight, died August 4th, 1910, seven days after confinement. She died suddenly on rising from bed.

Lungs very oedematous.

Heart dilated.

Other organs all normal.
I can only suggest that acute dilatation of the heart was the cause of death.

Case VII. (Gynaecological).—M. M'A., aged sixty, died August 24th, 1910, six days after Wertheim's operation for malignant disease. Only lesion, marked congestion of lungs. Mass of cancerous glands fixed to common iliac artery at its bifurcation.

Curettings and other fragments were examined on eighty-four occasions for diagnostic purposes.

<table>
<thead>
<tr>
<th>Table I.—Examination of Curettings and other Fragments for Purposes of Diagnosis.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endometritis . . 40</td>
</tr>
<tr>
<td>Endocervicitis . . 2</td>
</tr>
<tr>
<td>Epithelioma of cervix 6</td>
</tr>
<tr>
<td>Adeno-carcinoma of uterus 4</td>
</tr>
<tr>
<td>Erosion of cervix . 1</td>
</tr>
<tr>
<td>Mucous polypus . 3</td>
</tr>
</tbody>
</table>

The 40 cases of endometritis have been described as follows:

<table>
<thead>
<tr>
<th>Table II.—Endometritis.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glandular (including Cystic) . 23</td>
</tr>
<tr>
<td>Cystic) . 23</td>
</tr>
</tbody>
</table>

This classification presents, in our present lack of knowledge of the pathology of the endometrium, many difficulties. Many sections presented true inflammatory changes as well as structural changes in the glands, and the separation into "glandular" and "septic" does not proceed on any exclusive principle of classification. Of the 23 specimens described as "glandular" the glands presented cystic changes in three.

Tumours and other operation specimens were examined in 114 cases.
By Dr. Robert J. Rowlette.

Table III.—Tumours and other Operation Specimens.

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epithelioma of vulva</td>
<td>2</td>
</tr>
<tr>
<td>Epithelioma of cervix</td>
<td>8</td>
</tr>
<tr>
<td>Adeno-carcinoma of uterus</td>
<td>2</td>
</tr>
<tr>
<td>Sarcoma of uterus</td>
<td>1</td>
</tr>
<tr>
<td>Fibro-myoma of uterus</td>
<td>37</td>
</tr>
<tr>
<td>Mucous polypus</td>
<td>5</td>
</tr>
<tr>
<td>Papilloma of cervix</td>
<td>1</td>
</tr>
<tr>
<td>Prolapsed uterus</td>
<td>1</td>
</tr>
<tr>
<td>Cervix</td>
<td>1</td>
</tr>
<tr>
<td>Carcinoma of tube</td>
<td>1</td>
</tr>
<tr>
<td>Ectopic pregnancy</td>
<td>4</td>
</tr>
<tr>
<td>Pyo-salpinx and Salpingitis</td>
<td>15</td>
</tr>
<tr>
<td>Tubercular salpingitis</td>
<td>6</td>
</tr>
<tr>
<td>Cyst of ovary</td>
<td>22</td>
</tr>
<tr>
<td>Dermoid</td>
<td>3</td>
</tr>
<tr>
<td>Carcinoma of ovary</td>
<td>2</td>
</tr>
<tr>
<td>Parovarian cyst</td>
<td>1</td>
</tr>
<tr>
<td>Tubercular sinus</td>
<td>1</td>
</tr>
<tr>
<td>Carcinoma of breast</td>
<td>1</td>
</tr>
</tbody>
</table>

One of the cases of adeno-carcinoma of the uterus is of interest in that two ovarian cysts were present, in one of which were masses of the same nature as the tissue in the uterus.

Sarcoma of the uterus is a comparatively rare condition. This is only the third specimen we have met in six years' practice at the Rotunda. The tumour is a large, soft, homogeneous mass, situated, as nearly all these tumours are, in the endometrium of the fundus. It had infiltrated the wall of the uterus, so that it was invading the peritoneum and forming adhesions with neighbouring viscera. Microscopically, it consisted of irregular, large, round cells.

An examination of the fibroids as regards degeneration was again carried out. Of the 37 cases, 25 presented no signs of degeneration. Changes noticed in the twelve remaining were—haemorrhage in 2, mucoid change in 2, cystic spaces in 2, grey necrosis in 2, red degeneration in 1; 1 was inflamed, and 1 large myoma occurred in a uterus presenting also an epithelioma of the cervix.

Carcinoma of the tube is a comparatively rare disease, but Mr. Alban Doran last year was able to collect records of one hundred cases. Of these only one, in the practice
of Sir William Smyly and Dr. Earl, had occurred in Dublin. Our specimen was a large, soft, very friable, almost diffusent mass, whose anatomical relations were difficult to make out. Microscopic examination showed in some parts a papillary structure, though in much of the mass the growth of cells was so diffuse that from some of the first sections made one might have been in doubt as between a diagnosis of carcinoma and one of sarcoma.

One of the cases of ectopic pregnancy is of special interest (Plate), in that it is the first recorded case in Ireland of true primary ovarian pregnancy. It has already been shown at the Section of Obstetrics of this Academy, and been reported on by the Committee of Reference, with the help of three expert advisers—Drs. O'Sullivan, Earl, and Jellett.\(^a\) The diagnosis has been borne out by a Committee of Reference of the Royal Society of Medicine in London.\(^b\)

Of the 21 cases of inflammation of the tubes examined, 6 were tubercular. The proportion in six years has been 53 and 19. This is, if anything, a low estimate of the activity of the tubercle bacillus in the tubes, as it is easy in many cases of chronic fibrotic conditions to overlook the distinctive lesions of tuberculosis. A point of some interest is the frequency with which cysts of the ovary are related to chronic salpingitis. In 4 of the cases this year small cysts of the ovary occurred—\(i.e.,\) in about 38 per cent. of the cases of chronic salpingitis, non-tubercular in origin.

Twenty-five cystic conditions of the ovary were examined; 15 of these specimens were ordinary multilocular, smooth-walled cysts, 1 was a simple papillary cyst, and


Dr. Rowlette—"Remarks on Primary Ovarian Pregnancy."

A, blood-clot containing chorionic villi; B, corpus luteum; C, blood-vessels; D, ovarian tissue; E, fibrin on surface of clot.
3 were malignant papillary cysts; 3 lutein cysts are in the number, and 3 dermoids.

In my last Report I discussed the tendency to malignancy in papillary cysts. This year it will be noticed that no less than 3 out of 4 of the papillary cysts examined showed definite microscopic evidence of malignancy. Moreover, the fourth showed such excessive epithelial proliferation that I would not care to be dogmatic as to its innocence.

Two dermoids occurred in one patient. Another dermoid examined was in part malignant. A large mass of solid tissue lies at the back of the skin-covered surface. Its structure is carcinomatous. In addition, a large, solid, but more friable mass was found in the pelvis entirely separate from the ovary.

In addition to the three cases of malignant papilloma and this case of malignant dermoid, two other cases of malignant disease of the ovary were encountered. As usual in primary cancer of the ovary, the disease was bilateral. No primary focus of disease elsewhere in the body could be discovered. It is, I think, very remarkable that the number of cases of malignant disease of the ovary (6), so closely approaches the number of the uterus (11), in view of the received opinions of the frequency of the latter condition and the rarity of the former.

The uterine lochia from morbid cases were examined bacteriologically on 55 occasions.

Table IV.—Organisms Observed in or Isolated from the Lochia in 55 Morbid Cases:

<table>
<thead>
<tr>
<th>Organism</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diplococcus A.</td>
<td>39</td>
</tr>
<tr>
<td>Staphylococci</td>
<td>5</td>
</tr>
<tr>
<td>Streptococci</td>
<td>5</td>
</tr>
<tr>
<td>Gonococci</td>
<td>3</td>
</tr>
<tr>
<td>Pneumococci</td>
<td>5</td>
</tr>
<tr>
<td>Bacilli</td>
<td>17</td>
</tr>
<tr>
<td>Negative</td>
<td>7</td>
</tr>
</tbody>
</table>

E.
In a large proportion of the cases the organism failed to grow, and therefore the diagnosis is at best tentative. As this failure generally occurred in the case of patients whose recovery was rapid, it was probably due to a low state of vitality of the organisms themselves. Up to recently the determination of the organism present seemed to be of little more than academic interest. Within the past year, however, it has taken an important place in the treatment of the patient. Encouraged by the reports of many workers elsewhere, we determined to apply vaccine treatment to our morbid cases whenever it was found possible to determine the organism, if the patient's temperature did not come down after one douching. Prior to this I had treated one private patient with a stock pneumococcus vaccine with encouraging results, though she ultimately succumbed to a secondary streptococcal peritonitis.

In one case in the Hospital in the year under review vaccine treatment was applied with most satisfactory results.

M. A. C., aged nineteen, was delivered naturally of a living child on May 15th, 1910. On the fourth evening her temperature reached 102°, and her pulse was 130. Her temperature continued to be irregular for thirteen days, though on the ninth and tenth days it remained normal. It fluctuated greatly, with a variation in the bi-daily takings of anything up to seven degrees. Her pulse also varied very much. On the fourth, fifth, sixth, and tenth evenings the uterus was douched and explored, some decidua and débris being removed on each occasion. In the material removed small diplococci and streptococci were found. On the fourteenth day, with a temperature of 104.4°, and a pulse of 140, the uterus was freely movable, the fundus being at the pelvic brim. No masses could be felt in the pelvis, and there was no pelvic tenderness. On
douching, the uterus was found to be empty. The Calmette test gave no reaction. On the fifteenth day the temperature was normal, and the pulse below 90. On the sixteenth the temperature rose to 104.4°, and the pulse to 120. On the following day the patient received five million of a stock preparation of streptococci. Pulse and temperature there- after became and remained normal. On the twenty-first day the dose was repeated. The patient left hospital quite well on the twenty-fourth day.

This case has been so encouraging that we have within the past six months applied similar treatment much more widely. The results will be published in full at a later date. Suffice it to say here that in no case have we had any occasion to regret using the vaccine, and in no case where a definite bacteriological diagnosis was made has the patient died.

I desire, in conclusion, as this is the last Report to appear under the authority of the late Master, Dr. Tweedy, to express to him my very grateful sense of the consideration he has always shown for the Pathological Department, the important place he has given it in the work of the Hospital, as well as for his uniform patience with our failures to give assistance, and his courtesy to myself personally.

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Dr. Kirkpatrick congratulated Dr. Rowlette on his report. The reports of the Rotunda Hospital had, he thought, done more for the reputation of the Dublin school than almost any other work. He thought it a pity that other hospitals besides the Rotunda and St. Vincent's Hospital did not follow the good example.
ASPERGILLOSIS—ASPERGILLAR MYCOSIS.

By A. E. METTAM, B.Sc., M.R.I.A.;
Principal of the Royal Veterinary College of Ireland;
Professor of Pathology and Bacteriology in the College.

[Read in the Section of Pathology, May 19, 1911.]

Aspergillosis.—Infection by some form of aspergillus occurs both in man and animals, and particularly in birds. I have recently met with three cases at post-mortem examinations, and perhaps a short dissertation may prove not uninteresting.

Aspergillus.—The genus belongs to the family Perisporaceae, the sub-order corposcees of the order Ascomycetes of Fungi, and numerous members of the genus have been encountered in pathological lesions. Castellani and Chalmers, in their very interesting and valuable work, "Manual of Tropical Medicine," enumerates no fewer than thirteen which are parasitic in man. Many, of course, of these are found only in tropical countries. The fungi are found frequently in the ear, causing an otomyositis, but they may cause, in addition, lesions of the cornea and of the skin as well as the respiratory passages and lungs and other viscera.

In the lower animals (mammals) the first observation recorded was made by Revolta in 1857, who found the fungus in a pharyngeal abscess in the horse; and since then other infections have been recognised in the ear and in the lungs (seven animals were attacked in one stable.
by mycotic pneumonia traceable to mouldy hay upon which the animals had been fed), in pulmonary abscesses, in lesions of the intestines, &c.

In birds infection by aspergillus has been recognised for nearly one hundred years. The first case was described in 1815 by Mayer and Emmert, who found the fungus in the lungs of a jay, and in the following year Jäger described the infection in a swan. Since then it has been described as present in the long bones of a white stork, in the lungs of a raven, in the bronchi and lungs of a flamingo, in bronchi and air sacs of an eider duck, along with tuberculosis in a paroquet (note the date, 1842), in the pigeon, fowl, hawk, in a tuberculous bullfinch (1842), in the abdominal air sacs of a plover, in the tuberculous lesions of a pheasant (1853), in the bustard, parrot, duck, goose, ostrich, turkey, &c., &c. The infection, therefore, has been recognised in a very large number of different kinds of birds, and, in addition to those mentioned above, I have seen the aspergillus in the black stork, rhea, and in a vulture. It appears, therefore, that infection occurs not only in the grain-eating birds, but also in flesh-eaters. The point is of interest because the mouldy corn is blamed as the cause of the condition; in support of which the case is recorded of a bird with a grain of corn in a bronchus around and from which an aspergillus infection had spread. Moreover, it is believed that some cases of aspergillosis in man are due to the method adopted of cramming pigeons, the birds being fed directly from the mouth of man filled with prepared grain. It is presumed that the grain carries the spores of aspergillus, which are inhaled whilst the grain is in the mouth. In man the first case of aspergillosis on record is by Hughes Bennett in 1842. Rayer found it in this year also in the pleural sac of a consumptive with pneumothorax, the fungus
Aspergillosis—Aspergillus Mycosis.

being found in the sputum, cavities, and lesions of a tuberculous patient, and in 1847 Sluyter definitely demonstrated the fungus in the lungs of a patient. Virchow, in 1856, who referred to all known previous cases, described the presence of aspergillus in the bronchi and cavities of three tubercular subjects. The odourless gangrene he described as occurring in the lungs is believed by Saxer to be due to aspergillus. In 1879 Leber described a purulent keratitis due to aspergillus.

Dieulafoy, Chantemesse, and Widal in 1890 described their experience in Paris among the pigeon-feeders mentioned above. The lung lesions present in these persons were at first thought to be tubercle, but the presence of the mycelial threads in the expectorate revealed the true nature of the infection.

Boyce in 1892 and Nakel and Hinds in 1896 showed that the disease was in certain cases primary in man; but, as in Hughes Bennett's and other cases, the aspergillus infection is frequently secondary to some other prior infection, as tuberculosis.

Renon, who apparently closely studied the infection in man and animals, concluded that infection might arise among those handling grain or those engaged in operations where much dust, including spots of aspergillus, were liberated. He showed that animals and birds kept in rooms where hair was sorted and where rye flour was employed to assist in disentangling the matted hair became infected and died from aspergillosis of the lungs. The conclusions he arrived at may be given as follows. I quote from an article in the "Twentieth Report of the Bureau of Animal Industry," by Mohler and Buckley, to which I am indebted for many of the references above noted:

(1) That aspergillosis is a spontaneous disease affecting
the bronchi and lungs of birds and animals, and creating in the animals a generalised affection similar to hæmorrhagic septicæmia; that it develops in eggs in incubation, and may contaminate embryos contained therein.

(2) The disease may be transmitted experimentally. The botanical and cultural character of the fungus and the lesions it provokes are truly specific. In its pathogenic action it bears a strong resemblance to the tubercle bacillus.

(3) In man it develops on the cornea and skin, but has its particular evolution in the respiratory apparatus, creating pulmonary mycosis, resembling tuberculosis, and pulmonary gangrene, but without the foetid odour. It may co-exist with tuberculosis. Occasionally it is fatal after the formation of cavities in the lungs. It may invade the bronchial apparatus alone, causing membranous bronchitis of special form and of long duration.

(4) In all its manifestations aspergillus fumigatus may play a primary or secondary rôle in both man and animals. It is not, therefore, a simple saprophyte, but a true parasite.

Bostrum observed the fungus Aspergillus fumigatus in the sloughs and discharges from a fistulous tract of a case of chronic typhlitis. Olsen found a related organism Sterigmatocystis antacustica infecting the skin of an amputation stump. The cotton wool employed in the bandaging contained the organism which contaminated the skin, which became red, swollen, weeping, and studded with pustules as large as a lentil. The mycelium had penetrated the epidermis and was present in the pustules. The infection yielded to treatment after repeated application of carbolised water. Delepine records a similar case following treatment of a fractured thigh. This fungus had grown under the splint and had caused ulceration of the skin in two places.
Onychomycosis may be due to aspergillus as we know it may be due to favus. The superficial layers of the nail exfoliate, the fungus gains entrance, and at length attacks the root of the nail. It may then grow under the nail. The nail thickens, and yellowish-white patches develop under the whole extent of the nail or along its anterior and lateral borders.

Leber's case of purulent keratitis with ulceration developed after an injury by the husk of an oatseed.

In Upthoff and Berliner's case the patient, shaking a pear-tree, had received a blow on the eyeball from a falling pear. A fortnight later he had conjunctivitis followed by ulceration of the cornea. The ulceration increased in extent and then healed spontaneously after six weeks; a scab 1.5 mm. in thickness had formed over it. The superficial part of the scab was formed of a mycelium, the deeper parts of necrosed corneal tissue and some few mycelial threads. Fuchs records a similar case due to aspergillus fumigatus, and the fungus transplanted on the eye of a rabbit produced an ulceration of the cornea, the course of which was more rapid than in man.

Infection of the external auditory meatus appears to have been frequently observed, the aspergillus developing in and on the ear-wax. Several different varieties of the mould have been met with. The infection may or not be benign; on the other hand, there may be a discharge from the ear, which may become purulent and even fetid. Hearing becomes less acute, and deafness may result.

Aspergillus has also been found in different portions of the respiratory tract from the nasal fossae to the pulmonary parenchyma. The mould may grow upon the mucous membrane of the bronchi and particularly occlude the lumen, or it may be present growing upon the walls of cavities in the lungs, or, having gained the alveoli, it may
give rise to lesions not unlike tubercles, sometimes miliary, sometimes of the nodular broncho-pneumonic type. The latter lesion is the form the infection assumes often in the ox, and is said to resemble the lesions of actinomycosis in that organ. Khan describes in man an infection by the aspergillus fumigatus in which the mycelium grew in the smaller bronchi, and that certain of the filaments traversed the walls of the blood vessels and entered the blood stream. As previously mentioned, Dieulafoy, Chantemesse and Widal have described cases in men employed in cramming or feeding pigeons, the food being directly passed from man’s mouth to pigeon. The food consists of vetch seed and millet seed mixed with water. They have shown that the aspergillus is saprophytic upon the grain, and that from the grain both man and pigeon became infected.

Apparently the infection is not very fatal, but clinically up to a certain point resembles tuberculosis. There is, however, less fever and less loss of condition and wasting in aspergillosis. It is much more serious when the aspergillosis complicates another pulmonary infection, as is often the case, and not rarely this other infection is tuberculosis. Cases have been accidentally encountered or diagnosed by the discovery, on examining the sputum for the tubercle bacillus, of the aspergillus mycelium.

If there is any doubt animal experiment is suggested, a pigeon, in preference, being used. The pigeon is peculiarly susceptible to the aspergillus, and dies in three or four days. One may also attempt to isolate the mould, and as it grows readily on ordinary media—potato, bread, &c., for preference—there is little difficulty in arriving at a positive diagnosis.

In experimental aspergillosis, when spores are injected into the blood stream, as, say, into the auricular vein of a
rabbit, the spores are arrested in the capillaries of the lung, liver, kidney, and other organs. The mycelium soon develops and nodules arise, which in appearance resemble miliary tubercles. If the number of spores be small, then phagocytosis may prevent any infection at all. It is not the rule that many fruit-bearing hyphae form in the lesions, only occasionally and apparently exceptionally.

I have no time to refer to cutaneous aspergillosis further than to point out that in Central America pinta may be due to aspergillus and related fungi. The black, blue, violet, and red pinta has been shown to be due to aspergillus.

It is generally held that the commonest variety of aspergillus found in lesions is the *Aspergillus fumigatus*, but others are found.

The *Aspergillus glaucus* is commonly found on organic substances in damp places. It has been found in the air sacs of a goshawk, in the lungs of a paroquet, in the eggs of fowl, in the nasal passages of man, in cocoons of the silk-worm, in the vomit of a man.

*Aspergillus repens* observed in the lungs of an owl and in the ear-wax of man.

*Aspergillus liquiersi* found in the lungs of a penguin, and pathogenic for rabbit and fowl.

*Aspergillus aviaris* found in a canary’s lung.

*Aspergillus malignus* in the ear, pathogenic for rabbit.

*Aspergillus virido-griseus*, pathogenic for rabbit, not for fowl.

*Aspergillus bronchialis*, found in the bronchi of a diabetic.

*Aspergillus tokelau*, cause of tokelau, a dermatomycosis of the Malay Archipelago.

*Aspergillus niger*, *Sterigmatoecystis nigra*, found in different lesions and in different animals and contaminating dressings as in Delépine’s case above.
A. nidulans. Sterigmatocystis nidulans found in cases of human otomycosis.

Aspergillus fumigatus culture.—Aspergillus grows readily as an aerobe on most laboratory media, but for choice upon potato, bread, &c. Colonies develop in a few days at the temperature of the incubator as white, circular, downy points, which rapidly increase in diameter. Soon a green colour appears, and this deepens until in about a fortnight A. fumigatus is mouse-coloured or smoky. The colony is formed of a dense mycelium which is more or less colourless, the aerial hyphae carrying the fruiting heads are coloured. The fruiting heads carry sterigmata which are enveloped with spores or conidia. The conidia are oval, having one diameter slightly in excess of the other, the greater being 3 μ or so, the less slightly smaller. The transverse section of the conidiophore equals about 30 μ; the hyphae has a diameter of about 15 μ. The conidia stain by the Gram method, but the hyphae and mycelium are readily decolourised.

In the bird the aspergillus is found growing in the air sacs, along the bronchial tubes, and invading the lung parenchyma; but lesions may be observed in the liver, kidneys and other viscera. The aspergillus forms a felted layer of a greenish colour, and in the lungs appears to interfere mechanically with respiration. In some cases the fungus appears in the air sacs as an isolated growth, circular with concentric ringing, pale yellow in colour, of an appearance and firmness like to horn. There may be little to suggest aspergillus, but if the horny mass be removed and broken down in sterilised water and cultures made, the fungus grows readily and profusely. Two of the specimens of culture shown were obtained from such growths from a rhea and from a vulture.

It is not uncommon to find that the aspergillosis is
associated with another infection—that of tuberculosis—and in the case of the black stork, of which a culture is shown, there was extensive tuberculosis of the lungs. Sections made from the lungs and stained showed aspergillus lining the bronchi and infiltrating the lung tissue, which also showed changes due to innumerable bacilli of tuberculosis.

It appears that aspergillus does not form a toxin, that it grows parasitically in the respiratory tract, and that its presence may be serious, as it encroaches in its growth upon the lumen of the tube. If it is able to pass through the walls of a vessel and reach the blood stream, then, of course, matters will be very different, as infection may become generalised by the blood stream and lesions occur in other organs. In other organs, however, the conidia as a rule do not form, only the mycelium develops and lesions resembling actinomycosis or tuberculosis develop.

Professor McWeeney many years ago gave me a block of a piece of kidney from a rabbit which had developed an extraordinary kidney lesion following an injection of blood containing a mould. Sections showed a mycelium, but no fruiting heads, and a very remarkable development of enormous and numerous giant cells. So also in experimental work with aspergillus injection of spores a sufficient number must be injected—not less than 100,000,000. Lesions develop in kidney and liver where the mycelium may be found.

Professor E. J. McWeeney, referring to a specimen of aspergillar mycosis of his which Professor Mettam had mentioned, in which aspergillar nodules had developed in a rabbit, said this occurred at the commencement of their knowledge of the immunisation of animals against the blood of other species. Instead of injecting, as they now did, either serum
or the corpuscles separately, according to the particular kind of anti-serum they wished to obtain, he injected the defibrinated entire blood of the ox into the rabbit. It had been kept in the cold press in the refrigerator, and must have become infected; indeed, almost all his specimens of blood became infected with aspergillus after about a fortnight. One of the most remarkable histological features was the gigantic cells with which the films were surrounded. They were evidently foreign-body giant cells, and attained a very much larger size than tubercular cells. Had Professor Mettam grown the specimens from a pathogenic source from some infected animal? Had he tried the experiment of forcing those fungi to produce their secondary sexual form of fructification? It would be interesting if Professor Mettam would initiate some experiments on the artificial culture of tumour cells. They had been cultivated in purity outside the human body in hanging drops. The human pathologist had difficulty in such experiments, as he could not get the material in perfect freshness, but Professor Mettam, with the power he had over his subjects, was in a favourable position for carrying out such work.

Dr. T. T. O'Farrell asked if the aspergillus in tuberculosis retarded or encouraged the tubercular process. He had a case which died, and he considered it died of the mould. He found that the moulds did not grow so well in the incubator as in the sun. As to the osteo-chondroma, he had found one post-mortem recently which was growing under the scapula, and he remarked that it grew both from the pleural surface and from the outside.

Professor Arthur White thought there were cases diagnosticated as tuberculosis which were really infections of the nature of aspergillus. He had known three such cases, in one of which the thing grew apparently from the lungs and appeared in the nostrils after death.

Professor Mettam, in reply, said he thought the aspergillus hastened the tubercular process. A section under the microscope showed the specimen practically swamped with the tuberculosis. It was doubtful, he thought, in most cases, whether aspergillus actually caused death, as there
Aspergillosis—Aspergillar Mycosis.

were cases on record in human medicine of patients who had suffered from the infection and recovered. The specimens were all grown in the incubator. They had been inoculated only about a week, and later would get quite mouse-coloured. When his time was a little more his own he might try the culture of tumours.
ABSTRACTS.

SECTION OF PATHOLOGY.

Friday, November 4, 1910.

The President (Dr. A. H. Benson), in the Chair.

The Fringes of the Cancer Problem.

Mr. Sampson Handley read a paper on the above. See p. 441, ante.

Friday, December 2, 1910.

The President in the Chair.

Two Cases of Cerebral Tumour.

Dr. T. G. Moorhead, after giving a short summary of the subject of "localisation of brain tumours," went on to exhibit two cases of cerebral tumour. The first was from a man, forty-two years of age, who came to hospital some months ago, complaining of pain in the head, of vomiting, and of difficulty in walking and standing. Five weeks previously he had suddenly stumbled and fallen in the street and hurt his left knee. Previously he had not felt sick in any way. He said his special difficulty was in steering himself. He had no history of previous disease. He admitted having been a fairly heavy drinker, but nothing more. On examination they found a slight increase of knee-jerks, no ankle clonus, and normal plantar reflexes. When standing he tended to fall backwards and to right side. There was nothing
abnormal in the arms except a little incoordination on the right side. There was no disturbance of sensation. His eyes were examined by Dr. Benson, who found that the right optic nerve was in a state of extreme neuritis. There was no neuritis on the left side. The pupils reacted normally. There was no nystagmus. Owing to his mental state it was impossible to determine whether there was any hemiopia or not. There was no other cranial nerve involvement. There were no trophic or visceral symptoms. He was mentally dull and apathetic. The symptoms pointed to intra-cranial growth, and they determined to do a decompression operation. They discussed the question of localisation, and came to the conclusion that it was most probably cerebellar. He was so bad that they determined to trephine him on the right side in the occipital region. Mr. Henry Moore cut into the dura mater, and displayed a cyst which contained about half an ounce of clear, yellowish fluid. This was reported to be epithelial in structure, and probably not malignant. Subsequently the patient improved very much. He became clear in mind, and replied in a jocular way when spoken to. Symptoms of intra-cranial pressure again developed. The surface of the scalp became swollen and tense; and thinking the cyst might have filled up, they turned down the flap and put a drainage tube into it. Some fluid escaped, but not much. The patient was relieved, but again the symptoms of pressure returned, and he became hyperaesthetic. He developed trophic lesions on his heels. They operated in the cerebellar region, and found that the cyst did not originate there as they had suspected. The operation relieved the pressure, but the patient gradually sank, and died in three or four weeks mainly from cardiac failure. On examining the brain they found in the frontal region a tumour about the size of a walnut extending right to the base of the frontal lobe. A very small tumour was also found in the temporal region. In the region of the operation they found a definite hernial protrusion, which proved to be an epithelial tumour apparently taking origin from the ependyma. It was apparently a compound malignant papilloma, as shown by the sections under the micro-
scope, corresponding to similar tumours found in the ovary. On looking up the literature he found that Ferrier had had a similar case, in which, with a frontal tumour, the symptoms were cerebellar. He exhibited the specimen in order to emphasise the fact that cerebellar symptoms might be present in frontal tumours. Whether the frontal tumour was a development subsequent to the first operation was a matter on which they could express no opinion.

The second specimen was from a man, aged thirty, who noticed three weeks before admission that he was suffering from giddiness and failure of sight. Mr. Benson examined him, and reported intense double optic neuritis. Other symptoms were increased knee-jerks on both sides, slight ankle clonus on left side, normal plantar reflexes on both sides, marked nystagmus, slight diffused headache, and occasional vomiting. The optic neuritis was, if anything, a little more marked on the left side, and they determined to operate on that side. Mr. Moore trephined him, and found evidence of great intra-cranial tension. A very large amount of cerebro-spinal fluid escaped. Subsequently a large hernia developed. The patient did no good. No further fluid was evacuated. They had no definite indication pointing to involvement of any other part of the brain. At the post-mortem a large tumour was found lying on top and slightly in front of the vermis of the cerebellum compressing the region of the corpora quadrigemina. They had suspected that it was probably in the neighbourhood of the cerebellum. They had felt that the best thing was to relieve tension as rapidly as possible, and leave exploration for subsequent operation. The patient was so bad that the quickest operation had to be performed. In future cases of nystagmus, without other localising symptoms, he would be inclined to advise immediate exposure of the cerebellar region.

**A Case of Cerebellar Tumour.**

**Dr. George Peacocke** read notes on a case of cerebellar tumour.—D. P., aged eighteen years, in December, 1909, had an attack of erythema nodosum; since then she
suffered on and off from headaches. In March, 1910, had double pleurisy. Admitted to Adelaide Hospital on 14th May. Three weeks before admission had been complaining of very severe headaches, accompanied occasionally by attacks of vomiting. Was constipated. After admission she had no headache for five days, when she awoke with very severe headache. Pulse 40; pupils widely dilated, and respirations 46 and shallow. She was sweating profusely and very restless. On May 21st Sir Henry Swanzy reported that there was well marked optic neuritis in each eye, especially in the right eye. On May 31st her condition was as follows:—Knee-jerks well marked on both sides; no ankle clonus; plantar reflex normal; no difference in muscular power of legs; sensation normal; no incoördination; superficial reflexes normal; no loss of power in arms. Respirations between 30 and 40, irregular in time and depth. Eyes—Pupils equal, moderately dilated, respond to light and accommodation; slight nystagmus on extreme turning of eyes to the left. Turning of eyes, and especially head, to the left, caused giddiness and nausea. Headache was paroxysmal, occipital and down the back of neck; most severe on left side. Unsteadiness of gait, tendency to fall backwards, but not to either side. Romberg's sign was not present. Vomiting had no relation to food, and occurred frequently on some days, on others not at all. On June 2nd Mr. Gordon trephined over the left cerebellar lobe. The piece of bone removed was not replaced, and a hernia cerebri subsequently developed. The patient's condition cannot be said to have materially improved, and she gradually became less and less conscious—paralysis and epileptiform seizures being features of her condition towards the end. She died on the 6th October, about six months after the onset of definite brain symptoms.

Professor Scott said—On removal the brain showed a tumour in each lateral lobe of the cerebellum. On the right side the mass was somewhat spherical, about 2½ cms. in diameter, the outer edge being close to the surface of the lobe. It appeared of a slightly yellow colour and felt decidedly firm. On the left side the surface was of a deep orange
yellow colour, and about the same size, but on section there was a very irregular contracted mass; this latter side was closely adherent to the trephine opening, on the posterior side of which a small mass of the same colour was seen, and about 1 cm. by 0.5 cm. in size. Sections were made from all three portions. All showed somewhat similar appearances, but there were slight variations. The growth on the right side was firm centrally, and stained very badly. It appeared to be composed of very fine fibrils and the atrophied or degenerated remains of nuclei from former cells and some small bands of connective tissue which stained differently from the fine fibrils. At the margin close to the grey matter were seen many cells, very variable in size—some small, some large, and some spindle cells, the last arranged in rows. The round cells were more or less in small masses—some being arranged in very elongated forms, apparently growing along lymphatic spaces. Between the most active cellular portions and the harder centre, in a few spaces a considerable increase of the neuroglia could be seen. Many badly formed blood-vessels existed here. In the tumour on the left side the connective tissue of the central portion was much more abundant and in large cicatricial bands. At the margin in a few places large spaces filled with large, badly staining cells without apparent connective tissue, except in the division between the groups of cells. In the small outgrowth in the trephine opening, small round and spindle cells and badly formed blood-vessels could be seen very like the tumour on the opposite side. These growths seem to me to have started in the neuroglia, and probably existed for some time as a glioma; later, from some reason, growth became more rapid and cellular, and became indistinguishable from a sarcoma, which was almost typical at the margins of all three growths. This was associated with a formation of connective tissue, death of the neuroglia cells and some degeneration of the neuroglia fibrils, which with some altered blood from small haemorrhages formed the sclerosed centre. The margins I look on as a sarcoma, the particularly cellular type of the left tumour being caused by a very rapid growth, consequent
on the altered physical conditions due to the trephining operation.

**Tumour of the Pituitary Body.**

Dr. Maurice Hayes said he was enabled to show the specimen through the courtesy of Dr. Werner. The patient, a woman of fifty, had been under Dr. Werner's care for a long time with some ocular disturbance. She was unmarried. Her symptoms when he X-rayed her were:—Bitemporal hemianopia, both external and internal ophthalmoplegia, double optic atrophy, but no optic neuritis, no headache or vomiting. Towards the end of her illness she was slightly unsteady on getting out of bed. Never at any time had she any symptoms suggestive of acromegaly or the typical changes in hands or feet. Dr. Werner had sent her to him with the view of finding out if she had disease of the pituitary body. She was radiographed on July 6th. The negative showed considerable absorption of the pituitary fossa, absorption of the anterior clinoid process, as well as the posterior process, also absorption of the floor of the pituitary fossa. A negative showing a normal pituitary body was also exhibited, and showed the body to be much smaller. Anterior to the tumour the base of the skull looked normal. He diagnosticated tumour of the pituitary body. The patient was admitted to hospital in October, and became gradually worse. She was totally blind before she died. She developed, finally, bulbar paralysis, and died early in November. Dr. O'Kelly removed the brain, and a large tumour of the pituitary was found. As far as he knew it was the first case in the British Isles of which a diagnosis had been made from an X-ray photograph, although it had been done on the Continent. Dr. Werner would publish details of the case from his own standpoint. The exact histological nature of the case it was difficult to determine, but Professor McWeeney thought it was of an endothelial nature.

Dr. Stokes drew attention to a paper in the Johns Hopkins Bulletin, which read like a novel, by Harvey Cushing. The writer made a statement which the speci-
mens put before them that evening had impressed upon him—namely, that brain tumours were extremely common. He (Dr. Stokes) had been at the Johns Hopkins Hospital five years ago. At that time they had operated on six cases. In the last two years they had operated on 150. Five years ago they had not a single success. In the last two years they had actually cured 15 or 16 per cent. They had relieved and sent back to work about 60 per cent. of the remainder. They had about 10 per cent. of deaths soon after operation. They had not a single hernia cerebri or stitch abscess. Great stress was laid on early diagnosis, and on the point that the fields of vision for different colours were very early altered. From the number of cases which he had seen recently brain tumour was evidently increasing in Dublin.

Dr. Gunn said the fact that in two of the cases exhibited a tumour growth was found present at the post-mortem at or close to the seat of the opening, which apparently was not there at the time of the operation, was suggestive that the injury might have something to say to the formation of such a growth.

Dr. Parsons said it was held at the meeting of the British Medical Association at Belfast that the information to be obtained from the destruction of the optic nerves was not at all so reliable as Horsley contended for. The specimens shown, however, confirmed Horsley's view, and he himself recently had a case of double optic neuritis, which confirmed that view. The demonstration of the value of X-rays was most important.

Dr. Dawson said it had been held, though not absolutely proved, that the frontal lobes were the site of the moral faculties, and it had been found in many cases that destruction or injury of the frontal lobe did interfere with the moral character. It was in the frontal region that chronic alcoholism was found to exert most of its deleterious influence. It was held some years ago that tumours and other foreign bodies in the interior of the brain produced their effects by the extreme local anaemia caused, and he had seen nothing recently to make him modify that opinion.
In the case of rapid growth or hæmorrhage, where pressure was sudden or rapid, the direct pressure itself might result in a seizure; but it was possible to explain epileptoid seizures by means of the extraordinary localised anaemia which they produced.

Dr. Matson said a man had come to him about eighteen months ago with a history of apoplexy. He had all the classical symptoms of hemiplegia, and he treated him in the usual way. He seemed to be going on all right, but three days afterwards he sat up in bed and died. Dr. Earl found there was a hæmorrhage, but it had occurred just at the time of death, and apparently had nothing to do with the prior symptoms. There was a small glioma in the Rolandic area.

Dr. Rowlette asked for further information as to the origin of the tumours, and expressed his appreciation of the demonstration of the radiographic examination.

Dr. Cahill instanced a case of his about five years ago of a man who had had an accident which split the frontal bone, and who developed a habit of stealing.

The President said he had had a case many years ago of a man with cataract. Nothing else was supposed to be wrong. When about to be sent home, he sat up in bed and died. An abscess was found in the anterior part of the brain the size of an egg. There was no history of injury or symptoms of any sort. On inquiry of his employer he found that he was one of his most trusted servants, but that his temper had been getting more and more violent. It showed what a great amount of brain substance could be dispensed with without much loss.

Mr. A. Stokes asked for some explanation of the urinary symptoms present in frontal tumours.

Dr. Eustace said he believed that only about 5 per cent. of intra-cranial tumours had been successfully removed, but relief had been largely given to intra-cranial pressure. He was anxious to know if the optic neuritis showed any improvement.

The President said that most of the cases showed very little alteration in the optic neuritis, but the operations were not performed until the cases were almost in extremis.
Others with larger experience said the optic neuritis did subside considerably after a decompression operation. Sir Victor Horsley had told him that he was strongly of opinion that it disappeared altogether in a very considerable number of cases.

Dr. Moorhead, in reply, agreed with Dr. Stokes as to the frequency of intra-cranial tumours. He was, however, confident that even a larger percentage of cures than the Johns Hopkins Bulletin reported would be effected later on. They were dealing only with the fringe of the subject. As to the possibility of the irritation of the operation producing growth, in his case the cyst was exposed at the actual site of the operation, and he presumed the subsequent growth developed from the cyst wall. A little bit of wall examined was epithelial in origin. He did not think the actual irritation was likely to produce growth. He did not think anything very positive could be said on the mechanism by which tumours produced their effects, but every day brought evidence of the great amount of increased intra-cranial tension, and it was natural to attribute some of the results to that tension. He used to assume that it was anaemia that led to epileptiform seizures, but the direct effects of pressure lately had rather impressed him. Hemiplegia in relation to tumours of the Rolandic region was, he thought, common. As to the origin of the tumour in the first case it was impossible to get any information. The original cyst completely disappeared at the post-mortem. There was no communication with any of the ventricles of the brain. With regard to urinary symptoms, he could only say that he looked through the literature, and found it put down as one of the fairly constant symptoms, but without any explanation. The second tumour was a psammoma.

Friday, January 13, 1911.

The President in the Chair.

The Pathological Report of St. Vincent's Hospital.

Dr. T. T. O'Farrell read the above. See page 452, ante.
Bacillus Paratyphosus B. as an Accidental Post-mortem Finding.

Professor McWeeney read a paper on above. See page 459, ante.

Pathological Exhibits.

Dr. Coleman showed a lung, spleen, and kidney from a patient under his care at the Whitworth Hospital. The patient had developed acute croupous pneumonia of the left base, and during convalescence he complained of pain in the left hypochondriac region. Two days later he passed a large quantity of pus in the urine; this cleared off in a few days; but then the urine became more and more scanty until complete suppression ensued, followed by uræmic symptoms and death. The autopsy showed resolving pneumonia in the left lower lobe, and an abscess in a greatly enlarged spleen. The right kidney had been rendered functionless by old tuberculosis, while the left, although somewhat fibrous, was otherwise normal. The bladder showed acute haemorrhagic cystitis. Dr. Coleman thought the sequence of events interesting—pneumonia, followed by a septic infarct of the spleen with suppuration. There was a considerable quantity of pus around the left kidney, and he thought that this had somehow penetrated the left ureter, although no definite opening into it was found. This perinephritic abscess by pressure on the left kidney caused suppression of urine, the right kidney being completely disorganised by chronic disease.

Dr. Coleman also showed a specimen of aneurysm with a sacculated diverticulum—the latter showing a very narrow opening. The trachea was compressed, being flattened from before backwards. The patient died from respiratory obstruction.

Friday, February 24, 1911.

The President in the Chair.

Sarcoma of the Choroid.

The President showed the eye of a woman, aged fifty-four, which contained a mushroom-shaped leuco-sarcoma of the
choroid. She had been blind in that eye for a considerable time, and had suffered from intense pain in the eye for some weeks previous to operation. The pain was due to secondary glaucoma. The specimen showed well the mushroom-shaped method of growth. The neoplasm started close to the disc, and had, no doubt, blocked the percolation through the spaces round the entrance of the optic nerve. The tumour had apparently not extended through the external coats of the eye, so that it was probable that the patient might not suffer from metastases.

Mr. H. C. Mooney showed a similar mushroom-shaped growth of the choroid. A spot could be seen in the external limiting membrane, where the tumour had burst through into the vitreous, forming its peculiar mushroom shape, when relieved from the pressure of the tissues in which it originated.

In both specimens the retina was completely detached and pushed forward against the lens, thus inducing the high tension.

**Congenital Cystic Kidney.**

Mr. Gunn showed a specimen of congenital or polycystic kidney, and read a paper on the subject. See page 463. ante.

**Chronic Endocarditis and Calcification, with some organs from the same case.**

Dr. T. T. O'Farrell showed some organs in a case of chronic endocarditis and calcification. They belonged to a woman, aged forty-five years, who was admitted to St. Vincent’s Hospital on the 24th of January, and died on the 27th of January. She was then suffering from rapid action of the heart, hæmoptysis, and extreme dyspnoea. Afterwards the pulse became stronger and more regular, but ultimately the heart gave way. There was no particular pain in the chest. No previous history could be obtained except that she had been in the Royal City of Dublin Hospital a few years ago under Dr. Moorhead's care. Post-mortem examination showed that the heart was particularly interest-
There was no pericarditis. The right side was a little dilated and hypertrophied, but showed no disease to speak of. There was some dilatation of the left side, but no evidence of "tabby-cat" striation. There were shortening and thickening of the chordæ tendineae. Only the tip of the finger could be got into the valve. The opening at the base of the valve (the auriculo-ventricular ring) was quite calcified. With regard to the other organs there was a typical "nutmeg" liver and the sclerosed spleen of chronic heart disease. The middle lobe of the lung was quite solid. The whole lobe being affected suggested pneumonia, but this was a hæmorrhagic infarct. If the gritty particles seen in the heart formed the pulmonary embolus they must have been very minute, and it was difficult to see how they reached the lung. There were a few small cysts in the kidney, but the organ was not particularly small.

Dr. Stokes said he was under the impression that a big spleen was the rule in these cases, and asked why it was that the spleen was so small.

Dr. T. G. Moorhead said the case was under his care in 1907, but he did not recollect the details now. His own experience was that a small spleen was comparatively rare in such conditions—a congested spleen was more common.

Dr. Boxwell referred to the remarkable degree of stenosis often found in these cases and to the chronicity of the disease. He had seen calcified valves which would scarcely admit the passage of an ordinary scalpel. As to the hæmorrhage in the lung, it had never occurred to him to look for the cause in the left side of the heart. It was either hæmorrhage pure and simple or an infarct caused by embolism of a branch of the pulmonary artery by a thrombus originating in the right auricle.

Dr. O'Farrell, in reply, said, with reference to the size of the spleen, that on account of this case being so chronic the stage of wasting had had time to develop. He agreed that in the early stage of heart disease the spleen was enlarged. The connective tissue increase was more marked in the spleen than any other organ, particularly in a case like this. The patient must have been ailing a long time.
In the case of the woman whose condition he had described no murmur could be heard, but the heart was beating tumultuously.

Sarcoma of the Brain.

Mr. Arthur Ball described a case of brain tumour which was found post-mortem in a woman, aged thirty-six, who was brought in an unconscious condition to hospital on January 22nd, 1911. She was apparently unconscious when examined by the residents, and when one remarked to another that she had a squint, "Yes," said the patient, "paralysis of the external rectus." She complained of a terrible pain in her head, and shortly afterwards became completely unconscious. The right rectus was paralysed, the right pupil was dilated. She became comatose, and died the following day. With the exception of the right eye no paralysis was present. The only history we could at first obtain was that she had been blind of the right eye for some time, and had suffered from violent headaches, and had been a patient at an eye hospital. She was in a situation as a servant up to the time of her death, and was taken suddenly ill at the house of a friend, and brought from there to hospital. Her previous history, obtained from the eye hospital, is interesting, showing the long duration of her symptoms:—"She first attended on the 29th of April, 1907, with paralysis of the right external rectus; no cause could be found. She was treated with sod. salicyl., but did not get better. In August, 1907, she had some neuralgia. In December, 1909, she lost the sight of the right eye, and had much pain in the right side of the face and head. The fundus was normal. Vision-motion of hand. Pupil widely dilated, no reaction to light. She has not been here since." The long duration of the symptoms, and the fact that the patient was able to work up to the time of her death, made the case a remarkable one.

Professor A. C. O'Sullivan gave a detailed description of the size and position of the tumour. It was of the size and shape of a hen's egg, and lay in the right temporal fossa. It had caused a deep depression in the temporo-sphenoidal
lobe, but was quite unattached to it. It was firmly attached to the dura mater, and had evidently grown from it. It had eroded the temporal bone and projected for a short distance through the skull into the upper part of the pharynx. Microscopically the tumour presented different appearances in different parts. Some of it resembled cavernous tissue containing large spaces lined with endothelium and filled with blood. In other parts the endothelial cells had formed solid columns, and the intervening tissue was hyaline. In places there were small concentrically laminated bodies consisting of compressed cells, and showing various degrees of hyaline change. He regarded the growth as a hæmatangio-endothelioma.

Friday, March 31, 1911.

The President in the Chair.

Splenic Anaemia.

Drs. F. C. Purser and H. C. Earl gave an account of a man, aged thirty-four, who had been under the care of Dr. J. F. O'Carroll in the Whitworth Hospital suffering from the group of symptoms described under the splenic anæmias. The enlarged spleen had been noted by the patient in January, 1910, after an attack of influenza. This and scarlatina when very young were the sum of previous illnesses. No venereal disease. The patient was married. He had three healthy children. He was a stationmaster, and had never been out of Ireland. Father, three brothers, and two sisters alive and healthy. Mother died, aged sixty-two; cause of death unknown. On admission to hospital on November 16, the lower edge of the spleen could be felt one inch below the umbilicus. The liver was palpable, but not greatly enlarged; no jaundice, no ascites. Hæmorrhage from the rectum had been noted about ten times in eight months; no bleeding from other sources. A blood examination showed—Red corpuscles, 2,480,000, no abnormality in size, shape, or staining; hb. 55 per cent.; white corpuscles,
only 2,000 per c.mm. A differential count showed two mononuclear cells to each polynuclear cell. Shortly after admission (November 30th) patient developed an ischial-rectal abscess, which discharged into the gut. The red corpuscles had now fallen to 1,264,000 per c.mm., and the hemoglobin to 25 per cent.; the white corpuscles numbered 3,600; differential count as before. January 5, 1911.—The patient was nearly cured of the abscess. The red corpuscles had risen to 2,930,000, and the white corpuscles to 4,400 per c.mm.; polynuclear neutrophile, 24; polynuclear eosinophile, 2; transitional, 2; hyaline, 6; large lymphocytes, 30; small lymphocytes, 36; one normoblast was found. The patient vomited “coffee-grounds” on January 8, and had a convulsive seizure on January 9. The fit was more like a toxic than an apoplectic seizure. At no time was anything found wrong with the urine. The patient never recovered consciousness. He died on January 11.

Autopsy.—Spleen, 2,380 gm., hard and firm, red in colour, with darker red blotches all over its cut surface. Capsule thickened; no very obvious fibrosis of organ to naked eye. Microscopically considerable fibrosis, extensive disappearance of malphigian bodies, and areas in pulp of red blood corpuscles closely packed. Liver, 2,050 gm., looked fatty; microscopically showed some little interlobular cirrhosis. A few vascular and rather fibrous lymphatic glands were found round the abdominal aorta and head of the pancreas. Heart flabby, auriculo-ventricular valves each admitted one finger more than usual. Lungs very emphysematous: Brain, kidneys, and other viscera normal.

Blood and Organs from a Case of Pernicious Anaemia.

Professor A. H. White showed some of the organs and some stained specimens of the blood from a case of pernicious anaemia. The case was in every way a typical one, and the organs showed the characteristic fatty degeneration. The spleen was a little enlarged, and somewhat indurated. In slices from the liver and the kidney the presence of haemosiderin in exceptional amount was demonstrated by both the ferrocyanide and ammonium hydrosulphide methods. A
point of interest in this case was clear evidence of healed tuberculosis, found in the apex of one lung and in the liver. Professor White pointed out that patients not uncommonly developed tuberculosis in the course of the disease.

Dr. Wm. Boxwell said that this patient had been twice "cured" of her ailment by the administration of cacodylate of sodium. When first admitted to hospital, exactly a year before, she was almost "in extremis." The red cells had fallen to 17 per cent., the haemoglobin to 20 per cent. The blood was full of nucleated red cells, and occasional myelocytes could be found. Her teeth were carious, and the lower incisors entirely stripped of their enamel. Cultures had been made from the dentine, and compared with many taken from the teeth of various other patients, but nothing exceptional was found. After a three months' course of arsenic she made an apparent and wonderful recovery. The red cells count rose to 60 per cent., and the nucleated cells disappeared. The poikilocytic character of the blood, however, persisted, and the index was always a little above one.

Dr. T. G. Moorhead said that nucleated red cells were not the most important characteristic of the pernicious anaemia blood picture, but rather the poikilocytosis and the great variations in the size of the corpuscles. He had seen cases of pernicious anaemia otherwise typical, but in whose blood nucleated red cells could never be found.

Dr. Boxwell said he always looked upon this very variation in size of otherwise well-shaped cells as the essential feature of pernicious poikilocytosis. Broken and distorted cells might be simulated by artefacts. As regards the absence of nucleated red cells, Lazarus Barlow stated that in the majority of cases nucleated cells were generally conspicuous by their absence. This confirmed Dr. Moorhead's experience and to some extent his own.

Dr. H. C. Earl asked if it were not merely a question of looking long enough for them.

Professor White agreed that the great variation in size was a constant change in pernicious anaemia, as well as the change in shape. He thought that nucleated red cells were always present in the blood at some stage of the disease.
He mentioned a case from whose blood films were made showing multitudes of nucleated red cells; while in films taken a few days later not one such cell could be found.

An Unusual Case of Tuberculosis.

Professor J. A. Scott, in demonstrating a remarkable case of tuberculosis, said the man was in hospital for some time. He was known to have a large spleen and disease of the kidneys. He subsequently died. The post-mortem examination showed a large spleen, which weighed $4\frac{1}{2}$ lbs., and was covered with whitish patches about one-quarter inch in diameter. The liver was slightly pale, and showed small light-coloured spots, which were rather hard to see. The lungs were slightly pneumonic. The case subsequently proved to be a case of tuberculosis. The heart showed patches of fibrous tissue in the wall of the left ventricle. The aorta had a fibrous mass growing from the edge of a patch of atheroma. The microscopical examination of the liver proved the nature of the disease. The small spots were minute miliary tubercles, showing granuloma and giant cells. The spleen showed granuloma and giant cells, but much more fibrous tissue and caseation. The lungs showed tubercular patches and catarrhal pneumonia. The kidneys contained similar miliary tubercles. The disease appears to have commenced in the spleen, from which it was diffused through the whole body.

Dr. Gunn said the man was ill three weeks before he came into hospital, when he had extreme tenderness over the spleen and high fever. It was thought he had a subphrenic abscess, but after he had been a few days in hospital they were satisfied it was an enlarged spleen.

Dr. Moorhead said that chronic tuberculosis of the spleen was not so rare as was commonly thought. There was a form of chronic tuberculosis associated with enlarged tubercular spleen, and resembling Hodgkin's disease, that was far from rare. Often the only clue to diagnosis in such a case, apart from excising a gland, lay in enumerating the white cells of the blood. In the tuberculous condition to which he referred the lymphocytes were usually much diminished.
(a) Heart Causing Sudden Death in a Child. (b) Cerebral Hemorrhage in a Child.

Dr. W. G. Harvey said the brain was from a girl, aged thirteen. She had always been strong and healthy. Her sister had died from a sudden stroke when she was young. One day the mother noticed that she could not raise her right arm or leg, and the right side of the face was paralysed. The following day she died. At the post-mortem examination, when the cranial cavity was opened, the left cerebral hemisphere was observed to bulge, and there was also a subarachnoid haemorrhage. There was no fracture of the vault or base of the skull. On cutting into the brain a large haemorrhage appeared in its substance immediately behind the Rolandi fissure. Section of the brain near the haemorrhage showed no tumour substance. The other organs were normal. The interest in the case was (1) in haemorrhage of the brain not due to tumour occurring in so young a child; (2) in the history of a similar "stroke" in a young sister.

Dr. Harvey's second case was that of a child, aged eight, who was brought into hospital with the history that she was perfectly healthy since October last, when she had seen a doctor for some apparently trivial complaint. On the day that she died she went to bed apparently quite well, and her father noticed she was breathing curiously in her sleep. He tried to awaken her, but failed, and brought her over to hospital, where she was found to be dead. On post-mortem examination large quantities of fluid were found in the pleural and pericardial cavities. The lungs on section showed some bronchitis. A few adhesions were present on both sides, and some miliary tubercles. There was no pericarditis, but very extensive degeneration of almost the entire heart muscle. The degenerated areas were pale in colour, and to the naked eye were not unlike patches of fibroid degeneration. On section they showed the typical appearances of tuberculosis. The valves were normal.

Dr. Harvey said that such extensive tuberculosis of the heart-muscle was very uncommon.
Aneurysm Perforating the Æsophagus.

Dr. Robert J. Rowlette showed a specimen of aneurysm of the aorta perforating the Æsophagus. He said that the patient came into hospital having vomited a large quantity of blood. He was three days in hospital, during which time he had two severe attacks of hæmatemesis, one of which ended his life. The history was that for some months he had increasing difficulty in swallowing, together with general wasting. The pain felt on swallowing was referred to the right side of the sternum in front, no pain being felt elsewhere. No physical signs of tumour in the thorax had been discovered. At the time he had regarded the case as probably malignant disease of the Æsophagus. At the post-mortem examination he found the descending part of the arch of the aorta had a saccular aneurysm eroding the vertebral column. There was an opening into the Æsophagus large enough to admit the end of one finger. In this opening was some soft blood-clot. An interesting point was that there was no pain referred to the back or to the left, although it was on the left side that the vertebral column was eroded.

Heart and Aorta from a Case of Sudden Death.

Dr. Boxwell showed the heart and part of the aorta taken from a case of sudden death. The man from whom the specimens were taken was a powerfully-built man of the plethoric type. The only history obtainable was that he was suddenly seized with a "fit of shivering" while standing with some friends in a public house, and in a few seconds dropped dead. At the post-mortem examination an aneurysmal dilatation was found at the root of the aorta which was atheromatous. There was also some acute aortitis noticeable, as many of the patches were covered by red fleshy vegetations, and there were small hæmorrhages distributed through the coats of the vessel, and in the surrounding cellular tissue. In the upper part of the right ventricular wall there was a large irregular fibrous mass, yellowish grey in colour, terminating in a smooth, circular elevation the
size of a sixpence, and containing some liquid blood. The mass proved to be inflammatory, probably gummatous, and giant cells were plentiful. Parts of it might have passed for typical tuberculous granulation tissue. In a section from one of the aortic vegetations Gram positive diplococci were found.

Section of a Bronchial Cast with Charcot Leyden Crystals.

DR. T. T. O'FARRELL showed a microscopic preparation of a bronchial cast. It was seen to be packed with Charcot Leyden crystals.

Friday, May 19, 1911.

THE PRESIDENT in the Chair.

Renal Tumour.

Mr. L. G. GUNN exhibited a specimen of renal tumour, as an example of the commonest form of malignant disease affecting the kidney—hypernephroma. It was a typical example, and showed the yellow masses with haemorrhages in some of them. Such tumours were about 50 per cent. of all the renal malignant tumours. The structure very closely followed the structure of the supra-renal capsule, and in parts it looked almost sarcomatous. They all followed a very constant type, and varied practically only in size. They might exist for years without causing symptoms. The earliest symptoms were bleeding and possibly local pain. The prognosis as regards removal was not very good, as secondary deposits were apt to occur, commonly in the lungs. This patient was alive and well.

DR. O'FARRELL asked what was the microscopic appearance of the urine, and if there was any secondary deposit in bone.

PROFESSOR M'WEENEY said that, looking at the specimen, without having heard Mr. Gunn's remarks, he would have no hesitation in diagnosticating hypernephroma on account of three features which he had always observed in the cases
he had seen: (1) The nodular nature of the growth; (2) its position in the hilus of the kidney, pushing the kidney substance to one side, so that the poles of the kidney were fairly well preserved, while the middle portion was thinned out; (3) the tendency to haemorrhage. He might add a fourth feature of somewhat more doubtful character: it was the yellow colour of some of the nodules.

Mr. Gunn, in reply, said the patient had several attacks of haemorrhage within the past two years. She came under his care shortly after one of these attacks. He cystoscoped her, and saw the bleeding was from the right kidney; and the next day he catheterised both ureters, and examined the character of the urine from each. It was practically normal on both sides. There were one or two red corpuscles from the side from which the kidney was afterwards removed, and the amount of urine passed was somewhat small. One could feel a quite definite tumour. They looked as carefully as possible for any signs of bone deposits, but he could not find any evidence of such.

Vaccines and Pus.

Professor White read a paper, and exhibited some smears of pus, illustrative of a new method of controlling the timing and dosage of vaccines. See page 470, ante.

Pathological Report of the Rotunda Hospital.

Dr. Rowlette read the Pathological Report of the Rotunda Hospital. See page 475, ante.

(a) Aspergillar Mycosis, with Cultures; (b) Cultures of a Ringworm isolated from a Dog; (c) Osteo-Chondroma of the Vertebral Column, with Compression Myelitis; (d) Specimen of "Four Kidneys" from a Pig; (e) Cholesteatomata in the Lateral Ventricles; (f) Teratoma from Brain of a Horse.

Professor A. E. Mettam read a paper on aspergillar mycosis, and exhibited the remainder of the above. See page 484, ante.
So very little public attention has been directed in Ireland to the subject of Medical Inspection of Schools and Scholars that I believe I shall be doing a public service in bringing the subject before the State Medicine Section of the Royal Academy of Medicine.

In Ireland there is no medical inspection of school children, nor of schools either, except in so far as the latter come within the scope of the sanitary authorities. They receive less attention than cow-sheds. A very different state of affairs exists on the other side, of the Channel, and I shall briefly relate what can be done in England and Wales under the recent Education Acts, and also something of what has actually been accomplished.

Broadly considered, there are three chief departments in the education of children, which are concerned respectively with (1) the development of the body, (2) the development of the character, and (3) the development of the intellect. In Ireland the State concerns itself solely with the third department, the various churches devote some of their energies to the second, and the first is absolutely left untouched.

A somewhat similar state of affairs existed in the whole
of Great Britain until the enactment of the recent Education Acts, when, for the first time in our history, the State took upon itself to care for the health of the children whom it compelled to attend elementary schools. The operative section is No. 13 of the Education (Administrative Provisions) Act, 1907, which includes under the powers and duties of a local Education Authority the power to provide for children attending a public elementary school, vacation schools and classes, play centres in the schoolhouse or elsewhere, and the duty to provide for the medical inspection of children immediately before, or at the time of, or as soon as possible after, their admission to a public elementary school, and on such other occasions as the Board of Education direct, and the power to make such arrangements as may be sanctioned by the Board of Education for attending to the health and physical condition of the children educated in public elementary schools.

This Act came into operation on January 1st, 1908, but, owing to the shameful neglect of our Parliamentary representatives of every party, the Act does not apply to Ireland.

What has been done by the Board of Education?

I shall read some paragraphs from a memorandum issued by it on Medical Inspection of Children in Public Elementary Schools (Circular 576).

It is there pointed out that the duty is thrown upon the Board of advising local Education Authorities as to the manner in which they should carry out the provisions of the Act, and of supervising the work. The duty of the actual inspection is thrown upon the local Education Authorities. Each authority must, therefore, appoint such medical officers or additional medical assistance as may be required.
By Mr. J. B. Story.

The work of medical inspection should be carried out in intimate conjunction with the Public Health Authorities, and under the direct supervision of the Medical Officer of Health.

In county areas the County Council, as the local Education Authority, should instruct the County Medical Officer to advise the Education Committee and to supervise the work, the actual execution being deputed to local medical officers of health or assistants specially appointed for the purpose. In county boroughs the Town Council of course replaces the County Council.

The functions of a School Medical Officer may be exercised by a medical officer of health, a poor law medical officer, a private practitioner, or, as occasion requires, by a skilled specialist.

As regards subsidiary agencies, the Board is of opinion that the work of medical inspection cannot be properly accomplished without the co-operation of the teacher, the school nurse, and the parent or guardian. The health visitor is also of importance. These subsidiary agents should act strictly under the instruction and supervision of medical authority.

From what has been said it is clear that the fundamental principle of Section 13 of the Act is the medical examination and supervision of all children in elementary schools, not merely of the weak or ailing. It is evident that although this work involves (a) medical inspection of school children at regular intervals, (b) oversight of the sanitation of the school buildings, and (c) prevention of infectious and contagious diseases, action will in all three directions be incomplete unless (d) the personal and home life of the child is also supervised.

The training of the mental faculties must not be divorced from physical culture and personal hygiene.
520 Medical Inspection of Schools and School Children.

SCHEDULE OF MEDICAL INSPECTION.

I.—Name .................................... Date of Birth .....................................
    Address .................................. School ...........................................

II.—Personal History:

(a) Previous Illnesses of Child (before admission).

<table>
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<tr>
<th>Illnesses</th>
<th>Measles</th>
<th>Whooping Cough</th>
<th>Chickenpox</th>
<th>Scarlet Fever</th>
<th>Diphtheria</th>
<th>Other Illnesses</th>
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(b) Family Medical History (if exceptional).

1. Date of Inspection
2. Standard and Regularity of Attendance
3. Age of Child
4. Clothing and footwear
5. Height
6. Weight
7. Nutrition
8. Cleanliness and condition of skin
   - Head
   - Body
9. Teeth
10. Nose and throat
    - Tonsils
    - Adenoids
    - Submax. and cervical glands
11. External eye disease
12. Vision
13. Ear disease
14. Hearing
15. Speech
16. Mental condition
17. Heart and circulation
18. Lungs
19. Nervous system
20. Tuberculosis
21. Rickets
22. Deformities, Spinal Disease, &c.
23. Infectious or contagious disease
24. Other diseases or defect

Medical Officer's initials

General observations.
Directions to parent or teacher.
From such considerations as the above the Board concludes that the statutory medical inspection at entrance and subsequently should be conducted as in the foregoing schedule.

Regulations.—The Board has decided that not less than three inspections will be necessary during school life—(1) at or about the time of admission, (2) at about the third, and (3) at about the sixth year of school life. These times are subject to future modifications. The parents should be notified that they, or one of them, may be present; the inspection should take place in school hours and on school premises; the facts ascertained must be entered in a register kept at the school; the school medical officer should make an annual report, &c., &c.

The aim of the Act is practical, and schemes for amelioration of any evils revealed should be submitted to the Board, such as establishment of school clinics, special treatment of diseases of the eye, ear, skin, and teeth. Verminous heads and bodies can be ameliorated by the work of the school nurses. Facilities for bodily cleanliness should be provided if necessary.

Further, the Board is urging the necessity of giving special instruction in the principles of hygiene to all students in every type of Training College.

The above is in very brief abstract an account of the powers conferred upon the local Education Authorities and the orders issued by the Board. The results are to be seen in the Report of the Chief Medical Officer for 1908. The Report for 1909 I have not yet been able to obtain.

In England and Wales there are 328 educational areas. In all of them medical inspection is in operation, and in 307 the Board has "recognised" the school medical officer. In addition there are 616 assistant medical officers. I may mention that there are 68 women doctors
engaged in the School Medical Service, and that there are as many as 292 nurses or health visitors at work in 141 educational areas.

The estimated number of children to be inspected the first year was 1,328,000 in England and Wales. When the Act is in full working order it is estimated that one-third of all children attending elementary schools will be inspected each year.

The report goes on to speak of the schedule already mentioned, and to direct attention to the assistance that can be obtained from the parents, and then devotes some paragraphs to the cost incurred. This is a matter that is peculiarly interesting to us in Ireland.

Unfortunately, it is impossible to estimate with any exactness the total cost at present. In most cases reported the authorities show only the estimated salaries to be paid to the school medical officer, his assistants and nurses, with allowances for travelling expenses, &c. The total cost would include also apparatus and equipment, printing, postage, stationery, and clerical staff.

In a few cases a fee per capita of children inspected is the system adopted—a bad system according to the chief medical officer. In some districts it is as low as one shilling, but is more generally one and sixpence. In one case it amounts to half-a-crown.

The cost of a scheme may be considered in relation to two facts—(1) the number of children in average attendance for the statistical year, and (2) the produce of a rate of one penny in the pound.

COSTS OF SALARIES, &C., AS COMPARED WITH THE NUMBER OF CHILDREN IN AVERAGE ATTENDANCE.

In 32 counties (out of 62) the average cost per child in average attendance is 4.79d.

In 42 county boroughs (out of 73) it is 5.69d.
In 38 urban districts (out of 54) it is 7.56d.
From these figures we may make an approximate estimate that in Ireland the cost would work out to something about sixpence per child.

(2) Cost of salaries, &c., considered as decimals of a penny rate in the pound.
In counties the average cost considered in this way is 0.15d.
In county boroughs, 0.19d.
In municipal boroughs, 0.23d.
In urban districts, 0.28d.
These figures show that less than 3-10th of a penny rate in the £ is sufficient to defray the cost of medical inspection in England and Wales.

RESULTS OF MEDICAL INSPECTION.

It is not possible to deal in a broad way with the results of medical inspection in a limited number of subjects drawn from the official schedule, but the reporter refers to several matters rather as examples than otherwise. I mention a few of them:—

Nutrition.—It is impossible to give figures, as there is no absolute standard of what is and what is not healthy nutrition. Moreover, the malnutrition may be due to several different causes.

Cleanliness.—In some areas from 5 to 10 per cent. of the children are returned as "dirty."

Useful statistics are obtained from the Report to the Bradford Authorities on certain schools in a poorer district.
The same officer examined in 1906 and in 1908.
The percentage (in over 1,000 children) was as follows:—

1906—Clean, 3; somewhat dirty, 26; dirty, 61.5; very dirty, 9.5.
1908—Clean, 18.5; somewhat dirty, 42; dirty, 36; very dirty, 3.5.

Many towns have already made some degree of public provision for bathing in connection with the public swimming baths, and public slipper baths have also been provided in the poorer quarters at a small charge per bath. In this connection the shower bath system, largely adopted on the Continent, merits careful consideration.

*Cleanliness of Head.*—It may be stated in a general way that one-half the girls in urban areas and one-quarter of those in rural areas have unclean heads. This can be greatly lessened by proper measures under the Act, culminating in prosecutions and fines. Much good has been effected in London, Gloucestershire, Worcestershire, and elsewhere, as related in the report.

*Ringworm.*—The returns, though at present very incomplete, indicate how comparatively common this disease is in many districts.

*Condition of Teeth.*—Judging from the returns it is commonly found that from 20 to 40 per cent. of all school children examined have four or more decayed teeth, the older the child the more extensive the decay.

It is a curious and interesting fact that in several of the local reports the condition of the teeth in the children from very poor districts is somewhat better than that in the children from better class districts.

The Cambridge report is peculiarly interesting on dental caries. Ignoring temporary teeth, 64 per cent. of children at the age of five have perfectly sound permanent teeth, while only 24 per cent. at the age of seven possess them.

At the age of thirteen and fourteen one-half the children have each nine or more permanent teeth carious.

*Nose and Throat: Enlarged Tonsils and Adenoids.*—
From 8 to 10 per cent. of all children admitted appears to be the average of those thus afflicted.

**Eye Disease and Vision:** External Eye Affections.—Approximately 3 per cent. of all children admitted suffer from some of these.

**Vision.**—Approximately 10 per cent. of those about to leave school have only one-third of the visual standard which is regarded as normal—viz., 6/18.

**Ear Disease and Hearing.**—Examination of the returns (including children admitted to school and those about to leave) shows that one child in every sixty has running from the ear. That is, present active disease; but the report from Somerset upon 13,184 children shows that while 1 in 88 had active disease, as many as 1 in 14 had had ear discharge in the past.

**Defective Hearing.**—This is a relative term, but it may be stated that about 5 per cent. of the school children had defective hearing of a degree to be noticed by the teachers.

**Tuberculosis.**—So much has been written about tuberculosis of late in Ireland that I leave this subject untouched.

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**AN ADDENDUM ON SANITATION OF SCHOOL PREMISES.**

The school officers have reported upon—

- Ventilation.
- Lighting.
- Heating arrangements.
- Equipment.
- Cleanliness of rooms.
- Cloakrooms.
- Disinfection.
- Playgrounds.
- Type and condition of sanitary conveniences and lavatories.
ACTION TAKEN BY LOCAL EDUCATION AUTHORITIES IN RESPECT TO MEDICAL TREATMENT.

This part of the Act involves three separate considerations. First, a power is given to local authorities, which they may or may not exercise. Secondly, a duty of sanction is laid upon the Board. Thirdly, local authorities are permitted to co-operate with voluntary agencies.

Before sanctioning schemes involving large or unusual applications of the authorities' powers the Board must be satisfied that full use has been made of the ordinary and less ambitious means available. In a circular (596) the Board has set out eight classes or groups of methods which should be followed by local authorities desiring to undertake ameliorative work:

1. *Improvement of the School Arrangements*, including the sanitation of premises, curriculum, physical exercises, open-air classes and schools, school baths (where such exist), and school hygiene generally.

2. *Exercise of Powers under special Acts relating to School Children*, particularly such legislation as the Elementary Education (Blind and Deaf Children) Act, 1893, the Elementary Education (Defective and Epileptic Children) Act, 1899, and the Education (Provision of Meals) Act, 1906. To these may now be added the Children Act, 1908.

3. *Co-operation with the Sanitary Authority* in regard to the prevention of the spread of infectious diseases, disinfection, sanitation of school premises, the cleansing of persons, and the various questions of domestic and home hygiene.

4. *Directions to the Parent* as to the desirability of obtaining treatment for their children by their own, or the nearest, medical practitioner.
5. The Uses and Advantages of the School Nurse.

6. The Provision of Suitable Spectacles at reduced rates, or in necessitous cases free of charge, to those children requiring them.

7. The making of Contributions to Hospitals, Dispensaries, and Nursing and Children’s Care Associations. The Board has considered that before the direct treatment of ailments is undertaken by a Local Education Authority itself, by means of a School Clinic or otherwise, all reasonable advantage should be taken of the benefits of such institutions as hospitals and dispensaries as far as such are available and suitable to the particular needs and diseases of school children. The Board has made it permissible for Authorities to include among the conditions of contribution to this kind of institution a provision allocating reasonable remuneration to the medical staff responsible for carrying out the treatment provided. In some districts there are no such institutions; in others they are already overtaxed, and, therefore, no universal rule or practice can be laid down.

8. Lastly, the Board has been prepared to consider the establishment of School Clinics, managed by Local Education Authorities and having medical advisers who are either general practitioners whose part-time services have been secured by the authority or who are whole-time medical officers of the Authority. Before sanctioning the establishment of a School Clinic as an “arrangement” under Section 13 (1) (b) of the Act, whether of a general character or for dental treatment only, the Board has required to be furnished with detailed information as to the methods and scope of the
work which it is proposed to do. They have in particular required to be informed—

(i) What precautions the Local Education Authority will take to secure that only those children shall be treated in a School Clinic for whose treatment adequate provision cannot otherwise be made, whether by the parents or by voluntary associations or institutions, such as hospitals, or through the agency of the poor law.

(ii) What precise diseases and defects will be treated.

(iii) By whom and on what terms and conditions the treatment will be carried out and what will be its extent.

(iv) What is the estimated cost of the clinic in respect of buildings and equipment, maintenance and administration, and treatment, and how it is proposed to meet this cost, out of the rates or otherwise.

The acute problems of treatment arise in three directions:—

1. The question of adequacy. In what way is treatment to be provided which cannot be provided by the ordinary medical man?

2. Treatment for the necessitous. How is it to be provided for those who cannot afford the expense?

3. How is it to be provided for the neglected child with irresponsible or indifferent parent?

The Report goes on to give information of what has been done in various districts in the matter of school nurses, provision of spectacles, contributions to hospitals, children's care committees, and school clinics.
By Mr. J. B. Story.

The first scheme submitted to the Board for the establishment of a school clinic was that at Bradford.

From the report it appears that as many as 841 children were treated in the clinic, I presume during the statistical year.

The first school dental clinic in England was established at Cambridge by Mr. Sedley Taylor in 1907—that is five years after the first such clinic was established at Strassburg in Germany. The Cambridge clinic was taken over by the local authority, and is worked now at a cost of about 1s. 3d. per caput (on number of children on school register). In Germany the cost is from 5d. to 8d.

I have very briefly touched on what can be done in England and Wales under the recent Acts, and also upon what has been already accomplished, and every one must share with me the feeling of bitter regret that the same cannot be done in Ireland.

It is impossible to over-estimate the good that would be done for the health of Irish men and women if every elementary school child were to have its physical condition investigated in the manner described three times during its school life, and this done with the definite intention of curing remediable diseases or defects.

Nor can the good results that would flow from an annual report by a medical man upon the sanitary state of every primary school be over-estimated.

It has been shown that the cost of working such an Act is really infinitesimal when compared with the probable benefits to the health and well-being of the juvenile population.

When I put my name down several months ago to read a paper upon this subject I never expected that it would be a somewhat burning question by the time the paper came forward. I refer to the report of the Council of the
Dublin Sanitary Association and the strictures therein upon the action or inaction of the Commissioners of National Education in Ireland.

The Commissioners deserve some consideration, as, like the Israelites, they are expected in many instances to make bricks without straw. It seems to me that no really effective cure for the evils possible under present conditions will be forthcoming until an Act similar to what exists in England is also operative in Ireland. And, poor though we may be, it is absurd to assert that we are unable to raise enough to provide efficient medical inspection of our schools and school children when it is known that in England the highest rate required is less than three-tenths of a penny in the pound.

Some alteration in our system of national education would be required before such an Act could be put into operation, as the local body which levies the necessary rate must be given some definite control over some, at least, of the arrangements in the schools in its district.

The President said it must be borne in mind that we have not the same machinery for the management of our schools in Ireland which they have in England. He thought that medical inspectors for the schools should be introduced as soon as possible. He had often remarked the extreme frequency of vermin amongst the poorer classes, which vermin he considered gave entrance to staphylococcal infection. With reference to the prevalence of ringworm, he said this should be treated not by a single bath or towel for a number of children, but by a separate bath and towel for each child.

Dr. Boyd Barrett said that in England the local authorities dealt with their local schools. The Irish National Board acted as a trustee, and had no power to spend its money on medical inspectors. He had read the report of a recent
meeting at Paris, where representatives of all countries had assembled. This report showed the tremendous benefit which such countries as Germany, France, Russia, Holland, and even Mexico, had derived from their medical inspection of schools. He laid great stress upon the fact that children are compelled to attend schools, yet no precaution is taken to prevent the spread of infectious diseases amongst them.

Dr. Donnelly said that children or their guardians should be instructed as to the necessity for cleanliness. In a number of cases parents were not aware of the dirty condition of their children’s heads, which is a decided source of danger with regard to tuberculosis. He said that children are compelled to go to school under penalty, and he considered it a cruelty that they are not protected from infectious diseases. Mr. Story had shown the small amount of money that was necessary for medical inspectors, and if the matter was brought fairly before the public he thought there would be no difficulty in getting this small rate.

Dr. Kirkpatrick said that criminal negligence was displayed in connection with school children. The schools derive their grant from the National Board of Education on the condition that the regulations of the Board are properly carried out, and he thought if the school failed to do so it should be deprived of its grant. It was a tyrannous thing that a clean and healthy child should be compelled to go to a school where half the children were suffering from infectious diseases. He believed that if this matter was urged upon the lay public they would take it up as it certainly was their duty. He thought that if compulsory inspection was not adopted compulsory education should be stopped.

Sir John Moore said that eleven years ago he sat on the Local Government Commission to inquire into the health of Dublin. As one of the Commissioners it was his duty to visit the primary schools in Dublin. He then had no idea that such dirt and insanitary surroundings existed in our schools. The Commission made very strong recommendations which turned out to be practically a dead letter. The Board of National Education was wrongly constituted. There should be a fair representation of medical men on the
Board. It is most unfair that we should have no provision for safeguarding the condition of the children who go to the primary schools. These primary schools are hotbeds of infection, especially whooping-cough and measles, and neither of these diseases is notifiable.

Dr. McVittie said a great deal had been said about infectious diseases which caused some benefit by giving immunity from these diseases in adult life. He did not consider them so serious as heart diseases. A number of children with feeble hearts are driven to school by a compulsory Act. If our object is to be gained, it is necessary for the medical profession to agitate persistently and constantly.

Dr. Cox said if the people do not move in the matter it is because they are ignorant, and as we claim to be better educated than they we must draw their attention to the defects by which our children labour at the present day. In America dirty children are not allowed into a public school.
ABSTRACTS.

SECTION OF STATE MEDICINE.

Friday, February 3, 1911.

The President (Professor McWeeny) in the Chair.

Medical Inspection of Schools and School Children.

Mr. Story read a paper on above. See page 517, ante.

Friday, April 7, 1911.

The President in the Chair.

On the Rôle of Carrier Cases in the Propagation of Infectious Disease, and more especially of Typhoid Fever.

The President read a paper entitled as above. He began by dividing germ-carriers into two classes—viz., those who, having had the disease and recovered from it, nevertheless continue to excrete the specific germ for indefinite periods. These are the carrier "cases." There is also a type of carrier who has never had the disease—at any rate not in recognisable form—but has been in relation, direct or indirect, with cases. Such persons are best termed "infectious contacts." He then reviewed the rôle of each class of germ-carrier in the propagation of Asiatic cholera, cerebro-spinal fever, diphtheria, dysentery, and bubonic plague. Coming to the subject of typhoid, he sketched the development of our knowledge as the result of the pioneer work done in South-west Germany, and also by our own medical officers.
in India, more especially at Kasauli. Out of every hundred persons who contract typhoid, at least five continue to harbour the bacillus for periods exceeding three months after defervescence. A certain percentage of those who live in the same house as the declared cases, or who have the care of them, also come to harbour the bacillus. Of every four chronic carrier cases three are women. Of the "infectious contacts," a large proportion are children. The proportional frequency of typhoid carrying and of gall-stones as between the two sexes is about the same—three females to one male. The majority of carriers excrete the bacillus with the faecal matter; a minority in the urine. The source in the former case is the gall-bladder, in the latter, a typhoidal pyelitis or cysto-pyelitis. As regards treatment, success has been claimed for borovertin by Niepraschik and for salicylate of soda by Hilgermann; but the experience of most observers, including his own, was unfavourable. Vaccines had likewise failed in most hands, and even operative procedures on the gall-bladder had not succeeded in ridding carriers of their bacilli. Professor McWeeney then related in detail the case of a female urinary carrier, A. F., to whom some forty cases had been traced. He had had her under observation for over a year at the Mater Hospital in Dublin, and had tried urinary antiseptics and vaccine treatment in vain. After an operation whereby the kidney was exposed and fixed the bacilli disappeared, and the patient was discharged apparently cured. He concluded by mentioning other cases that had come under his notice, and pointed out that institutional typhoid was, in Ireland, very often propagated by carriers.

Major Morgan said that he had listened with the greatest interest to Professor McWeeney's paper, more especially as he was the officer in medical charge of the camp where the outbreak to which reference had been made had occurred. He said that the dairy in which the "carrier" whose case Professor McWeeney had detailed was employed was the recognised source of milk supply for the camp, and was frequently inspected, and always well kept. When first suspicion fell on the milk a "carrier" was suspected in the person of this girl, but the first sample of her blood examined
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gave a negative Widal reaction. There were two regiments encamped side by side, both getting their milk from this dairy. One of these regiments used boiled milk, with the exception of the man who did the boiling and reserved a portion unboiled for himself—he was the only one attacked; while in the other regiment, where the milk was not boiled, an outbreak occurred. Further samples of this girl's blood were taken, and were now found to give "positive" reaction, and endeavours were made to obtain samples of her urine and faeces for bacteriological analysis, but with not much success; but as she was the only person who had to do with the milk at O'N.'s farm he thought it was certain that she was undoubtedly the cause of the outbreak, and would be found to be a "carrier," as was subsequently proved to be the case by the researches carried out by Professor McWeeney. The speaker went on to refer to the investigations carried out by Major Harvey and himself in India on the viability of the Bacillus typhosus as excreted under natural conditions, which showed that the excretion of the bacillus in both urine and faeces was often extremely intermittent, and might easily be overlooked. When passed under natural conditions into water it rapidly disappeared, but was recovered from artificially infected dry earth up to three or four days, showing how easily it would be disseminated in dust. The bacillus was recovered from the faeces up to ten days, showing how easy it would be for the fly to carry infection from the dejecta of a typhoid carrier. As regards treatment, one of these carriers had been given 10 grains of urotropin three times a day until 450 grains had been given, and the drug did not seem to have the slightest effect upon the condition.

Dr. D. Farnan said he cystoscoped the girl A. F. on two occasions. On the first occasion he found that the excretion of methylene blue was delayed on both sides. Under these circumstances he did not feel justified in exploring either kidney. Later on he again cystoscoped, and used 2 cc. of .4 per cent. of indigo carmine, and found that the excretion of the left kidney was normal. While observation lasted (one hour) no blue urine appeared from the orifice of the
right ureter. This, coupled with the fact that the right kidney was movable and that paroxysms of pain and elevation of temperature were associated with diminution of the pus and bacilli in the urine, led him to conclude that there was not sufficient drainage to the pelvis of the right kidney. So he suggested he might fix it, as it was situated in the right iliac fossa. He operated, explored and found the kidney displaced and surrounded by dense adhesions. Nothing was discovered in the ureter or pelvis of the kidney, the mucous membrane being quite normal. He would suggest that the surgeon should be given an opportunity of draining the gall-bladder in the case of these typhoid carriers in which bacilli were found in the faeces, and endeavour to find out what could be done for these cases, otherwise so resistant to treatment.

Dr. Mervyn Crofton said with regard to the prophylaxis of these carriers, especially following typhoid fever, if they were treated by vaccines the patient would not recover with a low agglutinative power, and, therefore, there would be much less chance of their being carriers. He said that it was necessary both to raise the patient's immunity, and to secure that these immune substances should get to the lesion. He had given Professor McWeeney's patient two thousand millions and found that the agglutination was at least 1:500, and the patient was still excreting a large number of typhoid bacilli. He agreed it was no use to do more since she had the obvious lesion in her right kidney, and since indigo carmine was not excreted from her right ureter. Whether the vaccine had anything to do with the cure it was impossible to say, but it is possible that when the kidney was fixed into its place, and a good blood supply renewed the kidney had got a good supply of these antibodies and that this contributed to the sudden disappearance of the bacilli from the urine.

Dr. O'Kelly wanted to know the expense of carrying out the procedures mentioned by the President as being carried out in Germany, where the population was many times greater than in Ireland.

Dr. Kirkpatrick said he would like to know how the President would proceed to investigate the cases of diph-
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theria in the schools. He thought it would be fraught with considerable difficulty where children are not suffering from any disease in their upper air passages. He agreed that much of the sickness in children which is termed gastric is probably enteric fever. He said the cause that the right kidney was more often affected than the left was probably due to infection from the colon. It occurred to him that in this case probably the right ureter was kinked owing to displacement of the kidney, and in this back-water the typhoid bacilli were able to grow, and when the kidney was fixed the bacilli were excreted.

Professor McWeeny said he was interested to know from Major Morgan that at first this typhoid carrier gave a negative Widal, because while she was under his observation the reaction was always positive, more especially against the ordinary laboratory cultures. A peculiarity about the bacillus was that it was not very motile, and not readily agglutinated when freshly isolated. He supposed there must have been some pouch in the pelvis of the right kidney where the bacilli had collected. Vaccine therapy did not prove successful, and Houston, of Belfast, is the only one who got good results. The cost of carrying out the procedures is much less in Germany than it would be in Ireland.
ABSTRACTS.

SECTION OF ANATOMY AND PHYSIOLOGY.

Friday, January 27, 1911.

The President (Professor McLoughlin) in the Chair.

(a) Acromegalic Skeleton; (b) Femur with Separate Ossific Centre for Third Trochanter; (c) Displacements caused by Pleural Effusion (illustrated by slides).

Professor A. C. Geddes demonstrated the skeleton of an acromegalic subject. He showed a series of lantern slides illustrating the change in facies during the twenty-five years of life for which the disease persisted. The record of the dissection of the body was also illustrated by lantern slides. The points to which attention was specially directed were:—

(1) The great length of the facial skeleton. This was shown to be due to the great increase in height of the maxillae. This increase especially affected the alveolar processes of the bones. (2) The mandible was a remarkable bone, the greatest change being the increased length of the body, which was set at an open angle with the ascending ramus. The vertical height of the symphysis was much increased. (3) The skull vault was in parts enormously thickened, in parts extremely thin. (4) The pituitary fossa was enormous. (5) The vertebral column was completely ankylosed except in the case of the joint between the third and fourth cervical vertebrae. (6) The ribs were very large, more particularly at their anterior ends. (7) The pelvis was enormously broad, and the sub-pubic angle very great. (8) In
the limbs the bones showed an extraordinary prominence of the muscular crests with an equally extraordinary degree of atrophy of the general thicknesses of the shafts. (9) The bones of the hands and feet were not unduly large, but there was a considerable coalescence of the carpal and metacarpal and of the tarsal and metatarsal bones. (10) The joints throughout the body showed the changes associated with the so-called disease, rheumatoid arthritis.

A complete report upon the microscopic and macroscopic structure of the soft tissues of this case was published in the *Edinburgh Medical Journal*, March, 1909.

(b) Professor Geddes next showed a human femur showing a distinct centre of ossification for the third trochanter. He pointed out that little was to be found in the text-books concerning this centre, and expressed the hope that some of those present would be able to give the meeting some definite information as to its frequency.

(c) Professor Geddes' third communication dealt with the mechanical effects of right-sided pleural effusion as they appeared in the body of a male subject hardened with formalin. He drew special attention to the mechanical difficulties to the venous flow which the displacements of the viscera occasioned. The lumen of the inferior vena cava was shown to be partially obliterated as a result of the downward rotation of the apex of the heart round an antero-posterior axis passing through the left margin of the inferior caval opening in the diaphragm. The lumen of the superior vena cava was reduced as a result of the forward rotation of the right lung root, that of the vena azygos major by pressure against the right posterior edge of the right bronchus. He pointed out that these changes were probably exaggerated after death as a result of the loss of the resilience of the tissues, but that there could be no reasonable doubt that the forces which tended to produce them were operative during life, and in cases of considerable pleural accumulation might well become operative and occasion sudden death.

Professor Dixon referred to the diversity of opinions expressed in the literature on the subject of a separate ossific
centre for the third trochanter of the femur. He was inclined to think that such a centre usually existed. In regard to the case of acromegaly he pointed out that apparently those bones of the head that were developed in membrane were chiefly affected, the internal pterygoid plate, for instance, being greatly lengthened, while the external was of normal dimensions.

Professor Symington referred to the utility of studying the displacements caused by pathological conditions.

Dr. Moorhead thought that the investigation of displacements by means of hardening reagents would interfere with the pathological findings. He considered that the anatomical derangements found after death and the clinical picture of the case often did not correspond.

Alcohol and Oxygen Inhalations in Cardiac Failure (illustrated by slides).

Professor Collingwood described the physiological experiments he had performed on animals which led to the administration of alcohol vapour to man in cardiac failure. He stated that animals with heart failure following the administration of over-doses of chloroform had recovered their blood pressure under positive ventilation with alcohol vapour and oxygen. He gave an account of the clinical application of the treatment and of the very successful results that had been recorded by Dr. W. H. Willecox in the British Medical Journal of November 5, 1910. In conclusion he exhibited an apparatus designed for the administration of alcohol with oxygen which was manufactured by Burgoyne & Burbidges, Coleman Street, London, E.C. This apparatus, he said, could be attached permanently to the oxygen cylinder, for by means of a tap either pure oxygen or oxygen mixed with alcohol could be administered at will. He recommended this apparatus as being especially suitable for operating theatres and hospital wards.

The Topographical Anatomy of the Salivary Glands (with diagrams).

Professor Symington described the shape and relations of the salivary glands illustrated by specimens and drawings.
His description was based upon the results of the examination of a series of coronal sections of a head made about half an inch apart. The position and relations of any salivary glands exposed by these sections were drawn. The pieces of each gland were then removed from the slabs and placed in their natural relation to one another so as to demonstrate the shape of the whole gland, while the structures bounding the cavities from which these pieces had been removed were defined. A drawing was then constructed showing the position of the glands, &c., viewed from the lateral aspect. The shape of the parotid gland was considered, and also its deep relations, more especially to the facial nerve and external carotid artery. Attention was drawn to the slight extent to which the submandibular gland reaches forwards on the cervical aspect of the mylo-hyoid and the way in which it extends down the neck over the posterior belly of the digastric into the carotid triangle.

Friday, April 28, 1911.

The President in the Chair.

Intraocular Pressure.

Mr. Story read a paper on "Intraocular Pressure," in which he called attention to the views of Thompson Henderson on the anatomy of the cribriform ligament, and the ocular blood supply—views which are at variance with those accepted generally by the ophthalmological world. Henderson asserts that the ligament is not formed by Descemet's membrane, but by the corneal fibres themselves, and he also asserts that the anterior ciliary arteries universally accepted, have no existence, and that the circulus iridis major is a purely venous system. All these points are established by means of serial section. Mr. Story exhibited Henderson's glaucoma flask, and also one of the experiments of Birnbacher and Czermak upon the filtration of fluids in tubes, with movable and permeable walls.
Attention was directed to several points in which the author considered that difficulties and inconsistencies were present in the views of Henderson, as published lately in his book on glaucoma.

Professor Thompson dealt with the relationship between the intra-cranial and intra-ocular pressures, and with the secretion of the aqueous humour.

Mr. Crawley pointed out some difficulties in reconciling Henderson's views with the ocular conditions present in association with intra-cranial tumours and irido-cyclitis.

Professor Dixon mentioned the different results obtained in the study of the vessels of the eye by serial sections and by injections.

(a) Ossa suprasternalia; (b) The Par-occipital process at birth.

Professor A. F. Dixon exhibited a specimen in which well-marked suprasternal bones were present. An X-ray photograph, prepared by Dr. W. G. Harvey, clearly indicated the structure of these bones and also the existence of clearly-defined joint cavities separating each from the upper border of the manubrium sterni.

Professor Dixon also showed an example of a well-developed par-occipital process in the skull of a child at birth. The specimen proved the congenital nature of the condition and indicated its atavistic significance. The idea that the process is developed during life as a result of certain forms of occupation receives no support, but is rather disproved by the occurrence of specimens like that exhibited.
SPECIAL MEETING OF THE ACADEMY TO CONSIDER THE PROPOSED GENERAL ANÆSTHETICS BILL.

Thursday, November 10, 1910.

Sir Charles Ball, Bart, P.R.A.M.I., in the Chair.

The President said he had summoned that meeting of the Academy under Rule 23 in order that they might discuss the question of legislation with regard to the administration of anaesthetics. At the Council meeting of the Academy last week they had decided that they should ask Irish members of the British Dental Association to attend as their guests. He was glad so many had responded to the invitation, and he was sure that in the discussion they would help the Academy a good deal, as they had paid a great deal of attention to the subject. The general public on matters of that kind were very apathetic. They looked on with indifference while people were poisoned with quack nostrums, cripples manufactured by bone-setters and osteopaths, and jaws broken by unqualified dentists. But when it came to death under anaesthesia, that was such an extremely tragic circumstance that public opinion became aroused; and as the administration of anaesthetics had increased so enormously of late years, it was only to be expected that the number of deaths should also increase somewhat. Dr. Hewitt, who had gone very elaborately into the subject, had showed that in 1904 there were 156 deaths registered in England and Wales as having occurred from the administration of anaesthetics, and 155 in 1905. Probably the figures by no means represented anything like the total number. The daily Press reported these cases, and the public became aroused. Questions were asked in the House of Commons. Bills for the prohibition of unqualified administration of anaesthetics were promoted, and as a result the Government
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at last seemed inclined to take some action. Two years ago the Home Secretary appointed a Departmental Committee to inquire into the whole question of Coroners, and they were charged especially with the duty of investigating the causes of death under anaesthetics. They reported in favour of legislation. The Privy Council had on three occasions sent down Bills that had been proposed to the General Medical Council for their observations. One of those Bills got as far as a first reading in the House of Commons. During the last few days there had been circulated amongst the members of a small Committee of the Council, which had been appointed to deal with that subject, and of which he was a member, copies of a further Bill sent down by the Privy Council for discussion. As it was marked "Confidential" he was not able to disclose the details of the Bill. All he could say was that it was much more satisfactory than any of the previous Bills. The General Medical Council had reported in favour of legislation on the subject. So also had the Council of the Royal College of Surgeons in London, the British Association for the advancement of Science, the British Medical Association, the British Dental Association, the Royal Society of Medicine through its anaesthetic branch in London, and the Medical Society in London. He thought, therefore, it was quite fitting that they should take some action. Although the bodies alluded to had all been in favour of prohibiting to some extent the unqualified administration of anaesthetics which produced unconsciousness, there had been certain differences between them as to points of detail as to how the prohibition was to be best carried out, and how the proposed Bill should be worded. On the general subject that registered medical practitioners should have full authority all were agreed. He thought they were also agreed that dentists who were registered at the time of the passing of the Act should have the powers they now have continued. With regard to the dentists who were registered after the passing of the Act, some thought they should be put on an absolute equality with medical men; others thought they should be prohibited from administering any anaesthetic which produced unconsciousness, while a third—

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and, he believed, a largely growing body of opinion—held that certain anaesthetics, such as nitrous oxide gas, might fittingly be administered by dentists registered after an appointed day.

Of course, in any Bill that was drawn up there was a difficulty about naming certain anaesthetics. In the Poisons Act certain poisons were scheduled. Certain anaesthetics could be scheduled, but power would have to be given to the Privy Council to add to the list other anaesthetics if the progress of science should eventually show that there were even safer anaesthetics than nitrous oxide gas.

Another point—and possibly the most important—was whether they should attempt to urge that in any Act of Parliament dealing with the subject, the administration of local anaesthetics by hypodermic or hypomucous injection should be confined to registered medical practitioners and registered dental practitioners. The Departmental Committee on Coroners went so far as to say that they recommended the prohibition of intra-spinal injection of cocaine, &c., but they did not go so far as to say that the hypodermic injection of such substances for local anaesthesia should be controlled. It was, however, within the knowledge of most of them that very grave symptoms had not infrequently supervened from the injection of cocaine. It was true that death had not often resulted, but he saw in the last number of the British Dental Journal an account of the death of an apparently perfectly healthy young woman after two hypodermic injections of cocaine of one-eighth grain each. The danger was, therefore, a real one, and would have to be taken notice of in any proposed legislation.

Another matter referred to in former Bills was that due provision should be made for the education of both medical and dental students in the subject of anaesthetics. When that matter had come down for discussion to the General Medical Council, the Council pointed out that before they had heard anything of it from the Government they had, on their own initiative, made recommendations to the various licensing bodies that practical instruction in the administra-
tion of anaesthetics should form part of the curriculum of any students seeking medical or dental registerable qualifications. Inquiries had since been made as to how the recommendation was being carried out, and all the universities and licensing bodies in the United Kingdom had acceded to that recommendation. In the Bill which had been read a first time, that "qualification," as it was called, for the administration of anaesthetics was elevated to a somewhat unnecessary pitch. It was to be made a qualification which it was necessary to obtain antecedent to registry, in the same way as a diploma in medicine, surgery, obstetrics, or dentistry. That was quite unnecessary. The statutory powers of the Council were quite sufficient to enforce the teaching of students. Another question which it seemed necessary to allude to was, whether it was desirable or practicable to prohibit the same individual from giving the anaesthetic and doing the operation at the same time. Mr. Hewitt had got statistics of thirteen cases in which fatal results had ensued in the administration of anaesthetics for dental purposes, and in eleven or twelve it was found that the same individual had been both anaesthetist and operator. There was extreme difficulty in making any regulation on such a subject. They could never interfere with the obstetrical physician who gave chloroform single-handed to women in labour—a practice which had been attended with phenomenally small risk. Nor could they prevent a doctor who was situated in the country, perhaps twenty or thirty miles from help, from giving an anaesthetic for a strangulated hernia; or a dentist where assistance was quite impossible. But that was a totally different thing from the habitual practice of giving anaesthetics and operating at the same time; and there, again, the statutory powers of the Council seemed to be quite sufficient to deal with the matter. On that subject, therefore, it seemed unnecessary to burden the proposed statute. It was desirable to make the Act as brief and as clear as possible, and not overload it with questions liable to excite considerable debate.

In order to keep the discussion on even lines a certain number of resolutions had been proposed and circulated
amongst them. They would first have a general discussion on the whole question. Then if any Fellows of the Academy desired to move an amendment to any of them the amendment would be put. If it was carried it would take the place of the resolution to which it applied. If not, the resolutions would be put one by one. They should be glad to hear what their dental friends had to say, but it was obvious that the decision of the Academy could only be by the votes of the Fellows who were present. He knew that the medical and dental professions would very much prefer to see some more stringent measure of general prohibition of unqualified practice; but those who knew told them that there was not the slightest possibility of the present House of Commons ever passing such a measure. They had, however, been frightened about anaesthesia, and there was a very real possibility, if not probability, of the Government taking the matter up, and an Anaesthetic Prohibition Bill being put on the Statute Book. If that should happen, it would be a great thing for both professions. It would be a greater thing than appeared on the surface, as it would be the first time the British Parliament had ever said that any medical or dental action must not be done except by certain qualified people. It will be a useful precedent for further legislation. It will be a lever by which we may eventually get total prohibition. Under these circumstances it was, he thought, desirable that they should make as strong and as united a front as they could. As to the relative claims of doctors and dentists in the matter, there must, to a certain extent, be concessions on both sides. If the extremists on one side, who desired that all anaesthetics should be given by medical men, and the extremists on the other side who wanted a registered dentist to be on an equality with a registered medical practitioner as regards anaesthetics, gave way, and some moderate modus vivendi was carried, he thought that would go a long way towards getting what they wanted.

Mr. R. H. Woods, President of the Royal College of Surgeons, said he did not think there was very much to be said on the main subjects. They were agreed that, as far
as ether and chloroform and such general anaesthetics were concerned, they ought to be restricted to registered medical practitioners. But with regard to nitrous oxide gas, and other similar equally safe anaesthetics that might in future be discovered, it would obviously be a hardship on the dental men, who had often to work single-handed, to make it necessary for them to have a registered medical practitioner present, especially when they remembered that most registered dentists had got a very considerable experience in the administration of nitrous oxide gas themselves. He wished to speak specially with regard to the administration of hypodermic or subcutaneous injections. He did not think it could be contended that anaesthetics, such as cocaine, novaine, and stovaine, were quite safe. He held it to be a contradiction of terms to speak of a safe anaesthetic. If a drug was capable of producing either local or general anaesthesia, it must be a poison before it could be used for the purpose, and if it was a poison it must be dangerous. He therefore held that the only people who should be permitted to administer those drugs were people whose education, not only in the immediate method of administration, but on general medical and pathological lines, was sufficiently extensive to enable them to get a thorough grasp of the principles that underlay the administration of the anaesthetics. He spoke as one having, what he might call, a great experience in local anaesthetics, and he had always regarded such drugs as were of real practical use as being excessively poisonous. They were safe as long as they were carefully handled, but he thought there was a general tendency to underestimate their toxicity. He could tell them of cases where a very considerably smaller quantity than that quoted by the President had been followed by profound collapse. Many years ago he had administered a small quantity of cocaine by rubbing on the mucous membrane of a gentleman’s nose. He was a perfectly healthy man, and inside three minutes he was in profound collapse. Later he applied one-eighth of a grain, some of which remained on the cotton wool. He thought he was thus using a perfectly safe dose—about \( \frac{1}{10} \) grain. To his dismay a repetition
of the same phenomena occurred. He was in profound collapse for three or four hours. There was no drug that he knew of to which people showed so varied behaviour as cocaine; and, in view of his experience, he thought it was unwise to conclude that it was so perfectly safe an anaesthetic in small doses as it was generally represented to be. There was one respect in which there was a great deal of room for reform; that was proper instruction in the administration of those anaesthetics. It was only lately that the medical schools had begun to exact instruction in anaesthetics in general; and he thought that if they were going to restrict the administration to registered medical men and dentists, it was highly important that they should be instructed not merely in the administration of general anaesthetics, but also in local anaesthetics, and the importance of the way in which they were administered should be emphasised. He thought it was nothing short of a crime that men who had no education and no instruction beyond the mere mechanical part of their work should be allowed to handle powerful drugs, of whose constitution they were in ignorance.

Mr. Murray desired to convey the thanks of his colleagues to the Academy for inviting them to join in the discussion of such very great importance. The resolutions appeared to him to present a very happy compromise, and to meet all the vital points. In a former scheme the dentist felt that he was rather hardly used in being excluded from the administration of nitrous oxide gas. It had been pointed out that compensation might be found in the establishment of the principle of prohibition. But in the resolutions before them, they had the principle of prohibition amply established without invading the right of the dentist to administer nitrous oxide gas. They in Dublin were practising under advantageous circumstances. They had a number of highly skilled anaesthetists ready to help them, and they had a public ready to second them. They had, however, to think not only of themselves, but of the men in the country parts of Ireland, and of their colleagues across the water. The circumstances of the latter were not at all so favourable as their own. Not only had they the competition of the un-
qualified quack, but they had also the competition of the medical man who, being himself pressed by quackery, had to eke out a livelihood by any means open to him. This was rather hard on the dentist, and it would be still harder if he were altogether in the hand of the medical man for the administration of anaesthetics. He had known of a case in England where a medical man, who had been called in by a dentist to give an anaesthetic, took away the patient and administered the anaesthetic and did the operation himself. He noticed with approval that the resolutions covered the administration of local anaesthetics. That was a vital point. Local anaesthetics were quite as dangerous as general anaesthetics, and in the hands of unskilled men perhaps even more so, because there was the added danger of septicaemia and things of that sort. They were the great stand-by of the unqualified practitioner, and it seemed to him that if the administration of local anaesthetics were barred to the unqualified practitioner, he would receive such a blow that he would be knocked out by it, and it would probably have more effect than some of the visionary Bills which were considered to offer a solution of the question. If such a measure as was set forth in the resolutions were brought forward it would receive the cordial support of the dental profession throughout the United Kingdom. He spoke merely for himself, but he thought he was voicing the feelings of the entire profession.

Dr. Stritch said it appeared to him that the most important point in the administration of anaesthetics by dentists was the education of the dental student, not in the mere application, but in the recognition of those pathological conditions which rendered the administration of an anaesthetic unsafe.

Dr. Kirkpatrick said the history of the present movement was very interesting. For the past ten or fifteen years certain practitioners had urged on the licensing bodies the necessity and importance of teaching medical students how to administer anaesthetics. This argument had to a large extent fallen on deaf ears. The General Medical Council all along had the statutory right to enforce the instruction, but
they never made use of it. The movement for the teaching of anaesthetics had come at the same time as—perhaps slightly before—the public began to move and insist that some legislation should take place. It was rather an unfortunate position for the medical profession to say that after the number of years since the introduction of anaesthetics, while they systematically ignored all forms of teaching, they now come and claim for their profession the exclusive right in the administration of those drugs. The dentists, on the other hand, had not ignored the teaching. For many years past obligatory courses of instruction in anaesthetics had been given in many of the dental schools, and some of the dental licensing bodies had insisted on practical instruction as an essential previous to final examination. He saw the value of the position taken up by the medical profession, in incidentally putting a spoke in the wheel of quackery; and if there was no hope of general legislation on quackery, then he thought it would be wise for them to adopt the resolutions. He thought, however, it was unlikely that the substance of the resolutions would be embodied in an Act of Parliament. He thought it unlikely that the resolution dealing with local anaesthetics would be carried by Parliament, and that being so, he thought they should be slow in pressing for legislation which would probably result in only a partial measure, because as long as the administration of local anaesthetics was allowed to go on unchecked, it was futile to deal with the subject of general anaesthetics. To his mind, the administration of local anaesthetics was much more dangerous, in that it was less easy to become skilled in it than in the administration of general anaesthetics. The administration of general anaesthetics was an art to be acquired by practice, and when it was acquired it did not require very much medical knowledge. But in dealing with local anaesthetics they were confronted with personal idiosyncrasies and with the danger of sepsis, which required a knowledge of bacteriology to guard against it. They should bear in mind that in passing the resolutions they were giving expression to a pious opinion, part of which would be adopted, and part of which—the important part—was not likely to be embodied in an Act of Parliament.
Sir John Wm. Moore said the General Medical Council had no power of enforcing any regulation with regard to the teaching of anaesthetics or anything else. The whole power of the Council was in making recommendations to the different licensing authorities. He could not agree with Dr. Kirkpatrick that the teaching of anaesthetics had been so thoroughly neglected. When he was a student at the Meath Hospital, anaesthetics were given by the surgeons, and the operations witnessed by the students, who often took part. It was true that there was no absolute requirement, but the administration was taught, though perhaps not as thoroughly as it might have been. Neither could he agree that the medical profession had come up at the heel of the hunt. An enormous number of additional cases had arisen for the use of anaesthetics since the passing of the Dental Act. It was the same with surgery. The cases in which general anaesthesia had been produced had multiplied enormously. With regard to any attempt to exclude the dental profession from the administration of anaesthetics, he was old-fashioned enough to regret that the dental profession was ever separated from the medical and surgical profession. The resolutions would give the dental profession a full opportunity of being qualified under any Act of Parliament which embodied the regulations that were before the Academy.

Mr. Packenham said the administration of anaesthetics for a dental operation was very different from administration for a surgical operation. The anaesthetic was administered through the mouth, and the operation took place in the mouth. As a rule, the medical student who was just qualified knew little or nothing of the administration of nitrous oxide gas, or of a mixture of ether with it. He thought the instruction given in Dublin Hospitals should include an expert anaesthetist in that particular branch and a dentist of the staff. As a practitioner who had worked in the country, and called in a medical man to administer an anaesthetic, he must say that most medical men were totally ignorant of the subject, and it remained for the dentist to administer the anaesthetic and do the operation. The
management of the gag was a very important matter, and was not as simple a thing as it looked. The dentist had all his time occupied in getting the teeth out, and it required an expert to manipulate the gag and keep the patient quiet. It could, however, be taught. Any student who had been instructed in the Dental Hospital was much more capable of giving nitrous oxide gas alone and taking out teeth than he would be if he called in a country practitioner. For ether or chloroform, however, the medical man should be called in, as he was better qualified in the use of those drugs.

Mr. Wigoder said that at the Dental Hospital this year the students had had a practical course of instruction in anæsthetics. There was a great difference between watching an anaesthetic being administered and administering it oneself. He thought it would be better to take out a medical course, and then practice whatever he liked, and be under obligation to no one.

The following resolutions, proposed by Mr. R. H. Woods, and seconded by Dr. Kirkpatrick, were passed unanimously:

(1) "That it is desirable in the public interest that the administration of general anæsthetics to render persons unconscious during any medical, surgical, obstetrical, or dental operation or procedure should be restricted by law to Registered Medical Practitioners, with the exception of nitrous oxide gas, and such other anæsthetics as may from time to time be sanctioned by the Privy Council, which may be administered by a Registered Dentist."

(2) "That provision should be made for the practical instruction in anæsthetics of Medical and Dental Students."

(3) "That the specification of the anæsthetic substances or drugs which may thus be employed by Registered Dental Practitioners during dental operations or procedures should be made in a schedule to the proposed Act of Parliament, power being reserved to the Privy Council, on the recommendation of the General
Medical Council, as the authority charged with the publication of the British Pharmacopoeia, to add to or vary the specified list from time to time as occasion arises."

(4) "That the administration of local anaesthetics for producing insensibility to pain during any surgical or dental operation or procedure by the introduction beneath the skin or mucous membrane of any fluid or other substance by means of a hypodermic needle or in any other way, should be restricted by law to Registered Medical Practitioners, to Registered Dentists, or to persons acting under the immediate supervision of a Registered Medical Practitioner or a Registered Dentist."

On the motion of Dr. Drury, seconded by Dr. Kirkpatrick, it was unanimously decided not to send any notice of the resolutions to the lay Press.
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