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Presented by
Dr. Brenrose
THE TRANSACTIONS
OF
EDINBURGH OBSTETRICAL SOCIETY
PREFACE.

This, the thirty-second volume of the Society's Transactions, contains a record of its proceedings during the Session 1906–1907.

In it, as in former volumes, the views brought forward in the Papers are to be considered as those of the writers themselves, and not as those of the Society as a body.

The Editor.

October 1907.
EDINBURGH OBSTETRICAL SOCIETY.

OFFICE-BEARERS FOR SESSION 1906-1907.

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12 Charlotte Square.

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EDWARD WILLIAM SCOTT CARMICHAEL, M.D., F.R.C.S.Ed.
List of Presidents, Vice-Presidents, Treasurers, Secretaries, and Librarians of the Society.

**PRESIDENTS.**

<table>
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<tr>
<th>President</th>
<th>Year</th>
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<th>Year</th>
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<tr>
<td>Dr William Beilby</td>
<td>1840-41</td>
<td>Sir A. R. Simpson</td>
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<td>Sir James Y. Simpson, Bart.</td>
<td>1842-57</td>
<td>Dr John Connel</td>
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**VICE-PRESIDENTS.**

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LIST OF OFFICE-BEARERS AND HONORARY FELLOWS.

TREASURERS.*

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LIBRARIANS.

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EDITORS OF TRANSACTIONS.

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LIST OF FELLOWS OF THE SOCIETY.

HONORARY FELLOWS.

1898 Atthill, Lombe, M.D., Monkstown Castle, Co. Dublin.
1897 Bantock, Dr George Granville, 14 Upper Hamilton Terrace, London, N.W.
1901 Bar, Prof. Paul, M.D., Rue la Boétie, 122, Paris.
1906 Bossi, Professor L. M., The University, Genoa.
1886 Bozeman, Dr Nathan, 296 Fifth Avenue, New York.
1901 Chrobak, Professor R., University of Vienna.
1898 Coe, Prof. Henry C., M.D., 27 East Sixty-fourth St., New York.
1898 Cullingworth, Charles J., M.D., D.C.L., 14 Manchester Square, London, W.
1893 Doyen, E., M. D., L.L.D., Rue Piccini, 6, Paris.
1882 Emmet, Dr. 93 Madison Avenue, New York.

* Previous to 1861 the office of Treasurer was conjoined with that of Senior Secretary.
LIST OF FELLOWS.

1900 Fehling, Professor Herman, M.D., Kaiser Wilhelm's University, Strassburg.
1882 Freund, Emeritus Professor W., Kleiststrasse, 5, Berlin.
1901 Fritsch, Prof. H., University of Bonn.
1902 Garrigues, Prof. H. J., Tryon, North Carolina.
1891 Gusserow, Prof., Charité, Berlin.
1882 Hegar, Professor, Albert Ludwig's University, Freiburg.
1898 Kelly, Prof. Howard A., M.D., Johns Hopkins Hospital, Baltimore, U.S.A.
1907 Kinoshita, Dr Seichu, Professor of Obstetrics and Gynecology, Imperial University, Tokio, Japan.
1892 Koeberlé, Dr Eugene, Strassburg.
1898 Leopold, Prof. G., M.D., Seminarstrasse, 25, Dresden.
1906 Makléeff, Professor Alexander Matvějčevič, The University, Moscow.
1895 Martin, Prof. Dr A., Greifs- wald.
1903 Morisani, Professor O., San Felice à Piazza Dante, 10, Naples.
1892 Müller, Professor Peter, Berne, Switzerland.
1889 Olshausen, Professor, Frauenklinik, Artillerie Strasse, 13, Berlin.
1901 Ott, Professor D. von, M.D., Professor of Obstetrics, University of St Peters burg.
1902 Pestalozza, Professor, Instituto Obstetrico Policlinico, Roma.
1895 Pinard, Professor A., Rue Cambacères, 10, Paris.
1898 Pozzi, Professor S., M.D., Hôpital Broca, Paris.
1903 Schauta, Professor, Kochgasse, 16, Vienna.
1882 Schultz, Professor B. S., University, Jena.
1903 Segond, Dr Paul, Quai d'Orsay, Paris.
1906 Simpson, Emeritus Prof. Sir Alex. R., LL.D., 52 Queen St.
1905 Sinclair, Prof. Sir William Japp, Garvock House, Dudley Road, Manchester.
1901 Sneguireff, Professor W., University of Moscow.
1905 Veit, Professor, University, Halle.
1897 Williams, Sir John, Bart., M.D., LL.D., Plus Llanstephan, Carmarthenshire.
1882 Winckel, Prof. Von, Ludwig-Maximilian's University, Munich.
1905 Zweifel, Professor, Frauenklinik University, Leipzig.

CORRESPONDING FELLOWS.

1887 Baumgartner, Dr H. S., Newcastle-on-Tyne.
1892 Belby, Dr J. H., Bromsgrove.
1863 Belgrave, Dr, Sydney.
1888 Bentley, Dr Arthur J., Cairo.
1880 Bosch, Dr Van Den, Liège.
1880 Brock, Dr W. J., Edinburgh.
1863 Brown, Dr R. C., Preston.
1887 Chepmell, Dr C. W. J., London.
1894 Curatulo, Prof. G. E., Rome.
1869 Davies, Mr Thos., Manchester.
1873 Donovan, Mr W., Birmingham.
1877 Engelmann, Dr G., Kreuznach.
1896 Eyres, Hugh, Richmond.
1883 Fraser, Dr Dyce, London.
1892 Fraser, Dr Hugh E., Dundee.
1879 Glaister, Prof., Glasgow.
1877 Grassett, Dr F., Toronto.
1868 Grenser, Dr Paul W. T., Dresden.
1864 Grévé, Dr, Norway.
1875 Groesbeck, Dr Hermann J., New York.
1897 Gunsberg, Charkow, Russia.
1853 Hall, Dr D., Montreal.
1870 Haynes, Dr Stanley L., Malvern.
1880 Helme, Dr J. M., Carnforth.
1885 Helme, Dr T. A., Manchester.
1865 Henderson, Dr E., China.
1893 Howard-Jones, Dr J., Newport.
1887 Hume, Dr T., Surgeon-Major, India.
1881 Hurst, Dr George, Australia.
1882 Husband, Dr H. Aubrey, Manitoba.
1893 Hutchison, Dr Robert, London.
1894 Jennings, Dr David D., New York.
1871 Johnston, Dr A. C., R.N., London.
1882 Johnston, Sur.-Maj. Wilson, India.

1845 Keith, Dr George S., Currie.
1867 Kingston, Dr, Montreal.
1874 Kleinwächter, Prof. L., Grätz.

1871 Lambert, Dr, Paris.
1887 Limont, Dr J., Newcastle-on-Tyne.
1867 Lord, Dr Richard, London.

1878 Macdougall, Dr John A., Cannes.
1879 Machattie, Dr Thomas A., Australia.
1862 Mackay, Dr M. A., Canada.
1870 M’Kendrick, Prof., Stonehaven.
1869 M’Millan, Dr T. L., Australia.
1879 Marshall, Dr Thomas, London.
1866 Martin, Dr Karl, Berlin.
1860 Milburn, Dr George, London.
1888 Mills, Dr B. Langley, India.
1897 Minchin, Dr, Charkow, Russia.
1861 Mitchell, Sir Arthur, LL.D., Edinburg.

1877 Moolman, Dr Henry, South Africa.
1869 Mossop, Mr Isaac, Bradford.

1884 Neve, Dr E. F., Kashmir.
1849 Norris, Mr H., Petherton.

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<th>Date of Admission</th>
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<td>1866</td>
<td>Thomas John Fordyce Messer, M.D., F.F.P. &amp; S. Glasg., Garelochhead,</td>
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<td>1875</td>
<td>Henry Macdonald Church, M.D., F.R.C.P. Ed.,</td>
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**ORDINARY FELLOWS.**

**ARRANGED CHRONOLOGICALLY.**

*Note.—Those marked with an asterisk have been Members of Council. Members of Council continue in office two years.*
LIST OF FELLOWS.

Archibald Bleloch, M.B., Sc.D., 1876
Joshua John Cox, M.D., F.R.C.S. Ed., Excels, Manchester, 1876
20 *Thomas Rutherford Ronaldson, M.B., F.R.C.P. Ed., 1876
Charles H. Thatcher, F.R.C.S. Ed., 1876
*John Brown Buist, M.D., F.R.C.P. Ed., 1877
George Herbert Bentley, L.R.C.P. & S. Ed., Kirkliston, 1877
Andrew Douglas Ramsay Thomson, F.R.C.P. Ed., Musselburgh, 1877
John Archibald, M.D., F.R.C.S. Ed., Bournemouth, 1877
*David Berry Hart, M.D., F.R.C.P. Ed., 1877
*David Menzies, M.B., F.R.C.S. Ed., 1877
Donald Roderick Morrison Murray, M.B., C.M., Leith, 1878
30 Robert Spence, M.B., C.M., Burntisland, 1878
George Mackay, M.B., F.R.C.S. Ed., 1878
James Henry Crousdale, L.R.C.P. & S. Ed., Stafford, 1878
Alexander Dinsey Leith Napier, M.D., M.R.C.P.L., Australia, 1878
John M'Watt, M.B., C.M., Duns, 1879
35 *William Nicol Elder, M.D., L.R.C.P. & S. Ed., 1879
Henry Hay, M.B., C.M., 1879
*John Rogerson Hamilton, M.D., C.M., Hawick, 1879
George Rollowell Adam, M.D., C.M., Melbourne, 1879
40*****Alexander Hugh Frederick Barbour, M.D., F.R.C.P. Ed., 1879
James Murray, M.B., C.M., 1879
Andrew James Duncan, M.D., L.R.C.S. Ed., Dundee, 1879
T. Edgar Underhill, M.D., F.R.C.S. Ed., Burnt Green, 1879
**William Loudon Reid M.D., F.F.P. & S. Glasg., Glasgow, 1880
45 **** James Ritchie, M.D., F.R.C.S. Ed., F.R.C.P. Ed., 1880
William Alexander Finlay, M.D., F.R.C.S. Ed., Trinity, 1880
James More, M.D., M.R.C.S. Eng., Rothwell, Kettering, 1880
Thomas Rennie Scott, M.D., C.M., Musselburgh, 1880
*George Hunter, M.D., F.R.C.S. Ed., F.R.C.P. Ed., 1881
*Arthur Douglas Webster, M.D., F.R.C.P. Ed., 1881
James Hewetson, M.B., C.M., Holmfield, Reigate, 1881
**Samuel MacVie, M.B., C.M., Chirnside, 1881
55 John Waugh, M.D., C.M., London, 1881
Hugh Logan Calder, M.D., F.F.P. & S. Glasg., 1882
Henry Anderson Peddie, M.B., C.M., 1882
Thomas Fisher Gilmour, L.R.C.P. Ed., L.F.P. & S. Glasg., Islay, 1882
60 William Black Alexander, L.F.P. & S. Glasg., 1882
Harry George Deverell, M.D., C.M., 1882
*George Keppie Paterson, M.B., F.R.C.P. Ed., 1882
Herbert R. Rendell, M.B., C.M., St John's, Newfoundland, 1882
David Smart, M.B., C.M., Liverpool, 1882
*John William Ballantyne, M.D., F.R.C.P. Ed., 1883
Thomas Proudfoot, M.B., F.R.C.P. Ed., 1884
W. Fraser Macdonald, M.B., C.M., Glasgour, 1884
William Spence, M.B., C.M., Dollar, 1884
70 William Wright Millard, M.B., C.M., 1884
John Mowat, M.D., C.M., 1884
James Lumsdon Bell, M.B., C.M., Driffield, Yorkshire, 1884
*Thomas Brown Darling, M.D., C.M., 1884
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<td>Harry Melville Dunlop, M.D., F.R.C.P. Ed.</td>
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<td>A. A. Jervis Pereira, M.D., Delagwa Bay</td>
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<td>John Pirie, M.B., C.M.</td>
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LIST OF FELLOWS.

Date of Admission.

130

James Gibson Graham, M.B., C.M., Glasgow, 1888
Robert Adams Brewis, M.D., C.M., Dursley, 1888
John Allison, M.D., C.M., Kettering, Northampton, 1888
Archibald Cowan Guthrie, M.B., C.M., 1888
Samuel Beatty, M.B., C.M., Pitlochry, 1885
Professor James Challners Cameron, M.D., Montreal, 1888
George H. Temple, M.B., C.M., Weston-super-Mare, 1888
Norman L. Boxill, M.B., C.M., Barbados, 1888
John Hunter Helm, M.B., C.M., Ratho, 1888
George Scott MacGregor, M.D., C.M., Glasgow, 1888
William Sneddon, M.B., C.M., Cupar-Fife, 1888
*William Fordyce, M.D., F.R.C.P. Ed., 1888
Charles E. Harvey, M.B., M.R.C.S. Eng., Sav-la-Mar, Jamaica, 1889
Alexander Lang Murray, L.R.C.P. & S. Ed., Australia, 1889
*George Pirrie Boddie, M.B., C.M., 1889
James F. W. Ross, M.D., Toronto, Canada, 1889
Hugh Jamieson, M.D., C.M., 1889
Thomas Wm. Nassau Greene, L.R.C.P. Ed., L.R.C.S.I., Dublin, 1889
Prof. John Clarence Webster, M.D., F.R.C.P. Ed., Chicago, 1889
*William George Aitchison Robertson, M.D., F.R.C.P. Ed., 1889
William Basil Orr, M.D., C.M., 1889
*Edward Farr Armour, M.B., C.M., 1889
George Wilkinson, M.D., C.M., Liverpool, 1889
*James Lamond Lackie, M.D., F.R.C.P. Ed., 1889
James Wilson, M.B., C.M., 1889
Archibald Maclean, M.D., C.M., Kilmarnock, 1890
Frederick William Lyle, M.D., C.M., London, 1890
Thomas Dobson Poole, M.D., C.M., Linthwaite, 1890
Charles Newberry Cobbett, M.D., C.M., Alberta, 1890
Alexander William Gordon Price, M.B., C.M., 1890
George Matheson Cullen, M.D., C.M., 1890
Frederick Albert L. Lockhart, M.B., C.M., Montreal, Canada, 1890
Edmund Frederick Tanney Price, M.B., C.M., 1890
Ernest Theophilus Roberts, M.D., C.M., Keighley, 1890
Owen Foukes Evans, M.D., C.M., Liverpool, 1890
James Duncan Farquharson, M.R., C.M., Newcastle-on-Tyne, 1890
Harvey Littlejohn, M.B., F.R.C.S. Ed., 1890
Robert Wise, M.D., C.M., London, 1890
William Russell, M.D., F.R.C.P. Ed., 1890
Alexander Scott Duncan, M.B., C.M., Bolton, 1890
Prof. William Keilier, F.R.C.S. Ed., Galveston, Texas, U.S.A., 1890
*Michael Dewar, M.D., C.M., 1891
Gains T. Smith, M.D., Moncton, New Brunswick, 1891
John Hugh Alexander Laing, M.B., C.M., 1891
Robert Thin, M.B., F.R.C.P. Ed., 1891
James Harvey, M.D., C.M., 1891
Alexander Henderson, M.B., C.M., 1891
James Smith, M.D., C.M., 1891
George Balfour Marshall, M.D., C.M., Glasgow, 1891
William Booth, F.R.C.S. Ed., 1891
Richard T. Yoe, M.D., Louisville, Kentucky, U.S.A., 1891
Alexander Bruce Giles, M.D., C.M., 1891
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<td>Prof. John Alexander Campbell Kynoch, M.B., F.R.C.P. Ed., Dundee</td>
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<td>Robert Robertson, M.B., C.M.,</td>
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<tr>
<td>James Wilkie, L.R.C.P. &amp; S. Ed., <em>Portobello</em></td>
<td>1897</td>
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<td>Andrew Graham, M.D., <em>Curtie</em></td>
<td>1897</td>
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<td>Roderick Murdoch Matheson, M.D., F.R.C.S. Ed.,</td>
<td>1897</td>
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<td>Daniel Charles Edington, M.D., C.M., <em>Penrith</em></td>
<td>1897</td>
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<td>Harold Sherman Ballantyne, M.B., C.M., <em>Dundee</em></td>
<td>1897</td>
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<td>Ernest Edward Porritt, M.D., F.R.C.S. Ed., <em>New Zealand</em></td>
<td>1897</td>
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<td>William John Garbutt, M.B., C.M., <em>Birmingham</em></td>
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<td>William Alexander Potts, M.D., C.M., <em>Birmingham</em></td>
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<td>Angus Macdonald, M.B., F.R.C.S. Ed.,</td>
<td>1897</td>
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<td>Bernard Sannell Story, M.D., F.R.C.S. Ed., <em>New Zealand</em></td>
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<td>Alexander Macdonald, M.B., F.R.C.S. Ed</td>
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<td>George Robert Livingston, M.D., C.M., <em>Dumfries</em></td>
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<td>Charles Carmichael Forrester, M.B., C.M.,</td>
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<td>William Morrison Milne, M.B., C.M.,</td>
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<td>William Joseph Murphy Barry, M.D., M.R.C.P. Ed., <em>Penarth</em></td>
<td>1898</td>
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<td>John Christie Forbes, L.R.C.P. &amp; S. Ed., <em>Liberton</em></td>
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<td>Alexander Cruikshank Ainslie, M.D., C.M.,</td>
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<td>Henry Aylmer Dumat, M.D., F.R.C.P. Ed., <em>Durban</em></td>
<td>1898</td>
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<td>Gabriel Maurange, M.D., <em>Paris</em></td>
<td>1898</td>
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<td>John Thomas Woodside, L.R.C.P. &amp; S. Ed., <em>Stewartstown</em></td>
<td>1898</td>
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<td>Alfred Charles Sandstein, M.D., Ch.B., <em>New Zealand</em></td>
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<td>Alfred Shearer, M.B., Ch.B., <em>Newtown, N. Wales</em></td>
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<td>John Henry Rhodes, M.B., Ch.B., <em>Kendal</em></td>
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<td>James Duncan Slight, M.D., Ch.B., <em>Leicester</em></td>
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<td>Francis John Harvey Bateman, M.D., C.M., <em>London</em></td>
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<td>Robert John Johnston, M.B., C.M.,</td>
<td>1899</td>
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William Bertie Mackay, M.D., Berwick-on-Tweed, 1899
Edward William Scott Carmichael, M.D., F.R.C.S. Ed., 1899
George Crowston Thomas, M.D., C.M., London, 1899
John Eason, M.D., F.R.C.P. Ed., Leith, 1899
William John Barclay, M.D., F.R.C.S. Ed., New Zealand, 1899
Frederick Adolphus Fleming Barnardo, M.B., Ch.B., India, 1899
Alexander Dingwell Fordyce, M.D., F.R.C.P. Ed., 1899
William Thomas Ritchie, M.D., F.R.C.P. Ed., 1899
Owen, St John Moses, M.D., C.M., B.Sc., Calcutta, 1900
Charles Wakeham Holmsted, L.R.C.P. & S. Ed., L.F.P.S. Glasg., Tuxford, 1900
Donald MacGregor, M.D., C.M., Jedburgh, 1900
*Harry Oliphant Nicholson, M.D., F.R.C.P. Ed., 1900
Thomas Scott Brodie, M.B., C.M., Wishaw, 1900
William Hope Fowler, M.B., Ch.B., 1900
John Stanley Manford, M.B., B.S., Newcastle-on-Tyne, 1900
Ogden Watson Ogden, M.D., M.R.C.S., Newcastle-on-Tyne, 1900
John Craig, M.B., Ch.B., 1900
William Hope Fowler, M.B., Ch.B., 1900
Theodore Charles Mackenzie, M.B., Ch.B., Aberdeen, 1900
Donald George Hall, M.B., M.R.C.S. Eng., Sussex, 1900
Hugh Corbett Taylor Young, M.D., C.M., Sydney, 1900
John Boyd Jamieson, M.D., F.R.C.S. Ed., 1900
Malcolm M'Larty, M.B., C.M., 1900
Peter J. seph Henry Ferguson, M.B., C.M., 1900
Frederick Gardiner, M.D., C.M., 1900
George Mackie, M.B., Ch.B., Malvern, 1900
Kenmure Duncan Melville, M.D., Ch.B., 1900
John Thomas Dickie, L.R.C.P. & S. Ed., 1900
William Ernest Frcst, M.B., Ch.B., 1900
Frederick David Simpson, M.D., F.R.C.S. Ed., 1900
Francis Wilfrid Harlin, F.R.C.S. Ed., L.R.C.P.Ed., Queensland, 1900
William Darling, M.B., F.R.C.S. Ed., 1900
Robert Macfarlane Mitchell, M.B., F.R.C.S. Ed., Australia, 1900
Malcolm Campbell, M.B., F.R.C.S. Ed., 1900
James Ramsay Munro, M.D., Ch.B., Spalding, 1901
George James Rogerson Carruthers, M.B., Ch.B., 1901
Hilda Maud M'Farlane, L.R.C.P. & S. Ed., Burntisland, 1901
George Dickson, M.D., C.M., 1901
Elsie Maud Inglis, M.B., C.M., 1901
George Robertson, L.R.C.P. & S. Ed., Dunfermline, 1901
John Jeffrey, M.B., F.R.C.S. Ed., Jedburgh, 1901
John Wishart Kerr, M.B., Ch.B., Glasgow, 1901
William Harold Graham Aspland, M.D., M.R.C.S. Eng., China, 1901
William Taylor McArthur, M.D., F.R.C.S. Ed., California, 1901
Alexander Waddel Greenhorn Clark, M.B., C.M., 1901
Henry Overton Hobson, M.D., C.M., London, 1901
Robert Patton Ranken Lyle, M.D., Ch.B., Newcastle-on-Tyne, 1901
Frederick William Kerr Tough, L.R.C.P. & S. Ed., St Helen's Junction, Lancashire, 1901
Robert Ashleigh Glegg, M.D., Ch.B., Leith, 1901
Walter Scott Patton, M.B., Ch.B., India, 1901
David Whiteside Maclagan, M.B., Ch.B., New Zealand, 1901
Kennedy C. M'Ilwraith, M.B., M.C.P. & S. Ont., Toronto, 1901
LIST OF FELLOWS.

350
Robert Alexander John Harper, M.D., Ch.B., Dalkeith, 1901
William Hogg Prentice, M.D., Ch.B., Pendleton, 1901
Alexander Mowatt Malcolmson, M.D., Ch.B., Corstorphine, 1901
David Albert Callender, M.B., Ch.B., Knutsford, 1901
Caleb Williams Saleebey, M.D., Ch.B., London, 1902
John Andrew Douglas Thompson, Halesowen, 1902

355
John Ligertwood Green, M.D., Ch.B., 1902
William Sloss, M.B., Ch.B., Australia, 1902
Charles James Hill Aitken, M.D., C.M., Cape Colony, 1902
E. R. Secord, M.D., Ontario, 1902
F. E. Thompson, M.D., Montreal, 1902

360
John McGibbon, M.B., C.M., 1902
Thomas James Thomson, M.D., C.M., 1902
Charles Mowbray Pearson, M.B., Ch.B., 1902
Ewen John Maclean, M.D., M.R.C.P. Lond., Cardiff, 1902
James William Somerville, M.D., C.M., Galashiels, 1902

365
Alexander Miller, L.R.C.P. Ed., L.F.P.S. Glasg., Glasgow, 1902
Hugh Faulkner, M.B., Ch.B., Banbury, 1902
Duncan Macnab Callender, M.B., Ch.B., Lancaster, 1902
Robert Cranston Low, M.B., Ch.B., 1902
Benjamin Philip Watson, M.B., Ch.B., 1902

370
John Macdonald, M.B., C.M., Cumnor-Fife, 1902
Mabel Hardie, M.B., Ch.B., Stockport, 1902
John Sullivan, M.B., Ch.B., 1902
Charles William Somerville, M.B., Ch.B., China, 1902
Frank Mayes Willeox, M.B., C.M., 1902

375
John Tennant, M.B., C.M., Scunthorpe, 1902
Alexander Simpson Wells, M.R., F.R.C.S. Ed., Cape Town, 1902
Andrew Binny Flett, M.B., Ch.B., 1903
Francis Cavanagh, M.B., Ch.B., Sheffield, 1903

380
Alfred Lambré White, L.R.C.P. & S. Ed., Manchester, 1903
Robert Bathgate Johnston, L.R.C.P. & S. Ed., Penrith, 1903
William Llewellyn Jones, M.D., F.R.C.S. Ed., Merthyr-Tydfil, 1903
Robert Wilson Gibson, M.D., F.R.C.S. Ed., Orton, 1903
Philip Henry Mules, M.B., Ch.B., New Zealand, 1903

385
Andrew Francis Honyman Rabagliati, M.D., Ch.B., Bradford, 1903
Donald Gregor MacArthur, M.D., C.M., Aberfeldy, 1903
Henry Martyn Stumbles, M.B., Ch.B., Amble, 1903
Gilbert John Farie, M.B., Ch.B., Bridge of Allan, 1903
Cameron Robertson Gibson, M.B., Ch.B., Gretna, 1903

390
James Mathieson Kirkness, M.D., Ch.B., 1903
Katherine Jane Stark Clark, M.D., Ch.B., D.P.H., 1903
David Halliday Croom, M.D., Ch.B., 1903
Eleanor Russell Elder, M.B., Ch.B., Leith, 1903
Robert William Johnstone, M.D., Ch.B., 1903

395
James William Keay, M.D., Ch.B., 1903
Ivan Cochrane Keir, M.D., Ch.B., Melksham, 1903
Alexander Grant Macdonald, M.B., C.M., 1903
Charles John Shaw, M.D., Ch.B., Montrose, 1903
Frederick Porter, M.B., C.M., 1904

490
Sherwin Gibbons, M.D., Los Angeles, 1904
Russell Gerald William Adams, M.D., Ch.B., New Zealand, 1904
Duncan Campbell Lloyd Fitzwilliams, M.D., Ch.B., London, 1904
LIST OF FELLOWS.

Hugh Stevenson Davidson, M.B., Ch.B., 1904
Andrew Milroy Fleming, C.M.G., M.B., F.R.C.S. Ed., Rhodesia, 1904
Thomas William Edmondston Ross, M.B., Ch.B., Cardiff, 1904
John Benjamin Hellier, M.D., M.R.C.S. Eng., Leeds, 1904
John Thomas Williams, M.D., Tvekrharris, 1904
William Brown, M.B., Ch.B., Braemar, 1904
John Hepburn Lyell, M.D., C.M. Perth, 1904
Henry Hugh Roberts, M.D., Ch.B., Haddington, 1904
Thomas Garnet Stirling Leary, M.B., Ch.B., Australia, 1904
Robert Balfour Barnetson, M.B., Ch.B., Portobello, 1904
James Lochhead, M.D., Ch.B., Earlston, 1904
Arthur Charles Strain, M.D., Ch.B., West Hartlepool, 1904
Lewis Beesly, L.R.C.P. Ed., F.R.C.S. Ed., 1904
James Crawford Gibb Maenab, M.B., F.R.C.S. Ed., Dysart, 1904
Andrew Alexander Hall, M.B., Ch.B., 1905
Robert William Lessel Wallace, M.B., Ch.B., Bournemouth, 1905
Alfred Thom Gavin, M.B., C.M., Dunaskin, 1905
Alastair MacGregor, M.D., C.M., Market Harborough, 1905
Edmond Frost, M.D., C.M., Eastbourne, 1905
Edith Cochrane-Brown Pitts, M.B., Ch.B., New Zealand, 1905
James Brownlee, M.D., Ch.B., Middlesbrough, 1905
William Joseph Maloney, M.B., Ch.B., Cairo, 1905
Peter M’Ewan, M.B., Ch.B., Bradford, 1905
George Douglas Mathewson, M.B., Ch.B., 1905
Henry Grey Brown, M.B., Ch.B., 1905
Richard James Harley, M.D., L.R.C.P. & S.Ed., Murrayfield, 1905
Andrew Fleming, M.B., Ch.B., Corstorphine, 1905
Robert William Craig, M.D., Ch.B., Ford, 1905
Henry John Dunbar, M.D., Ch.B., 1905
Richard Alfred Blake, M.D., Ch.B., Pretoria, South Africa, 1905
John Herbert Gibbs, F.R.C.S.Ed., 1905
Alice Marion Hutchison, M.D., Ch.B., 1906
Barbara Martin Cunningham, M.B., Ch.B., India, 1906
W. T. Chonhall, M.D., Sydney, 1906
James Andrew Gunn, M.D., Ch.B., 1906
James Lawson Russell, M.B., Ch.B., Todmorden, 1906
Alexander Scott, M.B., C.M., Broxburn, 1906
Archibald Simpson, M.B., Ch.B., Darlington, 1906
Hirjee Nowon Anklesaria, L.R.C.P. & S.Ed., Bombay, 1906
Archibald Cotterell M’Master, M.B., Ch.B., 1906
Arthur James Lewis, M.B., Ch.B., 1906
Herbert Park Thompson, M.D., Ch.B., 1906
Samuel Davidson, M.D., C.M., Kelso, 1906
William Fowler Godfrey, M.B., C.M., 1906
H. St John Randell, M.B., Ch.B., Cape Colony, 1906
William Joseph Baird, M.B., Ch.B., Earls Barton, 1906
Edward Burnet, M.B., Ch.B., 1906
Arthur Samuel Walker, M.B., Ch.B., Ashley, 1906
Archibald Dunlop Stewart, M.B., L.R.C.S. Ed., 1906
Henry Fleet Gordon, M.D., L.R.C.P. & S. Ed., Winnipeg, 1906
Edward Alexander Elder, M.B., Ch.B., 1906
William Torrance Smith, M.B., Ch.B., Mid Calder, 1906
Arnold Davies, M.B., Ch.B., Menai Bridge, 1906
Thomas Graham Brown, M.B., Ch.B., 1906
ALPHABETICAL LIST OF FELLOWS.

John Bruce M'Moreland, M.B., Ch.B., .................. 1906
William Omand Sclater, M.B., Ch.B., .................. 1906
Archibald George Kirkwood Ledger, M.B., Ch.B., Darwen, 1906
Frederick James Greig, L.R.C.P. & S.I., Lt.-Col., R.A.M.C., Stirling, 1906
Duncan Lorimer, M.B., Ch.B., .................. 1906
Charles Robert Paterson Mitchell, Glasgow, .................. 1906
William David Osler, .................. 1906
Archibald George Kirkwood Ledger, M.B., Ch.B., Darwen, 1906
Frederick James Greig, L.R.C.P. & S.I., Lt.-Col., R.A.M.C., Stirling, 1906
Duncan Lorimer, M.B., Ch.B., .................. 1906
Charles Robert Paterson Mitchell, Glasgow, .................. 1906
William David Osler, .................. 1906
John Halley Meikle, M.D., .................. 1906
Frederick James Greig, L.R.C.P. & S.I., Lt.-Col., R.A.M.C., Stirling, 1906
Duncan Lorimer, M.B., Ch.B., .................. 1906
Charles Robert Paterson Mitchell, Glasgow, .................. 1906
William David Osler, .................. 1906
John Halley Meikle, M.D., .................. 1906
David Lloyd Roberts, M.D., F.R.C.P., Manchester, .................. 1906
James Sutherland Edwards, M.B., Ch.B., .................. 1906
Alexander Murray Drennan, .................. 1907
Mary Caroline Hamilton, L.R.C.P. & S. Ed., L.F.P.S. Glasg., Joppa, 1907
John Andrew Macleod, M.B., Ch.B., Inverness, 1907
Hugh Smith Reid, M.D., Ch.B., .................. 1907
Allan Macdonald Dick, M.B., Ch.B., .................. 1907

Date of Admission.

ORDINARY FELLOWS.

ARRANGED ALPHABETICALLY.

(a.) LIFE MEMBERS.

Adam, Dr George Rothwell, 84 Collins St., Melbourne, Aus., 1879
Anderson, Dr John, Newholm, Pitlochry, 1896
Ballantyne, Dr Harold S., Ashton, Eskbank, Dalkeith, 1897
Ballantyne, Dr J. W., 24 Melville Street, 1883
Barbour, Dr A. H. Freeland, 4 Charlotte Square, 1879
Barclay, Dr William John, Invercargill, New Zealand, 1899
Brock, Dr G. Sandison, 2 Via Veneto, Rome, 1894
Burnet, Dr Edward, 4 Pingo Place, 1906
Cavanagh, Dr Francis, 396 Ecclesall Road, Sheffield, 1903
Chipman, Dr W. W., 285 Mountain St., Montreal, Canada, 1895
Chouhall, Dr William T., 233 Macquarie St., Sydney, Australia, 1906
Craig, Dr John, 71 Bruntsfield Place, 1900
Craig, Dr William, 71 Bruntsfield Place, 1870
Croom, Dr David Halliday, 17 Alva St., 1903
Croom, Prof. Sir John Halliday, 25 Charlotte Square, 1870
Cumming, Dr John, 70 Bruntsfield Place, 1896
Dobell, Dr C. B., 1 Royal Well Terrace, Charlton, Cheltenham, 1904
Dunat, Dr Henry Aylmer, 7 Devonshire Place, Durban, Natal, South Africa, 1898
Fleming, Dr Andrew M., C.M.G., Salisbury, Rhodesia, 1904
Fowler, Dr Simson, Waverley, Juniper Green, 1892
Frost, Dr Edmund, Chesterfield, Meads, Eastbourne, 1905
Gibson, Dr R. Wilson, Town Head House, Orton, Tebay, 1908
Grant, Dr Lewis, Neston, Cheshire, 1896
Hart, Dr D. Berry, 5 Randolph Cliff, 1877
Inch, Dr Robert, Gorebridge, 1887
Johnston, Dr D. W., P.O. Box 2022, Johannesburg, Transvaal, 1892
Livingston, Dr George R., 47 Castle Street, Dumfries, 1898
ALPHABETICAL LIST OF FELLOWS.

M'Arthur, Dr W. Taylor, 259 S. Figueroa St., Los Angeles, California, 1901

M'Brearty, Dr J. Wilson, Greymouth, West Coast, New Zealand, 1899

M'Farlane, Dr Hilda M., Bendameer, Burntisland, 1901

Macnab, Dr James, C. G., The Towers, Dysart, 1904

Maddox, Dr Ralph H., I. M. S., c/o Messrs Thomas Cook & Son, Ludgate Corner, London, E.C., 1887

Martin, Dr Christopher, Cleveland House, George Road, Edgbaston, Birmingham, 1888

Melville, Dr Kenmure, 2 Nile Grove, 1900

Morgan, Dr T. H., Gympie, Queensland, Australia, 1895

Mules, Dr P. Henry, Bishopdale, Nelson, New Zealand, 1903

Pereira, Dr A. A. Jervis, Consul de Grèce en Mozambique, Lourenço Marques, Delagoa Bay, South Africa, 1888

Pitts, Dr Edith Cochrane-Brown, Strathmore, Christ Church, New Zealand, 1905

Ponder, Dr Charles F., Glenorchy, Hobart, Tasmania, 1892

Ranking Dr J. E., Tunbridge Wells, 1881

Ross, Dr James F. W., 481 Sherbourne Street, Toronto, Canada, 1889

Russell, Dr J. Lawson, West Lodge, Tornorden, 1906

Simpson, Dr G. F. Barbour, 50 Melville Street, 1898

Simpson, Dr W. Petrie, Viewbank, Bathgate, 1892

Simpson, Dr H. J. F., 36 Grosvenor Street, London, W., 1897

Struthers, Dr John, Nqamakwe, Transkei, South Africa, 1895

Vatve, Dr Gopal Govind, c/o H. H. The Rajah of Miraj, Bombay, India, 1894

Wells, Dr A. Simpson, 56 Orange Street, Cape Town, South Africa, 1903

(b.) ANNUAL SUBSCRIBERS.

Aarons, Dr S. Jervois, 14 Stratford Place, London, W., 1896

Adams, Dr Russell G. W., Langley Dale, Blenheim, New Zealand, 1904

Affleck, Dr J. O., 38 Heriot Row, 1869

Ainslie, Dr A. C., 49 Minto Street, 1898

Aitken, Dr C. J. Hill, 19 Church Street, corner of Oxford Street, East London, South Africa, 1902

Alexander, Dr W. B., 8 Blenheim Place, 1882

Allison, Dr J., Fuller House, Kettering, Northampton, 1888

Anderson, Dr Fred. T., 20 Inverleith Row, 1892

Andrew, Dr James, 2 Atholl Crescent, 1868

Anklesaria, Dr H. N., 12 Colaba Causeway, Bombay, India, 1906

Archibald, Dr J., Hazelden, Wimborne Road, Bournemouth, 1877

Armitage, Dr J. A., 58 Waterloo Road Wolverhampton, 1886

Armour, Dr E. F., 6 Bruntsfield Terrace, 1889

Aspland, Dr W. H. Graham, Church of England Mission, Peking, China, 1901

Baildon, Dr F. J., 42 Houghton Street, Southport, 1887

Baird, Dr W. J., Earl's Barton, Northants, 1906

Ballantyne, Dr A., Ashton, Eskbank, Dalkeith, 1870

Barnardo, Dr F. A. F., Capt. I. M. S., Ferozepore, Punjab, India, 1899

Barnetson, Dr Elsie M., 31 Morton Street, Joppa, 1907
<table>
<thead>
<tr>
<th>Name</th>
<th>Address</th>
<th>Date of Admission</th>
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<tr>
<td>Barnetson</td>
<td>Dr R. Balfour, 31 Morton Street, Portobello</td>
<td>1904</td>
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<td>Barrington</td>
<td>Dr Fournier, 213 Macquarie Street, Sydney,</td>
<td>1884</td>
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<td>Australia</td>
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<td>Barry</td>
<td>Dr W. J. M., 29 Plymouth Road, Penarth, Glamorgan</td>
<td>1898</td>
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<td>Bateman</td>
<td>Dr F. J. Harvey, Heath End, Blackheath, Lond., S.E.</td>
<td>1898</td>
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<td>Beatty</td>
<td>Dr Samuel, Craigvar, Pitlochry,</td>
<td>1888</td>
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<td>Beesley</td>
<td>Dr R. W., 135 Deane Road, Bolton,</td>
<td>1894</td>
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<td>Beesly</td>
<td>Dr Lewis, 13 Torphichen Street,</td>
<td>1904</td>
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<td>Bell</td>
<td>Dr J. Lumsden, Drffield, Yorkshire,</td>
<td>1884</td>
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<td>Bentley</td>
<td>Dr G. H., Loanhead House, Kirkliston,</td>
<td>1877</td>
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<td>Beveridge</td>
<td>Dr Robert, 9 James Place, Leith,</td>
<td>1895</td>
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<td>Blair</td>
<td>Dr J. A., 16 Windsor Terrace, Newcastle-on-Tyne,</td>
<td>1887</td>
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<td>Blake</td>
<td>Dr R. A., Padnoller, Sunnyside, Pretoria, South Africa,</td>
<td>1905</td>
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<td>Bleloch</td>
<td>Dr A., 26 Gilmore Place,</td>
<td>1876</td>
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<td>Boddie</td>
<td>Dr G. P., 73 Bruntsfield Place,</td>
<td>1889</td>
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<td>Booth</td>
<td>Dr William, 2 Minto Street,</td>
<td>1891</td>
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<td>Borrowman</td>
<td>Dr Philip G., Galvelmore, Crieff,</td>
<td>1883</td>
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<td>Boxill</td>
<td>Dr N. L., Buttalls, St George, Barbados,</td>
<td>1888</td>
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<td>Brand</td>
<td>Dr Eden, Bellfield, Banchory,</td>
<td>1903</td>
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<td>Brewis</td>
<td>Dr N. T., 6 Drumshaugh Gardens,</td>
<td>1883</td>
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<td>Brewis</td>
<td>Dr R. Adams, The West Gate, Dursley, Gloucestershire,</td>
<td>1888</td>
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<td>Broad</td>
<td>Dr B. W., The Sanitorium, Cardiff,</td>
<td>1895</td>
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<td>Brodie</td>
<td>Dr T. Scott, 21 Belhaven Terrace, Wishaw,</td>
<td>1900</td>
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<tr>
<td>Brodie</td>
<td>Dr W. Haig, 6 St Stephen's Road West, West</td>
<td></td>
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<td></td>
<td>Ealing, London, W.</td>
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<tr>
<td>Brown</td>
<td>Dr H. Grey, 1 Cluny Avenue,</td>
<td>1905</td>
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<td>Brown</td>
<td>Dr J. Graham, 3 Chester Street,</td>
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Darling, Dr T. Brown, 18 Merchiston Place, 1899
Darling, Dr William, 2 Warrender Park Terrace, 1900
Davidson, Dr D. G., 9 Granville Terrace, 1892
Davidson, Dr H. S., 4 Dundas Street, 1904
Davidson, Dr Samuel, Kelso, 1906

Davies, Dr Arnold, Grammar School, Menai Bridge, North Wales, 1906
Davies, Dr E. T., 1 St Domingo Grove, Liverpool, 1887
Dendle, Dr Frank, Overton House, Spring Grove, Isleworth, 1892
Deverell, Dr H. C., 12 Windsor Street, 1888
Dewar, Dr M., 24 Lauriston Place, 1891
Dick, Dr A. M., Edinburgh University Union, 1907
Dickie, Dr J. T., 37 Lauriston Place, 1900
Dickson, Dr George, 9 India Street, 1887
Dickson, Dr George, 14 Ardmanil Terrace, 1891
Dobie, Dr D. Robertson, Heathfield, Crieff, 1894
Donald, Dr C. W., 28 Portland Square, Carlisle, 1896
Drennan, Dr A. Murray, 39 Woodburn Terrace, 1907
Dunbar, Dr H. J., 1 Kew Terrace, 1905
Duncan, Dr A. J., 158 Nethergate, Dundee, 1879
Duncan, Dr A. S., 1890

Dunlop, Dr H. M., 20 Abercomby Place, 1884
Dyer, Dr E. W., c/o Messrs Webster, Steel & Co., 5 East India Avenue, Leadenhall Street, London, E.C., 1906
Eason, Dr John, 58 Northumberland Street, 1899
Easterbrook, Dr A. M., Arnprior, Gorebridge, 1893
Easterbrook, Dr C. C., Glengall, Ayr, 1892

Easton, Dr Thomas, 23 East Park Terrace, Southampton, 1894
Eden, Dr T. Watts, 26 Queen Anne Street, Cavendish Square, London, W., 1888
Edington, Dr D. C., 4 Portland Place, Penrith, 1897
Edwards, Dr J. S., University Union, 1906
Elder, Dr Edward A., 6 Torphichen Street, 1906
Elder, Dr Eleanor, 4 John's Place, Leith, 1903
Elder, Dr W. Nicol, 6 Torphichen Street, 1879
Evans, Dr O. F., 20 Princes Avenue, Liverpool, 1890
Parie, Dr G. J., Strathallan House, Bridge of Allan, 1903
Farquharson, Dr J. D., 242 Westgate Road, Newcastle-on-Tyne, 1890

Faulkner, Dr Hugh, St John's House, Banbury, Oxon, 1902
Felkin, Dr R. W., 12 Oxford Gardens, North Kensington, London, W., 1884
Ferguson, Dr J. Haig, 7 Coates Crescent, 1885
Ferguson, Dr P. J. H., 9 Windsor Street, 1900
Ferguson, Dr R. T., Middlemarch, Anstruther, Fife, 1895
Finlay, Dr W. A., 50 Trinity Road, 1880
Fitzwilliams, Dr D. C. L., 64 Brook Street, Grosvenor Square, London, W., 1904
Fleming, Dr Andrew, St John's Road, Corstorphine, 1905
Flett, Dr A. B., 60 George Square, 1903
Forbes, Dr J. Christie, Ardveigh, Liberton, 1898

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ALPHABETICAL LIST OF FELLOWS.

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<td>454</td>
<td>Vickery, Dr W. H.</td>
<td>1 Trewartha Park, Weston-super-Mare</td>
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<td>455</td>
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<td>St John's, Melrose</td>
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<td>456</td>
<td>Walker, Dr Arthur S.</td>
<td>Ashleigh, Middlesborough</td>
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<td>457</td>
<td>Wallace, Dr Abraham</td>
<td>39 Harley Street, London, W.</td>
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<tr>
<td>458</td>
<td>Wallace, Dr R. W. L.</td>
<td>The Royal Boscombe and West Hants Hospital, Bournemouth</td>
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<td>459</td>
<td>Watson, Dr B. P.</td>
<td>6 Castle Terrace</td>
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<tr>
<td>460</td>
<td>Watson, Dr R. H.</td>
<td>Rousden, Park Road, Hamilton</td>
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<tr>
<td>461</td>
<td>Waugh, Dr John</td>
<td>36 Finsbury Pavement, London, E.C.</td>
</tr>
<tr>
<td>462</td>
<td>Webster, Dr A. D.</td>
<td>18 Minto Street</td>
</tr>
<tr>
<td>463</td>
<td>Webster, Prof. J. C.</td>
<td>706 Reliance Building, 100 State Street, Chicago, U.S.A.</td>
</tr>
<tr>
<td>464</td>
<td>White, Dr A. L.</td>
<td>Tantallon, Manchester Road, Castleton, Manchester</td>
</tr>
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<td>465</td>
<td>Wilcockson, Dr G.</td>
<td>Morton, Whitley Cross, Reading</td>
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<td>466</td>
<td>Wilkie, Dr James</td>
<td>Selville House, Portobello</td>
</tr>
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<td>467</td>
<td>Wilkinson, Dr George</td>
<td>3 Dingle Hill, Liverpool, S.</td>
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<tr>
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<td>Will, Dr J. C.</td>
<td>Ogilvie, 17 Bon-Accord Square, Aberdeen</td>
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<tr>
<td>469</td>
<td>Williams, Dr J. T.</td>
<td>Bronygar, Treharris, Glamorgan-shire</td>
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<td>470</td>
<td>Wilcox, Dr F. Mayes</td>
<td>8 Strathearn Road</td>
</tr>
<tr>
<td>471</td>
<td>Wilson, Dr James</td>
<td>53 Inverleith Row</td>
</tr>
<tr>
<td>472</td>
<td>Wise, Dr Robert</td>
<td>290 Ivylede Road, Nunhead, London, S.E.</td>
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<tr>
<td>473</td>
<td>Wood, Dr Thomas</td>
<td>182 Ferry Road</td>
</tr>
<tr>
<td>474</td>
<td>Woodside, Dr J. T.</td>
<td>Stewartstown, Co. Tyrone</td>
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<td>Wright, Dr W. F.</td>
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</tr>
<tr>
<td>476</td>
<td>Yoe, Dr Richard T.</td>
<td>2103 Floyd Street, Louisville, Kentucky, U.S.A.</td>
</tr>
<tr>
<td>477</td>
<td>Young, Dr H. C. Taylor</td>
<td>209 Macquarie Street, Sydney, New South Wales</td>
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<td>478</td>
<td>Young, Dr Peter A.</td>
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### TRANSACTIONS

**OF THE**

### EDINBURGH OBSTETRICAL SOCIETY,

**FOR SESSION LXVIII., 1906-1907.**

---

**Meeting I.—November 14, 1906.**

Dr J. W. Ballantyne, President, in the Chair.

I. The Treasurer (Dr Wm. Craig) made his Annual Statement, which is given below:

<table>
<thead>
<tr>
<th>Income</th>
<th>Amount</th>
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<tbody>
<tr>
<td>Balance from Session 1904-1905</td>
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</tr>
<tr>
<td>Arrears</td>
<td>£10 1 0</td>
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<tr>
<td>Bank Interest on Deposit Receipts</td>
<td>9 5 3</td>
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<tr>
<td>Interest on Consols</td>
<td>6 0 8</td>
</tr>
<tr>
<td>Entry Fees from 28 new Ordinary Fellows</td>
<td>29 8 0</td>
</tr>
<tr>
<td>Annual Contributions from 380 Ordinary Fellows</td>
<td>95 0 0</td>
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<tr>
<td>Composition for Life-Membership from Four Ordinary Fellows</td>
<td>21 0 0</td>
</tr>
<tr>
<td><em>Transactions</em> sold</td>
<td>4 2 0</td>
</tr>
<tr>
<td><strong>Total Income</strong></td>
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<table>
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<tr>
<th>Expenditure</th>
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<td>Shorthand Reporters</td>
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<tr>
<td>Commission to Collector</td>
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</tr>
<tr>
<td>Doorkeeper's Salary</td>
<td>1 16 0</td>
</tr>
<tr>
<td>Oliver &amp; Boyd's Account for Vol. XXXI of Society's <em>Transactions</em> (550 copies)</td>
<td>102 12 6</td>
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<tr>
<td>Oliver &amp; Boyd's Account for Printing Billets, Postages, etc.</td>
<td>30 3 0</td>
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<tr>
<td>Rent of Rooms and Carriage of Books</td>
<td>5 2 0</td>
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<tr>
<td>Waterston &amp; Sons' Account</td>
<td>11 9 9</td>
</tr>
<tr>
<td>The Secretaries and Editor, for Postages</td>
<td>0 8 0</td>
</tr>
<tr>
<td>Blocks for Illustrations</td>
<td>8 2 6</td>
</tr>
<tr>
<td><strong>Total Expenditure</strong></td>
<td><strong>£173 15 2</strong></td>
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</table>

| Balance to New Account          | 564 7 11   |
|                                 | **£738 3 1** |

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1 Of this Balance, the sum of £250, 10s. 6d. is invested in 21 per cent. Consols.

---
The accounts were audited by Dr Nicholson and Dr Dewar, and found correct.

Dr Freeland Barbour, seconded by Dr Lamond Lackie, moved a hearty vote of thanks to the Treasurer, which was unanimously accorded.

II. The Society then proceeded to the election of Office-bearers for the present Session, and the President announced the result as follows:—President, Dr J. W. Ballantyne; Vice-Presidents (Senior), Dr Berry Hart; (Junior), Dr Wm. Fordyce; Treasurer, Dr Wm. Craig; Secretaries, Dr Lamond Lackie and Dr Barbour Simpson; Librarian, Dr Haultain; Editor of Transactions, Dr Angus Macdonald; Members of Council, Dr N. T. Brewis, Dr Munro Kerr, Dr Freeland Barbour, Dr Haig Ferguson, Sir Halliday Croom, Dr Samuel Sloan (Glasgow), Dr Macrae Taylor, Dr Scott Carmichael.

IV. INAUGURAL ADDRESS ON THE FUTURE OF OBSTETRICS.

By J. W. Ballantyne, M.D., F.R.C.P., F.R.S. Edin., Lecturer on Midwifery and Gynaecology, Surgeons’ Hall and Medical College for Women, Edinburgh; Physician to the Royal Maternity and Simpson Memorial Hospital, Edinburgh, etc.

LADIES AND GENTLEMEN, Fellows of the Edinburgh Obstetrical Society,—“To inaugurate,” said Dr Johnson, in that famous Dictionary of his, means “to begin with good omens,” or simply “to begin.” His worthy follower in the art and science of lexicography, Dr James A. H. Murray, in that marvel of patient research and brilliant scholarship, the New English Dictionary on Historical Principles, after quoting Johnson’s early definition, proceeds to amplify and lead out the meaning of the rich and suggestive word inaugurate in this manner: “to begin (a course of action, period of time, etc., especially of an important character) with some formal ceremony or notable act; to commence, enter upon, to introduce, usher in, to initiate.” And then our fellow-countryman, with that dry humour which breaks out now and then even in his Dictionary, places within brackets the following additional definition: “inaugurate, sometimes merely grandiose for begin.” Now I feel grateful to Dr Murray for so slyly slipping that bracketed addendum into his already full page; for I see, with relief, that I can shelter myself behind it, and can plead that if this address fall short of being a worthy, a notable, and an auspicious ceremonial act at the commencement of this, the sixty-eighth session of our Society’s history, it can at least claim to be, beyond any cavilling, a beginning.
A valedictory address naturally enough concerns itself with what is past, and has a ring of finality and farewell in it, *vale! vale!* sounding out from it with pathetic cadence; but an inaugural address looks forward to the future and dwells upon it, not without hope and expectation of the good and great things that are to come out of it, for at the very heart of the word *inaugural* lies the root *augur*, and the augur had, of all men, to be always looking forward. The Roman augur was, as we remember, or, as Dr Murray will tell us, if we have forgotten, "a religious official whose duty it was to predict future events and advise upon the course of public business, in accordance with omens derived from the flight, singing, and feeding of birds, the appearance of the entrails of sacrificial victims, and other portents." Now, although the primary visual image thus conjured up can hardly be said to reside any longer in the derivative words *inaugural*, *augury*, and *august*; although, also, the augur himself, with his staff and auspicious rites, has long since passed into the thick mists which cover even the brightest phenomena (and he was not very luminous ever) of a bygone age, uttering his *vale!* yet the augural spirit is not dead in these days, but is as living and insistent now as it ever was during all the centuries which have elapsed since man first began to ask questions about himself and his future. In vulgar form it is seen in the irresponsible and sensational sisterhood of the lady palmists, the crystal-gazers, and the Sibylline vendors of wonder-working remedies and charms. It assumes scientific shape in the daily forecasts of the weather to be expected in these islands, although it must be owned that the meteorologist, being limited to observations made upon the surface of the earth, and having no stations high up among the clouds, sometimes fails as completely in his foretelling as does the itinerant gipsy. In our own profession we seek, in a legitimate and proper fashion of course, to pierce the veil which hides the future from us, and we have recourse to the bacteriologist with his opsonic index
and Widal test, to the histologist with his methods of cyto-
diagnosis and differential blood-counts, and to the cryoscopist
with his osmotic and ionic actions.

There is, in a sense, the would-be augur in us all; and,
having now in hand the giving of an inaugural address, I
bethought me that I also might try to play the augur’s part and
endeavour to forecast the future of obstetric theory and practice.
If I fall far short of what you may expect; if I fail to please
even myself (as is indeed very likely); if the manner and form
of the forecasting be contrary to the traditions of Inaugural
Addresses in learned societies; if, in striving not to be dull, I
become extravagant; and if, in seeking to restrain fancy I run
the risk of being prosaic; then let the blame rest upon the
eymologies which have led me into such difficult territories,
and please let it be remembered that after all “inaugurate”
may be only “grandoise for begin.”

**In Touch with the Future.**

I suppose that it was one evening in the autumn that the
events I am going to relate apparently took place. I had, I
fancy, been reading about some of the marvels of modern
psychology, had been learning how a personality can be
dissociated (on paper at least), had been grasping, with some
difficulty, that the *ego* is not one but two or three, and had
been trying, without entire success, to understand the mysteries
of the subliminal and the supraliminal. Then I had begun to
wonder what subject I should choose for an inaugural address
to the Society which had so highly honoured me by placing me
in its Presidential Chair. I was not finding the question one
which admitted of easy solution. My mind, in freakish fashion,
began to hunt ideas, starting a new one every few minutes, and
chasing it until another idea suddenly emerged from the sub-
conscious somewhere of brainland and engaged its attention.
The house was very quiet, and my thoughts wandered on, undisturbed by any extraneous interruptions, save the occasional fall of a cinder into the fireplace, or the coming of a sort of breathless bark from my dog, enjoying doubtless the exciting pleasure of a subconscious chase after some old enemy. Suddenly the telephone gave one of those undecided, apocopated, monosyllabic tinkles that we usually leave unanswered, and regard as due to a fault in the apparatus or an error of the operator. On this occasion, however, I put my ear to the instrument and whispered "Hullo!" To my surprise an answering "Hullo!" very faint and distant, but quite distinct, came back. "Who are you?" I asked.

"One nine four nought," was the reply.

"Thank you," I said, "but I don't want to know your number; I wish to know who you are, and where you are ringing up from."

"I am not ringing up from anywhere," said the voice; "you are on the Time Exchange, and until you grasp that notion firmly you cannot understand who I am."

"I beg your pardon," I exclaimed in great surprise; "I have heard of many Exchanges, but never of the Time Exchange."

"That I can quite well believe," replied my unknown correspondent. "It was only on rare occasions that you in the beginning of the Twentieth Century got switched on to the Time System instead of the Place System; you happen to have been attached to-night, and I thought I might venture to ring you up and have a talk. So, now do you know who I am?"

"I am really very sorry," I replied, "but I haven't an idea."

"I thought you might have guessed," he said. I am an official of the Edinburgh Obstetrical Society, and the time from which I am ringing you up is one nine four nought, or, if you prefer it, nineteen hundred and forty, the Centenary year of the Society's existence. You are not forgetting," he added, "that our Society was born in 1840, having been conceived, so to say, in the last month of 1839."
For the moment I was too surprised to answer this startling communication from the future; but I soon recovered myself and made a suitable reply to the Centenary Official's remark.

**The Future of Obstetrics.**

The next question that came to me over the wires stimulated my curiosity and determined the course of our conversation: it was, "Now, is there nothing you would like to ask me about obstetrics in 1940?"

"If you will let me get my thoughts gathered together," I replied, "there are hundreds of questions I should like to ask you."

"I do not promise to answer them all," replied Nineteen Forty as I may call him, "for there are some matters which I could not make plain to you without a great deal of preliminary explanation, and we have not time for that; but I will do what I can to satisfy your curiosity."

"What sort of preliminary explanation do you mean?"

"Well, this simply: Obstetrics has not been the only subject of study in which there have been advances and discoveries; there have been great changes in surgery, still greater ones in medicine, and a revolution in physics and physiological and pathological chemistry; it would require a series of lectures to bring your general knowledge of these matters up to the level required for the perfect understanding of all that has been accomplished in obstetrics."

"I fully grasp the situation," was my reply. "I am now in a position similar to that in which an old friend of mine found himself in 1906: he had been in Central Africa for fifteen or twenty years, and he came back to his native land to find the pathologists speaking the (to him unknown) language of bacteriology. He had the greatest difficulty in making up leeway, and indeed never quite succeeded in doing so."
"You are really in a worse state than he was," said Nineteen Forty, "but I shall try to make things as simple as I can."

**TEACHING OF OBSTETRICS.**

"Being a teacher," I now said, "I should like to hear about your methods of conveying obstetric information in the year 1940."

"Ah," said my correspondent, "you were, as perhaps you suspected, on the eve of great changes in your teaching methods in the year 1906. You were under the intolerable burden of having to give fifty or one hundred hours of purely theoretical teaching in order to fulfil the requirements of the examining boards. You delivered, each day, a lecture of an hour's length, containing usually a bald statement of a number of facts discoverable in almost any reputable text-book upon the subject; you occasionally tried to relieve the weariness and monotony of your exposition by a passing reference to a specimen or a diagram, or by the introduction of an anecdote or a personal experience; you adopted a didactic or a grandiloquent style, or, worse still, you read slowly and closely from a bulky bundle of manuscript notes. You occasionally put forceps on to the doll in the phantom, but you lectured all the time, and you expected your students to be taking down your words in their note-books, when you were directing their attention to the movements of your hands in the act of inserting the blades of the instrument. All this was altered at once when in the University and College Regulations the words 'hour's instruction' took the place of 'lecture'; instead of having to give fifty or a hundred lectures, you were asked to supply fifty or a hundred hours of obstetric instruction, a very different thing, as you can imagine. Of course some lecturers preferred to go on in the old way, and they were at liberty to do so; but many chose to vary the methods which had been in vogue. Here, for instance, is a plan
BY DR. J. W. BALLANTYNE.

which was adopted not so long after the time at which you now are. Each student was supplied with a neatly printed and fairly full statement of the subject of demonstration to be taken up on the following day; to this were attached two or three blank sheets for the noting down of additional facts, for the drawing of a few diagrams, or for the indication of the page or pages in a large text-book where full details might be found. Having perused this syllabus or epitome the night before, the student came prepared to follow and appreciate the teaching his teacher was ready to give him. It might take the form of a demonstration of pelvimetry in normal and malformed pelvises. On a number of tables were several models of the well-formed and the deformed pelvis, with callipers of various kinds lying beside them. The teacher at first gave a very concise and clear statement of the measurements of the diameters in the normal and in the abnormal pelvis, and of the bearing which these measurements had upon labour, and indicated the various ways in which the diameters could be estimated. The class then broke up into sections for the application of principles which had been enunciated; and, supposing there were a hundred students, ten men went to each of ten tables, and tested the methods and familiarised themselves with the apparatus. On another day the demonstration would consist of the examination of a large number of slides under microscopes, illustrating the appearances of placentas from two months up to the full term, or of the uterine musculature at various stages of development. On another day the electric phantom would be brought into action."

"I beg your pardon," I here interjected; "what was the electric phantom?"

"It was a skilfully made model of the abdomen and pelvis with the full-time uterus inside. By a somewhat complex apparatus, a doll representing the fetus could be expelled from the interior through the canals, exhibiting in its progress the
whole mechanism of labour. The rate could be regulated to a nicety, so that a twelve hours' or a twelve minutes' labour could be imitated; further, the process could be interrupted at any stage (when the head was on the perineum, for instance), and the details explained. A student could be placed in charge of the phantom labour at any time, the most favourite being of course the period of vulvar dilatation and of the passage of the head; if he made any mistake in the method he adopted for the delivery of the head and for the safety of the perineum, he could be checked and shown the right plan. By the touching of a button the pelvis could be narrowed at the inlet or outlet, or be deformed in other ways, and by the use of dolls of various sizes, representing mature, premature, and post-mature foetuses, different kinds of delay or varieties of mechanism could be exhibited. The dolls' heads were so constructed as to permit the occurrence of moulding."

"I can quite understand the value of teaching such as you describe," I said to Nineteen Forty; and I suppose it was supplemented by clinical instruction in the Maternity Hospital?"

"That, of course," was the reply, "and also at the various small maternity sub-centres, scattered over all our large cities. They were sets of two or three rooms, with accommodation for ten or twelve patients, under the charge of an assistant obstetric officer and one or two nurses; in them normal or nearly normal cases were confined, leaving the central institution for the complicated and operative labours. But these were comparatively early changes in our teaching methods," went on my informant; "others soon followed. One, for instance, was the introduction of the kinematograph and the gramophone. By a perfecting of the methods of obtaining differential radiograms, it became possible to represent internal processes, such as the passage of a stone down the ureter, or of the infant through the passages, by the kinematograph. The pictures thus obtained were thrown
upon the screen and utilised in the teaching of obstetrics; in
this way, for instance, the mechanism of labour could be shown
and the somewhat cumbersome and uncertain electric phantom
replaced. By the gramophone we were able to reproduce and
illustrate the cry of the parturient woman in the different stages
of labour, and the various sounds made by healthy, by premature,
and by semi-asphyxiated infants, as well as by those whose
birth had been accomplished by the use of forceps. The different
kinds of movement made by the fœtus in utero (rotatory,
calcitrant, vibratory, or singultant) could be shown by the kine-
mematograph, while the neophone reproduced accurately the fœtal
heart sounds and the uterine bruit.”

“Stop! stop!” I said, “I cannot follow you any further in
your novelties of obstetric teaching.”

“I was afraid you would begin to find there were difficulties
in understanding all the details,” was my friend’s reply, “and
yet I have only begun to name some of the new methods
invented by science for the imparting and for the testing of
obstetric knowledge. I was going on to tell you of the micro-
kinematograph, by which all embryological processes and
organogenetic readjustments could be first represented and
then reproduced upon the screen for teaching purposes. I
intended then to give you an idea of the automatic and
registering gramophone for use at oral examinations, which
excluded all conscious and unconscious bias in the testing of
candidates for degrees, for it rolled out questions in an ex-
pressionless tone of voice, and recorded without feeling the
answers given in reply; and I was hoping to have interested
you in the great development of clinical teaching which took
place soon after 1906, and more especially after an examination
in Clinical Obstetrics was insisted upon by nearly all universities.
Perhaps, however, it would be well if I passed on to some other
subjects, for, after all, the advances in the clinical teaching of
Midwifery were already indicated and could be recognised and
foretold by any thinking and observant man, even at the time at which you are."

Obstetrical Societies.

"What, then, may I ask, have you to tell me about our own and kindred societies in the Twentieth Century?" was the next question which I put to Nineteen Forty.

"There was a great and beneficial change in the life and activities of the various learned societies in Edinburgh soon after 1906. By means of a munificent gift from a wealthy man with strong scientific leanings, a large central hall to serve as a meeting-place for all the Edinburgh societies was built. Our own Society was, of course, one of these. But this was found to be a suitable occasion for a rearrangement of the energies and spheres of the different learned bodies, and so gynaecology was united with surgery to form a large surgical society, the Obstetrical Society devoted itself entirely to midwifery, the Medico-Chirurgical Society became the Royal Medical Society by fusion with the old undergraduate organisation bearing that name (the surgical members of both allying themselves with the newly formed surgical society), and the Pathological Club increased its membership and instituted Anatomical, Physiological, and Psychological Sections. Similarly, the other scientific societies rearranged themselves. Each society had its own afternoon or evening in the month; but, in addition, there were conjoint meetings on special occasions, when, for instance, the Medical, Surgical, and Obstetrical Societies would unite together for the discussion of subjects in which each had an interest. The Royal Society was, as it were, the mother of us all. Through the benefactions of the generous donor already mentioned, the fee for membership was made quite a nominal one, and the member's ticket admitted to all the meetings, but it only conferred powers of contributing to or speaking at one of the societies and at the conjoint meet-
ings in which that society took part. The most wonderful part of the hall of the societies was the phonograph room; at least it will seem so to you," said my friend, Nineteen Forty. "This room," he continued, "was in telephonic communication with all the learned societies in the world, and if you wished to hear the papers read at different places you had only to switch yourself on to any one you might choose. In this way, you missed none of the asides and interruptions which are so often the very soul and life of a discussion. Furthermore, the speaker, knowing that his words were audible all over the world, was very careful as regards his statements, and rarely claimed priority for any suggestion, therapeutic or otherwise."

"But what about understanding the language in which the discussion was taking place?" was the question which I could not prevent myself from here asking.

"You surely do not think for a moment that the world, and especially the scientific world, was content to go on till 1940 without adopting a universal language," was the answer I received to my question; and I was so taken aback by the tone of reproach in my friend's voice that I had no remark ready, and so lost my opportunity of finding out what the universal language was. Before I had time to recover myself I found that Nineteen Forty was beginning to describe to me some of the changes which had taken place in the practice of midwifery, and as I did not wish to miss anything of what he was saying, I had to give him my attention.

**Obstetric Practice.**

"You must know," he was saying, "that the discovery which revolutionised obstetric practice in the twentieth century was that of a tocophoric serum."

"What was that?" I asked.

"A serum obtained from the blood of pregnant animals which had been treated with cultures from the blood of a
human placenta, obtained preferably from a case of placenta praevia," was the reply. "Its introduction into use gave us the means of safely, speedily, and certainly inducing healthy action of the uterus. In this way a labour could be brought on and a child born with almost the same degree of certainty with which it used to be possible to perform a surgical operation. The day, and in some cases even the hour, could be arranged, and a midwifery case became a certain part of the day's work instead of an uncertain contingency in the middle of any night. In the nineteenth century the introduction of anaesthesia abolished the pains of labour and brought in a new era of obstetric advance; in the twentieth century the discovery of this tocopheric serum did away with the uncertainty of the supervention of labour, and had an almost equally great influence upon our subject. The profession earned the gratitude of countless patients, who said something like this: 'In the past you relieved our pains and sent us to sleep in the midst of our agony; but now you have released us also from the intolerable bondage of our uncertainty, and we thank you for this new boon.' Post-mature confinements, with their risks and delays, were in this manner done away with; a time suitable alike for patient, nurse, and obstetrician, and calculated as accurately as possible to coincide with the full term of pregnancy, was fixed upon; and the labour was conducted with the same care and aseptic precautions as a gynaecological or other operation."

"But what about premature labours?" was the question with which I here checked my friend's flow of description.

"I expected that remark," was his reply. "You must know that the special investigation given to the pathology of pregnancy in the early part of the twentieth century bore good fruit in the discovery of means of successfully preventing the premature termination of pregnancy, and such abnormal labours became very rare. At the same time the tocopheric
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serum gave us a means of interrupting pregnancy, when for medical or obstetric reasons (such as pelvic contractions, heart disease, etc.) it was regarded as desirable so to do."

**THE FALLING BIRTH-RATE.**

"But the great principle of obstetric practice in the twentieth century," continued my informant, "was the securing of the safety of the infant."

"You mean," I said, "that the falling birth-rate forced obstetricians everywhere to reconsider all their methods, operative and otherwise, from the standpoint of the life of the infant?"

"Yes, indeed," was the reply; "and I shall now try to make this plain to you. I must introduce some statistics to bring out my meaning, but you, of course, can take your ear from the instrument if you are bored."

"Truly, I shall do no such thing," I protested.

"In 1906 the falling birth-rate in our own and in all civilised lands was at length beginning to attract the attention it deserved. The birth-rate for England and Wales was 35·2 for the decade 1865-1874; it was 34·7 for the next decade; for the next period of ten years (1885-1894) it had fallen to 31·2; and during the last ten years (1895-1904) it has sunk to 29·0. So much for England and Wales. Sir Henry Littlejohn had a still more depressing account to give of the capital of Scotland. In 1871 the natality in Edinburgh was 34·8 (almost the same as that of England and Wales at the same time); in 1881 it was 32·2; in 1891, 28·2; in 1901, 24·99; and in 1905 it was 22·99.¹ Even with these figures

¹ The figures for 1906 are now available: the number of births was 7042, and the birth-rate was 22·41 per 1000. The descent, therefore, is steadily going on, and the number of babies born in 1906 is actually less than the number in 1881, although the population has so greatly increased.
before you the full gravity and meaning of the position was not recognised in 1906. In order to grasp the significance of the movement, look at the matter thus. In 1881, when the population of Edinburgh was (in round figures) 228,000, the number of babies born was 7360; in 1905, when the population had increased to 336,000, the number of babies born was 7741, whereas, if the rate had been maintained, it ought to have been 10,846. There was therefore a shortage of over 3000 babies. It is only fair to the country in general to state that Edinburgh occupied almost the worst position in this matter of a falling birth-rate. Of the sixteen large towns of England and Scotland, there was only one (Bradford) that had a lower birth-rate than Edinburgh; and while London registered 27, Dundee had 28, Manchester, Birmingham, Aberdeen, and Leith had 29, Glasgow and Greenock had 30, and Liverpool had 33."

"But," I here interrupted, as my friend paused to note the effect of these undeniably startling figures, "the death-rate had fallen as well as the birth-rate, and so we were no worse than we were before."

"Let us take the Edinburgh statistics again," was the reply. "In 1881 the death-rate was 18·86; in 1905 it was 14·25, the lowest ever reached till then. While, however, the death-rate was slowly falling from 18 to 14, the birth-rate had come rapidly down from 32·23 to 22·99. If this rate of descent had in each case been maintained for another quarter of a century the two rates would have reached almost the same figure, and any increase in the population of Edinburgh would have had to be put down to immigration, for the birth-rate had been falling much more quickly than the death-rate. Further, while it was conceivable that the natality of Edinburgh would continue to fall till it reached a vanishing point, it was not thinkable that its mortality would do likewise. There might come a year when there were no births, but it could
hardly be expected that in that year there would occur no deaths. All these things, however, were to the inhabitants of Edinburgh in 1906 as idle tales; they heeded them not. And yet, to Edinburgh obstetricians at least, the subject of the falling birth-rate was a grave problem, and it became no less grave as the twentieth century proceeded on its way. To put the matter very practically," said Nineteen Forty, "there were many more doctors settled in Edinburgh in 1906 than in 1881, but the number of babies being born was practically the same. I expect some of you had shrinking lists of midwifery engagements to deplore, but I forbear to press the point."

"Can you give me now any hints as to the way in which obstetricians in the twentieth century met the dangers of the falling birth-rate?" was my next question.

"That I will gladly do," was my friend's answer; "but, first, I must point out what perhaps was little recognised or altogether overlooked in 1906. I refer to the aggravations of the falling birth-rate."

THE AGGRAVATIONS OF THE FALLING BIRTH-RATE.

"What were these aggravations?" I asked.

"In the first place, there was the infantile death-rate. You were proud, in 1906, of the fall that had taken place in the general death-rate of the country during the preceding half century, and your pride was justified; for there had been a reduction by more than fifty per cent. of the number of deaths between the ages of five and twenty-five years, and between twenty-five and thirty-five there had also been a notable decrease. But there was one circumstance about which little was said, and about which no pride could be felt: the infantile death-rate was practically unchanged at the end of these fifty years of hygienic progress and material advancement. To quote from the Report of the National Conference
on Infantile Mortality (p. 99), held in London in June 1906: 'In the twenty years ended 1874, we find that out of every 1000 children born alive in England and Wales, 153 never completed their first year, while in the twenty years ended 1904, the ratio was 148 per 1000.' There was, it is true, a slight improvement—148 instead of 153—but was it an adequate, a satisfactory, even a noteworthy degree of improvement, when contrasted with the fifty per cent. improvement between the ages of five and twenty-five? This, then, I call the first aggravation of the falling birth-rate: fewer babies were being born, and yet they were dying off practically as rapidly during the first year of life as they had ever done.

"A second aggravation was your ignorance, in 1906, of the stillbirth-rate and the abortion-rate of your country. You did not know how many pregnancies ended in the birth of infants who never lived outside the mother's uterus, who, in the words of one of the nineteenth century poets, exchanged 'the amnios-skin of this world for the shroud, the amnios-skin of the next.' You hoped, perhaps, that fewer stillbirths were happening, but you dreaded lest your hopes should turn out ill-founded; at any rate you did not know, for there was no registration of stillbirths to reveal the frequency of such ante-natal catastrophes. In reality, a steady increase was going on, as Dr Kaye's Yorkshire statistics, local though they were, proved. He found that in 1901 there were 47.6 stillbirths per 1000 livebirths, and the number steadily increased until in 1905 it was 56.3. 'Apply these figures,' said Dr Kaye (Report of the National Conference on Infantile Mortality, 1906, p. 104), 'to the whole country (England and Wales), and it means that the number of stillbirths has grown from 44,270 in 1901 to 52,350 in 1905, an increase of over 18 per cent., while the total livebirths have decreased in actual numbers.' Then as to the abortion-rate, you must surely," said the Official of 1940, "have had some feelings of dismay.
when, in 1906 and in preceding years, you reflected upon the wastage of ante-natal life by reason of abortions. You could hardly shut your eyes to and stop your ears against the testimony of text-books and journal articles which, with striking unanimity, attested the frequency, the growing frequency, of abortion. Some placed the frequency of miscarriage at one to every three or four pregnancies; others stated that one in every five gestations ended in abortion."

Here I interrupted my informant with the remark that I did not think the abortion-rate was so high as that.

"What reasons have you for doubting it?"

"Well," was my reply, "in the last series of 100 indoor labours under my care in the Edinburgh Royal Maternity Hospital there were not many women who gave a history of having aborted."

"But," said my friend, "did you exclude the primiparas and the women under thirty years of age?"

"No," I replied.

"Suppose you do that; how do your statistics stand now?"

"In the 100 cases there were 21 women of thirty years of age and over, and of them 8 gave a history of previous abortions."

"There you are," said Nineteen Forty in triumph; "thirty-eight per cent. of your patients who had reached the middle of reproductive life had aborted! Besides," he continued, "you had only the patients' word for the number of their abortions; it is much more likely that they under-estimated than over-estimated the frequency of such occurrences, especially early miscarriages of six weeks. You must, after all, admit that not fewer but more abortions were occurring in Great Britain in the early years of the twentieth century. There was yet another aggravation to the falling birth-rate, to which I must, for a moment, refer. That was the curiously significant increase in the number of deaths ascribed to premature birth
which began to be noticeable in the mortality returns. The infantile mortality from premature birth, which in 1865-1874 was 11.9 per 1000 (for England and Wales), had in 1875-1884 grown to 13.7, in 1885-1894 to 16.8, and in 1895-1904 to 19.8. The most striking thing about this increase was that it began as soon as and no sooner than the birth-rate commenced to decline. One can hardly refuse to ascribe some significance to that fact.

"Now, let me gather together these various statements," said Nineteen Forty, "and you will see better how you really stood in the year in which you are living. The infantile death-rate, notwithstanding all recent advances in hygiene and the laborious study of the diseases of infancy, was no better than it was fifty years previously. There was reason to believe that the number of stillbirths and abortions was increasing; and these, although they constituted deaths in a real sense if not in a forensic one, were not included in the mortality tables. The number of infantile deaths ascribed to premature birth was increasing, pointing to a probable increase in the total number of premature births occurring. Finally, there was the progressive and serious fall in the birth-rate. What could the obstetricians of the twentieth century do but strive to counteract these evils?"

**Checking the Falling Birth-Rate.**

"How did they check the falling birth-rate?" was my question, for my informant at this stage in our conversation seemed to expect me to say something.

"They did not check it, they could not check it," was the startling reply; "but they checked the aggravations of it, and so secured some salvage from the wreckage of life which was occurring before, at, and immediately after birth. This salvage more than compensated for the decline
in the birth-rate, and thus the civilised nations of the earth were able to maintain their position to some extent, at any rate, if not entirely. So now you see why I so strongly emphasised the aggravations of the falling birth-rate. But matters got much worse before they began to improve.”

“In what way?” I asked.

“I will tell you,” was the reply.

“The checking of the falling birth-rate was, as I have said, not an obstetrical problem at all; at least it was not one which obstetricians could hope to solve. The falling of the birth-rate was not due to less knowledge or less skill in the obstetricians of the day, or to want of training of the midwives and monthly nurses, or to the neglect of chloroform or the forceps, or to the excessive use of these means of relieving pain and hastening the second stage of labour, or, indeed, to any other thing which lay in the power of the medical man to do or leave undone. The causes lay deep among the roots of the somewhat artificial conditions of the sexual relationships in modern society. A nineteenth century writer (Renan) said: ‘The spread of an enlightened selfishness is, in the moral world, a fact of the same nature as the exhaustion of coal-fields in the physical world; in each case the existing generation is living upon and not replacing the economies of the past.’ His words apply very exactly to the enlightened selfishness which was the root-cause of the falling birth-rate. The era of personal comfort first, and at any cost; the age of late marriage, because the entrants upon the matrimonial state wished to begin, not where their parents began, but where they were prepared to leave off; the period of frequent holidays and expensive amusements could hardly be described as other than ‘selfish,’ although it might be doubted whether it deserved the honour of being entitled ‘enlightened.’ In any case, such an age was not one in which frequent child-bearing was likely to be thought of with favour, or carried through with enthusiasm.
If there was ergophobia in the one sex, there was maieusophobia in the other. Nor was a popularisation of the knowledge of the nature and mode of use of ‘checks’ to conception likely to raise the average size of families.

"Matters did not improve after 1906. In fact, it was not long till rumours began to circulate regarding the existence of a new institution, the ‘City without a Child,’ a sort of municipal agennesia, wherein mental productivity and financial success were held in high esteem, while the reproduction of the race was nothing accounted of. The inhabitants renounced the pleasure and the honour of having families, but gladly accepted all other pleasures and honours that came in their way. The citizens occupied their days in making money, and their nights were not spent round the fireside in the home. They were described as curious places, these experimental childless cities: no schools, no toy-shops, no Christmas-trees, no happy young boys and girls on the roadways; nothing but hard-visaged men and steel-eyed women, and bustle and racket, and vain hopes and restless desires; and by-and-by an alarming increase in the frequency of suicide, and in the number of the inmates of the palatial asylum which stood upon a hill overlooking the town. So, in the end, the attempt to reduce the birth-rate to nil was the cause of its gradual ascent again; and the experiment of race-suicide was in that sense a failure.

"In the meantime the medical profession, and especially the obstetricians, had been busily endeavouring to save something from the wastage of ante-natal life, and to keep alive many of the new-born infants who formerly used to succumb to death in various forms during the first few months of post-natal existence."

**Estimation of the Wastage of Ante-natal Life.**

"In the first place," continued the Official of 1940, "the
obstetricians of the early part of the twentieth century set
themselves the task of estimating the annual loss of life at
and before birth. With the help of a Stillbirth Registration
Act, and with the assistance of the army of skilled monthly
nurses which the Midwives Bill had called into being, statistics
of stillbirths and abortions were obtained. The results were
startling, appalling in fact; but after the first excitement
incident thereupon had died down, it was seen that in the very
magnitude of the loss of ante-natal life that had been going on
lay the hope of the future. By diminishing the ante-natal
death-rate, by checking the frequency of abortion, it was
recognised that there was a means ready to hand to counter-
balance the falling birth-rate. If a fifth of the stillbirths and
abortions could be prevented, it was seen that the loss accruing
from the smaller number of births would be compensated.
Further, it was discovered that many of the cases which went
to produce the high infantile mortality of 148 per 1000, during
the first year of life, were deaths of prematurely born infants.
So it became apparent that to check the frequency of premature
births would give a means of reducing the high infantile death-
rate; in this direction also there lay compensation for the
falling birth-rate. You can almost forecast for yourself now
the lines along which obstetric practice began to advance," said
my friend of 1940; "but I will indicate them very briefly."

STUDY OF PREGNANCY, NORMAL AND PATHOLOGICAL.

"The hygiene of pregnancy began to be studied in detail and
with an enthusiasm and thoroughness never before arrived at.
Patients were encouraged to consult their medical attendants
regarding the rules of health in pregnancy, and the latter were
prepared to give the advice sought. It was recognised that
pregnancy was a severe and a long-continued testing of the
structural and functional integrity of all the organs of a
woman's body. It was soon seen that while an unmarried or a non-pregnant woman might with impunity, or apparent impunity, break many of the laws of hygiene, a pregnant patient did so at her peril; and every medical man made it his duty to revise with the pregnant patients all the rules relating to the care of the bodily functions, putting right what was wrong, and warning against possible errors in diet, clothing, habits, and the like.

"Further, in cases of doubt, consultations were freely asked for and given, it being recognised that it was better to check the beginnings of evils in pregnancy than to wait till an abnormal gestation had developed into a labour dangerous for infant and mother alike. Whereas in your time," said my informant, "consultations in pregnancy were seldom asked for, save to determine whether the induction of abortion should be carried out in order to try to save the mother's life at the expense of that of her foetus, in the new era the specialist was called in early enough for his remedial measures to avail both the maternal and the infantile lives. In this way, not only were pathological pregnancies often prevented altogether, but in many instances they were so energetically treated in the early phases that they yielded to therapeutic means that would have been of no use at later stages. Eclampsia was one of the first of the gestational maladies which began to benefit by such a revolution in the management of pregnancy. Whereas it had been common for the urine of a pregnant patient never to be tested—indeed, in many cases it was not customary for the medical attendant to be told about the pregnancy or summoned to the patient till labour was in the first stage—now, the doctor was engaged to look after his patient in the early weeks of her pregnancy as well as in the hours of her labour and in the days of her puerperium. His duties included regular analysis of the urine, as well as the supervision of all the details of the gestation, and the correction of any of the symptoms which might
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arise. The obstetrician of 1940 finds it difficult to understand why his brethren of the early part of the century paid so much attention to the one month of the puerperal period and so little to the nine months of pregnancy. To him the time of preparation for labour was not less but more important than the time of recovery from the effects of labour, for he found that if the former was normal the latter was little likely to be pathological.

"Along with this development of the study of the management of pregnancy and of the treatment of the disorders of the pregnant state came a marked advance in the knowledge of ante-natal maladies. The mystery of trans-placental transmission was elucidated, and stillbirth by reason of foetal diseases and defects became rare. So-called 'habitual' abortion and intra-uterine death were soon shown to be due in every instance to some definite and ascertainable cause; and the hopelessness which had previously characterised all attempts at treatment gave way to the enthusiasm inspired by frequent success. New and more effective means of keeping prematurely born infants alive were adopted with the best results, and the favourite British operation of the induction of premature labour for contracted pelvis took an enhanced position of esteem among other methods of obstetric intervention. As I have already said, the appreciation of the value of foetal life was the fact which dominated obstetric theory and practice in the twentieth century. Embryulcia, craniotomy, and all such destructive procedures yielded to methods which gave a chance of survival to the child, and thus Cesarean Section, Vaginal Section, and the Induction of Premature Labour took their rightful place in the list of obstetric operative measures. By means of the knowledge which obstetricians gained regarding the state of their pregnant patients (e.g., by pelvimetry, physical examinations, etc.) it was possible to detect pelvic contractions, tumours, and the like before the supervision of
labour, and so to avoid interference at the time when the occurrence of the phenomena of childbirth was the cause of additional risk and danger. For instance, it became rare for a medical man to be summoned to a full-time labour in which there was an undetected pelvic contraction, and thus, emergency Cæsarean Sections or (worse still) craniotomies were hardly ever heard of."

\[THE \ \text{PROBLEM \ OF \ CANCER.}\]

"I have greatly benefited by what you have told me," I said to Nineteen Forty; "but can you satisfy my curiosity about one other matter? It is scarcely an obstetric problem, perhaps, but it is a very pressing one: I refer to the discovery of the cause and cure of cancer."

"I cannot reveal much," was the reply, "but I am permitted to throw out some hints. For instance, it was not long after 1906 that it came to be recognised that there was a curious parallelism between great philanthropic movements and noteworthy life-saving and pain-relieving discoveries."

"What do you mean?" I queried. "Well, take the case of the abolition of slavery in the British possessions at a cost of £20,000,000; that was a great and a beneficent and an unselfish act on the part of one section of mankind for the amelioration of the condition of another and a suffering section; it was soon followed by the discovery of anaesthesia—that priceless boon. Of course, the anaesthetics themselves had been in existence for years, but their effects were till then unknown."

"I think I see what you mean," I said; "and was there any great philanthropic advance pending in 1906, or soon thereafter, which made it possible for the discovery of the cause and cure of cancer to take place as a corollary thereto?"

My friend hesitated a little before he replied, and then said slowly: "The greatest boon that mankind could voluntarily
bestow upon itself would be the abolition of war, would it not?"

"You think," said I, "that it was that great international blunder—the appeal to arms to settle disputes—that was delaying the discovery of the cure of cancer?" My informant did not answer this question; at least, if he did, I, in my excitement, failed to catch his reply. So I went on and said to him: "I myself have of late years been inclined to look to the chorion-epithelioma and its embryological relations for the elucidation of the problem of the origin of malignancy; but I have a friend who believes that the secret lies in the hands of the botanists. He is sure that in the differences of the life-conditions of fungi and bacteria are to be found the explanation of the origin and the theory of the cure of cancer."

"Tell him to make experiment," was the reply which came to me somewhat indistinctly, for it appeared as if my telephone were not recording very clearly. I spoke again, but it seemed as if the connection had been cut; so, as I did not wish to be rude, I asked for the Time Exchange, No. 1940, and got switched on again. "I wished to thank you very warmly for so kindly giving me so much information about the future," I said. "Can you answer one other question, a personal one?" I asked. "You described yourself at the beginning of our conversation as an Official of the Obstetrical Society of 1940; can you give me no other clue to your identity?"

"I am the President," was the reply.

"Indeed, then," I said, "I am highly honoured, sir, to have made your acquaintance."

I heard what sounded like a laugh, and then this rejoinder came back to me over the wires: "You call me sir, but is it impossible that the President of 1940 should be a woman?"

I awoke with a start, to find my telephone ringing furiously; and a call to a serious case at the Maternity Hospital was soon engaging my thoughts. But I have sometimes wondered
whether it was all a dream; whether it was not in part an "uprush of the subliminal consciousness," as the psychologists call it; whether it was not, in certain details, a vision of that future so rapidly advancing upon us, when—

Much that is wrong shall be righted,
And man shall see, never affrighted,
Clearly his duty, and do it,
E'en if his life-blood go to it.

On the motion of Dr Ritchie, seconded by Dr Craig, a hearty vote of thanks was unanimously accorded the President for his address.

V. THE MANAGEMENT OF SOME DIFFICULT OCCIPITO-POSTERIOR CASES.

By J. Lamond Lackie, M.D., F.R.C.P. Ed., Assistant Physician, Royal Maternity Hospital; Lecturer on Obstetrics and Gynaecology, School of Medicine of the Royal Colleges.

Until quite recently, I had been in the habit of thinking, and indeed sometimes of teaching, that when the obstetric forceps slipped off the head during the operation of extraction, the instrument had been unskilfully applied. Within the last month I have changed my views on this point entirely. Up till October of this year I had no personal experience of the accident, but during that month I had two consecutive cases in which the forceps slipped, and these form the basis of the present communication.

Case I.—Mrs D., æt. 29, primipara, went into labour on Thursday, 4th October, at 2 A.M. The pains at first were slight and very occasional, but the membranes ruptured at 10 A.M.; and at 11 A.M., when I first saw her, the os was only the size
of a shilling. It dilated very slowly, and little progress was made all Friday. During the night the pains were stronger, and at 10 A.M. on Saturday the os was 3 inches in diameter, and a right occipito-posterior position was diagnosed. Pains were strong till 3 P.M., but on examination one found that since 10 A.M. absolutely no progress had been made, and the anterior segment of the cervix had become oedematous. At 4 P.M. the patient was exhausted, and inertia uteri had set in. Chloroform was administered, and the dilatation of the os completed by the fingers. Forceps were then applied to the head, which was well engaged in the pelvic inlet. Strong traction seemed to make no impression, and suddenly, during an extra effort on my part, the forceps came away in my hands. The sensation, to say the least of it, was unpleasant; one felt that one had fractured or dislocated something, but I take it that the click one feels and hears is simply due to the sudden excessive overriding of the cranial bones which the closed forceps causes as the instrument comes over the head. Fortunately, the damage to the mother’s soft parts was slight, but the vulva was somewhat torn by the escaping forceps. I then tried to flex the head and rotate it, but, as I almost expected, my efforts were fruitless, as the head was too high up and too fixed. Forceps were again applied, and appreciating the fact that the occiput was to the back, I endeavoured to apply the blades in that region. Again the forceps slipped when I pulled, and this not once but several times. The instrument was not each time forcibly pulled out of the vagina, as I was always on the outlook for slipping. Here, I may say, that by grasping the application handles, as well as the traction handle, I was better able to appreciate whether the blades were to slip or not; one seemed to be more in sympathy with the position of the blades by sensation conveyed through the handles than through the traction rods. Ultimately, one seemed to find a grip that held, well back over the occiput,
and the head was born face to pubis, but only with great difficulty, and after the expenditure of much force in traction. There was some laceration of the perinæum. The child, a female, which weighed 9 lbs., was apnoëc, but recovered, though it showed signs of compression for two or three days. It is now very well, but has a marked internal strabismus of the right eye, which, however, is now improving. The mother had a normal puerperium. I ought to mention that she was a woman of average stature, and there were no obvious signs of any deformity of the pelvis. This, then, was simply a persistent occipito-posterior case, delivered in the usual way by forceps—the only peculiarity being the slipping of the forceps, which shows how excessive was the traction necessary for delivery. I have quoted the case as a contrast to the two which follow.

Case II.—Mrs W., æt. 30, ii.-para, expected her confinement on 10th October, but this did not take place till 28th October. Pains commenced at 2 A.M.; at 4 A.M., when I saw her, the os was nearly but not quite fully dilated. Right occipito-posterior was the position. At 5 A.M. the membranes ruptured and the liquor amnii began to trickle away. The cervix was still not fully taken up. At 8.30 A.M. there was no change, except that the anterior segment of the cervix had become oedematous. Pains were now slight, and made no impression on the advance of the head, which remained at the brim. Under chloroform, forceps were applied, and, to my surprise, I repeated my experience of 6th October. The forceps came away in my hands with, fortunately, no damage to the mother. I reapplied them, still remembering the position of R.O.P., but the result was the same, and no matter how carefully I applied the instrument well back towards the promontory of the sacrum, the forceps, whenever traction of any degree was employed, came over the head with that click which is so suggestive of
serious injury to the child. I applied the forceps no less than six times, but I could not get the head to enter the pelvis. I then tried to turn the child's head round so that the occiput should be to the front, and at the same time I endeavoured to turn the shoulders by external manipulation; but though I could move the head I could not turn the shoulders, and before I could get the forceps applied the head was back to its original position. Finally, I introduced my hand past the head, and with two fingers on the right shoulder and my left hand acting through the abdominal wall, with great ease I turned the child round till it occupied the L.O.A. position. Once more I applied the forceps, and with comparatively little traction the child was born within three minutes. It weighed 10½ lbs., but seemed to have suffered no injury except facial paralysis, which passed off in three days. The mother had a normal puerperium. She was a woman of medium height, and had no pelvic deformity. I delivered her of her first child exactly four years previously, when the labour was almost normal, forceps being applied only to bring the head over the perineum.

Case III.—I hoped I had done with difficult R.O.P. cases for the month, but I was mistaken. On Tuesday, 30th October, at 10 A.M., I was called to Mrs B., iii.-para, who had been in labour since 4 A.M. The os was the size of half a crown. At 3 P.M. the liquor amnii began to trickle away. At 5 P.M. the os was nearly, but not fully, dilated; the position was R.O.P., and the head was high up and movable at the brim. At 9 P.M. there was no change, and inertia uteri had set in. The patient was chloroformed, and first of all I applied forceps, but the locking was so unsatisfactory that I was not surprised that traction proved useless, and I therefore soon desisted. Remembering my experience of two days before (Case II.), I determined to try internal rotation of the head. I removed the forceps, then pushed the head upwards, and by internal and external
MANAGEMENT OF DIFFICULT OCCIPITO-POSTERIOR CASES,

manipulation turned the head round till the vertex lay in the R.O.A. position. A pain came on and fixed it there, and as rapidly as possible I applied the forceps. Extraction was quite easy, and a living child was born, 9 lbs. in weight, with no signs of damage at all. The interesting point about this case was that the patient had been confined twice before, nine years ago and seven years ago, and on both occasions she was very ill, instruments were used, and both children were born dead, having died, the mother tells me, during birth. I cannot help thinking that but for artificial internal rotation the result would have been just the same on this occasion.

The first and the second and the third cases which I have narrated form a striking contrast. The first was a primipara who presented all the usual features of a malposition of the head—a slow first stage, premature rupture of the membranes, and œdema of the anterior segment of the cervix, which one notes seems in these cases always to hang free in the pelvis between the head and the outlet. The second stage was delayed, the descent of the head was only partial, spontaneous rotation did not occur, the forceps slipped several times, but ultimately the patient was delivered simply by excessive forceps traction. Had forceps failed, one had to think of craniotomy, symphysiotomy, or pubiotomy. The second and third cases presented the same preliminary feature as Case I., but the head was still movable at the brim. There were several possibilities of treatment had forceps ultimately failed—Cæsarean section, embryulcia, etc.—but the whole object of this paper is to emphasise the fact that to rectify a malposition, if diagnosed early, is possible and sometimes easy. I have rarely been so struck with the effects of treatment as in the second case, where what proved almost an intractable case became quite suddenly, by simply rotating the child, one of the easiest high forceps cases I have ever experienced. The
child was large, it was post-mature, but once it was placed in a normal position it was delivered in a very few minutes. Before resorting to a more serious obstetric operation, such as craniotomy, I should certainly have performed internal version, which is generally recommended in these cases, but the chances for the child would then have been much diminished. Everything was no doubt favourable for artificial rotation: the head was still not properly engaged, the liquor amnii had not all escaped, and the patients were multipara. Since in nine cases out of ten an R.O.P. rotates so that the occiput comes forward, one would not attempt this operation if the head were descending with the pains; one would simply further rotation chiefly by increasing flexion. In all text-books reference is made to artificial rotation of the head when it has reached the pelvic floor, and this is common practice; but only in a few, and these are foreign, is rotation when the head is high up recommended as a possible method of treatment. I am not sure that in this country the value of artificial rotation of the whole child when the head refuses to enter the pelvis has been duly appreciated. Under the circumstances which prevailed in Cases II. and III., I should be inclined, if an R.O.P. were diagnosed early, to again try artificial rotation, rather than risk a very difficult forceps case—a possible sacrifice of the child by version, or a certain one by embryotomy.

*Dr Barbour* was much interested in Dr Lackie's communication, which drew attention to a method of dealing with occipito-posterior cases which was not sufficiently recognised in this country. It was noteworthy that the head was delivered with much greater ease, lying in the same diameter, with the occiput to the front instead of to the back, because the difficulty was evidently in this case not in the longer rotation the head had to undergo, but in some cause interfering with its engagement,
or with proper flexion. The cause of deficient flexion in occipito-posterior positions was not evident. It had been ascribed to the promontory, but this explanation was not adequate. He congratulated Dr. Lackie on his successful management of these cases.

Dr Haig Ferguson cordially thanked Dr. Lackie for his interesting and suggestive paper. All present, no doubt, had had experiences such as Dr. Lackie's in the slipping of forceps in occipito-posterior cases. In his opinion, this slipping was due to the head being extended and the forceps grip being too near the sinciput and not sufficiently far back on the head. This could be rectified by promoting flexion of the head by manual manipulation, after which the forceps can generally be applied satisfactorily without fear of slipping. When the forceps is applied when the head is extended, traction simply tends to keep up, if not to increase, the extension, and so the delivery of the head is not by any means facilitated even when the blades do not slip off the head. He was much interested to hear that by an apparently comparatively simple manoeuvre, as Dr. Lackie described it, a right occipito-posterior position, as in Case II, was converted even into an L.O.A. He would certainly try this method of artificial rotation the next suitable opportunity he had, as it seemed not only rational, but eminently calculated to conserve foetal life, a point so strongly and rightly insisted on by the President in his address just delivered.

Dr James Ritchie felt indebted to Dr. Lackie for having reported cases showing the ease with which in posterior positions, under suitable conditions, the body of the child could be rotated. Rotation of the head alone was not satisfactory. He thought that the chief reason why delivery was more difficult in posterior than in anterior positions lay in the fact that, in consequence of the projection of the promontory there is less room at the posterior end of the oblique diameter than in front,
and that the sinciput, being smaller, passes more easily than the occiput.

Dr Dewar thanked Dr Lackie for his eminently practical paper. Papers such as the one read were a great help to the practitioner in his everyday life, inasmuch as they refreshed the memory by recalling some of the principles in the treatment of difficult cases, which are apt from infrequent application to become dim in the mind. In thinking over those occipito-posterior positions, one or two thoughts had occurred to him. A medical man was sometimes called to a labour case at a very early stage. It was very customary for him, after making the usual vaginal examination and finding the os undilated or only very slightly dilated and the passage dry, to heave a sigh, perhaps, if it should be three o'clock in the morning, and tell the patient and her friends that, as labour was hardly commenced, he would go home, and come back in the morning. He confessed that he used to follow such a practice, but experience had taught him to adopt a different method, which he had now practised for many years. By being content with a simple vaginal examination the medical man missed his best opportunity of rectifying an abnormal position if it should be present. His routine practice was, if the os was undilated, to make an abdominal palpation, as he was anxious to find out, if possible, what presentation and what position he had to deal with. It was easy to read in the text-books what to do in difficult cases, but it was not so easy in practice; yet, with patience and a little care, if such an opportunity occurred, it was fairly easy, by palpation, to make out whether the presentation was a transverse, a breech, or an occipital one. If occipital, he should try to satisfy himself whether the position was occipito-anterior or occipito-posterior; if the latter, he should then endeavour to rectify at once, as it is very much easier to rotate the child at that stage, when the membranes were still intact, than at a later stage, when the head was engaged in the brim or in the pelvic cavity. If, however,
the case was not seen till at a later stage, he favoured internal rotation by the hand rather than by the forceps, as being less dangerous to both mother and child. He narrated the difficulties of an occipito-posterior case, in which the persistence of the position was probably due to the tip of the coccyx projecting forwards at a right angle to the sacrum, and thus diminishing the antero-posterior diameter of the pelvic outlet to something like 3 1/2 inches, which was certainly too little to allow the passage of the occipito-frontal diameter of the head, which would be at least not less than 4 1/2 inches. The position remained a persistent posterior one, in spite of all his endeavours to rectify it, and while attempting to deliver with forceps, a snap was heard, after which the head was extracted in the ordinary way of R.O.P.'s. The coccyx was fractured. In the patient's second labour the same difficulty occurred, the coccyx having united at a similar angle. On this occasion, profiting by the experience of the previous labour, he forcibly fractured the coccyx with his fingers, so as to avoid damage to the occiput, which was present in the first labour, and delivery was comparatively easy. On the third occasion, with the tip of the coccyx in the natural position, the position was an R.O.P. again, which very soon rotated into an anterior position, and the child was born without assistance, showing that the peculiar position of the coccyx in the first two labours was the cause of the failure of rotation. With regard to the question raised by Dr Barbour, as to why the head, when rotated from the posterior to the anterior position, should engage in the brim more easily, Dr Dewar thought that an answer would be found in the fact that after rotation above the brim, the belly of the child would adapt itself to the concavity of the uterus and pelvis behind, the spinal column would curve correspondingly, and the occipito-spinal joint coming behind the line of the uterine force, flexion would take place, allowing the head to pass easily through the pelvic inlet in the wide oblique diameter.
Dr Church joined in the expression of indebtedness to Dr Lackie for his practical and suggestive paper. He referred to the danger of injury to the maternal parts over and about the region of the ischial spine from pressure of the child's head in occipito-posterior positions. Sloughing and septic troubles might supervene from such injury. He had read Professor Sir Halliday Croom's paper on this subject, and had been impressed with the importance of this point. He had met with an illustrative case in his own practice. He expressed the opinion that in all great lying-in institutions a detailed account of every presentation should be recorded in the case books. This would add to their scientific value. For example, "Vertex" was not enough. The particular vertex presentation should be defined, and so on. In connection with occipito-posterior positions, it would appear (from the Talmud) that the ancient Jews were of opinion that most female children were born in this position. Hence a medical reason for the longer puerperium of the mother and the longer Levitical period of ceremonial uncleanness. By kind permission, he had looked at the books of our own Maternity Hospital and found that there were considerably more female than male occipito-posterior positions. Obstetricians of to-day could generalise like the Rabbis of old, but, like them, they still found in occipito-posterior positions possible conditions of danger and difficulty. Dr Lackie had shown us how to lessen the difficulty.

Dr Oliphant Nicholson thanked Dr Lackie for his interesting paper, and wished to make a few remarks regarding the management of difficult occipito-posterior labour. He had had quite an abnormal number of such cases recently in his dispensary practice, and these positions of the head seemed to be commoner than was generally supposed. Occipito-posterior labour might be easy or difficult; if it was really difficult, it constituted one of the most undesirable and dangerous complications due to malposition of the foetus—a presenting shoulder
was infinitely more easy to deal with successfully. There were
several methods of management in these cases, and he had
tried them all. He thought everyone who had had a large
experience in this kind of case, would agree that the manual
rotation of the child’s head and body into the correct position
was the best. It was the most scientific treatment, and it was
also the best for the safety of mother and child. He would
like to mention some of the methods commonly adopted, and
briefly discuss their application to certain cases. 1. First, there
was delivery by the forceps without any attempt to correct the
position of the head. This was probably the commonest
method of all, because the general practitioner did not always
trouble to diagnose the position of the head. If a labour was
lingering, and the head did not descend, forceps were applied,
and the doctor pulled—often with his utmost strength—till the
child’s head appeared at the vulva. Most of these cases were
persistent occipito-posterior ones. Sometimes rotation of the
child’s head occurred during traction, especially when axis-
traction forceps were used, but generally the occiput emerged
behind. Now, even when one knew that the position of the
head was occipito-posterior, this method was sometimes good
practice. Robert Barnes had advised it, and when the head was
relatively small, and one had not to exert dangerous traction,
the delivery was generally safely completed without extensive
perineal laceration. 2. A slight modification of this method was
gradual rotation of the head carried out by the forceps during
traction. The blades were removed and re-applied several times
till rotation was completed. This method was applicable to
those cases where the head showed indications of rotating
during traction; the application of the blades two or three
times was the important thing to complete rotation. 3. The
next method was the manual rotation of the head alone to
carry the occiput behind the pubic arch. It was then held
in its new position and forceps applied. In applying this treat-
ment it was necessary to know that the case was an occipito-posterior one, and he had to confess—that he could never be certain of this point by means of fontanelles and sutures. In every case where the head remained high up and would not descend, he made a very thorough vaginal examination. With the patient well over on her left side and under chloroform, the whole of the left hand was passed into the vagina and the fingers pushed over the head until an ear was felt. In occipito-posterior cases an ear was always easily reached; that point by itself was rather suggestive of the position. But this method he had found excellent, inasmuch as it not only verified the position, but indicated the direction in which one should rotate. One always rotated away from the ear. This method of correcting the position of the head by means of the hand was, as a rule, very easily carried out. He always used the left hand, and the head, being firmly grasped, was lifted up right out of the pelvis between the pains. The manoeuvre was often carried out with extraordinary ease; sometimes, however, it was very difficult, and then one must adopt some other means of effecting delivery. The main objection to this method was that, unless the body of the child was rotated at the same time, the head had a great tendency to spring back to its old position. Thus it was always necessary, after rotating the head in this way, to keep one's hand on it, and apply the forceps with the other hand. He wished to mention the advantage, in such cases, of introducing the upper blade first; after the application of this blade, the head could be kept in position while the lower blade was introduced. He might mention also the advantage of the axis-traction forceps with straight blades—such as Milne-Murray's—for these cases, because with them a better grip of the head over the parietal bones was obtained; the ordinary curved blades were certainly more apt to slip off the head during traction. When the forceps were got on to the head in
its new position and traction was made, the body of the child swung round; the neck of the child did not break. 4. The best method of all was manual rotation of both the head and the body of the child. The body was rotated through the abdominal wall by placing the right hand behind the shoulder and pressing it forwards, this being done at the same time as the left hand in the vagina rotated the head. In some cases this was easily done, but in others very great difficulty was experienced in getting the body of the child round. Most practitioners had met with these troublesome cases, and the natural thing was to pass the hand still further into the uterus, in order, if possible, to get the body to rotate. Last year, in an exceptionally difficult case of this kind, Dr Nicholson, in passing the hand higher up, came upon the child's shoulder, and grasped it within the uterus. Then rotation was accomplished with surprising ease. He was much impressed at the time with this method, and he had no doubt that others who had discovered the manoeuvre had been similarly impressed. On looking up the literature of the subject, he found that it had been described, and advocated to the exclusion of all other methods, by Professor McIlwraith of Toronto, in a paper published in the Canadian Practitioner and Review of February 1905. He did not know whether others had described the manoeuvre; but it was certainly one that deserved to be more widely known, and Dr Lackie had brought the matter prominently before them in his excellent paper.

Dr Lackie, in reply, said that it was to him quite remarkable how easy the children were delivered after artificial internal rotation at the brim. In the first case he had converted an R.O.P. into an L.O.A.; in the second he managed to rotate the head only to the R.O.A. position, which, however, was quite sufficient. When it was possible, rotation of the whole child was preferable to mere rotation of the head. He thanked the Society for the kind way in which they had received his paper.
MEETING II.—DECEMBER 12, 1906.

Dr N. T. Brewis, Vice-President, in the Chair.

I. The following gentlemen were elected Ordinary Fellows of the Society:—D. Lloyd Roberts, M.D., F.R.C.P., 11 St John Street, Manchester; J. S. Edwards, M.B., Ch.B., University Union, Edinburgh.

II. Dr Brewis showed—(a) Two examples of endothelioma of the ovary, removed from a patient aged 20. Miss McK., admitted September 1906; complaining of swelling in the lower abdomen and pain in that region when she turned herself; duration two months. She had always had pain at her periods, but since January 1906 that pain had been more severe. She had strained herself at that time by lifting a very heavy weight. Two months ago, when an attack of pain had come on after turning herself in bed, she felt a hard lump the size of a marble on the right side of her lower abdomen. This grew gradually larger. A short time after she had noticed the first swelling, she felt another on the left side of the lower abdomen. This also gradually increased in size, but she thought it was softer to the feel than that on the right side. On admission, an irregular mass was filling the hypogastric and lower part of the umbilical region. Menstruation regular, twenty-eight-day type; duration, seven days; quantity fairly copious; pain present. Operation.—Abdominal section, double ovariectomy; small quantity of free fluid in abdomen. Pathological Report.—Extracts from Mr Muir's letter:—"The condition is that of lymphatic endothelioma, but is undergoing extensive colloid degeneration. The sections from different parts of both the right and left ovaries show that the structure is much the same in all. The essential tissue element is seen to be made up of endothelial cells arranged in a very indefinite manner, but in parts one can make out
these cells to be lining lymphatic spaces, and some spaces are filled with cells forming an alveolar-like structure. The stroma in parts is well defined and at others scanty. The areas showing an open network of delicate stroma forming spaces, are really the tumour cells undergoing colloid degeneration; in parts their condition is more advanced, showing complete transformation of the endothelial cells into colloid material; only the stroma persists.” Patient went home feeling quite well, on the thirty-second day after operation, having made a splendid recovery, only interrupted by a fainting turn on the eighteenth day after operation.

(b) Rare variety of dermoid tumour, tuberculous tubes, and intraligamentary tumour of the other ovary. Miss B., æt. 24, admitted 8th October 1906, complaining of pain in the right side, distension of the abdomen, and occasional pain in the left side. Duration of illness, four years; symptoms more marked during the last year. Menstruation regular, twenty-eight-day type; duration, two to three days; flow less in quantity since onset of pain in the right side a year ago. On opening the abdomen a large grey-walled cyst was exposed, and through parts of the wall of the cyst small yellow bodies like coriander seeds could be seen floating about in the interior of the cyst. The cyst was tapped, clear, straw-coloured fluid and little yellow bodies escaping; the cyst was then removed without any special difficulty. In the situation of the right ovary was a body, yellowish in colour, and in shape and size like a medium-sized horse-chestnut. This was adherent to the omentum, and had to be dissected from dense adhesions to the lower end of the cecum. The fimbriated extremity of the right tube was attached to this body, and was swollen. The left tube was distended in its outer third to the size of a pigeon’s egg. A round yellow body the size of a pea was attached to the fimbriated extremity. The left ovary was hard and cirrhotic looking. Under the left ovary and parietal
EXHIBITION OF SPECIMENS.

peritoneum, covering the left wall of the pelvis, was a cyst firmly adherent to the wall of the pelvis. The patient, although very sick and much pained for some days after the operation, was making an uninterrupted recovery.

(c) Dermoid tumour of the ovary, which ruptured during administration of the anaesthetic:—Miss R., age 28, admitted 2nd November 1906. Complaint.—Distension of the abdomen; duration, a fortnight. Some little pain in September 1906; frequency of micturition at the end of October, with a little fulness of the lower part of the abdomen. During the next ten days the abdomen gradually became distended, till on the day of operation it had reached the size of a six months' pregnancy. While the anaesthetic was being administered, the swelling disappeared, the abdomen becoming quite flat. On opening the abdomen, greasy fluid, fat, and hair welled up into the wound. A dermoid cyst about the size of a foetal head was found, with a rupture in the cyst wall about 2 inches long. This cyst, a dermoid of the left ovary, was removed. The right ovary was slightly enlarged, and cystic. The abdomen was thoroughly washed out, but great difficulty was experienced in getting rid of all the fatty material. After the operation the pulse kept very fast—over 100—and twenty-four hours after the operation the patient became very restless. On the morning of the second day she was slightly delirious. The same day a condition of stupor developed. This gradually deepened; her pulse remained between 100 and 130; her respirations were at times deep, with long pauses between, but never stertorous, and she died on the third day after the operation. The wound was opened on the day of her death, and there was no sign of peritonitis. The temperature the day after the operation was 99° F.; the day before her death it was subnormal, and remained so till just before her death, when it rose to 102° F.

(d) Ruptured ovarian tumour, presenting microscopic
characters of adenocarcinoma and tubercle:—Mrs A., age 53; admitted 22nd October 1906; married twenty-eight years; widow twelve years; six children. 

Complaint.—Swelling on the right side of the abdomen, with a continuous sore feeling in that region. Patient had reached the menopause two years before. Between that time and six months ago, she noticed that a swelling was present on the right side of the abdomen. This part then became tender, and had remained so since. Six months ago a red discharge like that at her periods set in, and lasted six weeks. Since then this discharge had returned at irregular intervals, being usually very copious, and sometimes had an unpleasant odour. It was sometimes clotted. She had had pain in the right side, and an uncomfortable bursting sensation for the past six months. Her husband and one child died of consumption. A large firm mass filled the left iliac, left lumbar, lower part of umbilical, and left side of hypogastric regions. A dull note in the flanks changed from side to side with the altered position of the patient. 

Operation.—On opening the abdomen a large quantity of free fluid escaped. The omentum was found adherent to the tumour. The intestines were roughened, red, and extensively studded with tubercles. Ovariotomy was performed. There was considerable bleeding and oozing. Everything in the pelvis was very friable, and bled easily. The left ovary was a normal senile one, and was not removed. 

Pathological Report.—The tumour had the appearance of a columnar-celled carcinoma. The specimen also consisted in parts of granulation tissue infiltrated with leucocytes, and presenting advanced necrosis, so that its features suggested the probability of tuberculosis. Patient got up on the twenty-first day after operation, having made an uninterrupted recovery, and went home a week later, feeling and looking quite well. 

(e) Uterus with large cervical fibroid, removed at the fifth month of pregnancy. The abdomen was opened, and the
fœtus, which was not viable, was delivered by Cæsarean section; then the uterus and large cervical fibroid which filled the pelvis were removed by hysterectomy. (Described in paper, page 49).

(f) UTERUS WITH FIBROID TUMOUR IN LOWER UTERINE SEGMENT, removed at term by supravaginal hysterectomy after Cæsarean section. Mrs B., age 33. Married ten months; no children; no miscarriages. History.—Patient was confined to bed from Easter Monday 1906 until May 1906 with severe sickness. When she got up she was seized by a violent pain in her left side, chiefly in the left iliac region. Pregnancy, complicated by a fibroid tumour, was diagnosed. She was kept in bed for seventeen weeks on account of the pain. A belt was then given her to wear. She got up, and had no recurrence of the pain. The pregnancy was allowed to go on till full time. When labour set in, the fetal head was found occupying the right side of the pelvis and a hard rounded swelling the left side of the pelvis, both situated just above the brim. The abdomen was opened, and the rounded swelling was seen to be a rounded mass the size of a cricket ball, in the wall of the uterus, at the left side of the lower uterine segment and under the bladder. The child was delivered alive by Cæsarean section. The placenta was removed, and the uterus, which had another projection from the wall at the fundus, was removed by supravaginal hysterectomy. On section, the rounded mass was seen to be a fibroid tumour, and the cylindrical projection near the fundus a fibroid growth which had undergone colloid degeneration. Both mother and child did very well, the mother making a rapid recovery. (Described in paper, page 49).

III. Dr Haig Ferguson showed—(a) 1. TUBAL PREGNANCY (two months), showing dilated ostium tubæ, and ovum partially protruding. Rupture had at the same time occurred slightly into the broad ligament. Free blood in abdominal cavity; operation on account of pain, hæmorrhage, and continued
growth of tumour. 2. COMPLETE TUBAL ABORTION (about second month). Tube apparently empty, but still bleeding through open ostium. Pelvis full of clot, containing shreds of membrane of gestation sac. Operation for pain, steadily increasing haematocele, and symptoms of internal bleeding. In this case it was necessary to drain through the posterior fornix into the vagina, on account of the large raw surface behind the uterus, which was packed with gauze. Both patients made good recoveries.

(b) LARGE DOUBLE PYOSALPINX, apparently tubercular. The uterus was removed at the same time, to render operation possible. Free ends of both tubes adherent to each other behind the uterus.

(c) UTERUS WITH FUNDAL CANCER, removed by vaginal hysterectomy from a nulliparous patient, aged about 55. She complained of haemorrhage as her only symptom, and there was no pain. Uterus measured 2½ inches with the sound. Curettage; scrapings reported as malignant adenoma. Disease limited to fundus. Satisfactory recovery. Patient had weak heart, so the vaginal route was chosen, which, though more difficult in a nullipara, caused less disturbance and shock to the patient.

(d) CHORION EPITHELIOMA OF UTERUS, removed by vaginal hysterectomy. This was the second specimen of deciduoma malignum shown here to the Society by Dr Ferguson this year. The patient, Mrs O., age 38, had an imperfect abortion, and was sent to hospital for curettage. Severe haemorrhage occurred after curetting; scrapings were examined by pathologist, who reported chorion-epithelioma. Uterus was removed by vaginal hysterectomy. Good recovery. Patient remaining well four and a half months after operation. The former specimen, which he now brought for comparison, was removed in April last, and the patient was still in excellent health. Her age was 47.

(e) INVERTED UTERUS, of puerperal origin, after a carefully conducted labour. Insidious commencement, with practically
no symptoms. Recognised six weeks after labour; reduction impossible; vaginal hysterectomy; good recovery. (Case reported in full in *Journal of Obstetrics and Gynaecology of British Empire*, October 1906.)

(f) **Soft subperitoneal fibroid**, resembling an ovarian cyst. This tumour was removed by abdominal hysterectomy, from a patient aged 60. The uterus was completely upside down in the pelvis, and was normal in size as measured by the sound. She had been treated by pessaries for a considerable time with no benefit. The symptoms were constant bladder irritation, and pelvic pressure symptoms. When Dr Ferguson saw the patient he thought the tumour alongside the uterus was an intraligamentous cyst in close contact with the right side of the uterus. Even after removal the examination of the specimen gave that impression, so soft and fluctuating was the mass. The patient made a good recovery from the operation, and her distressful symptoms had quite disappeared.

(g) **Chart** showing ante-partum temperature of 105.8°F. (malarial), when child was born alive. The patient, a primipara, made a good recovery, and the child did well. Labour was to have been induced prematurely on account of a narrow pelvis. The high temperature, however, combined with the quinine, set the labour going just at the time the induction was to have been done, so no further interference was necessary.

(h) **Uterus**, removed by vaginal hysterectomy, one year after a double pyosalpinx (probably gonorrhoeal) had been removed by abdominal section. The uterus was removed for persistent, purulent, and offensive uterine leucorrhoea combined with pain, which resisted curetting and all other minor treatment. The patient and her doctor both urged hysterectomy, which, owing to the shortness of the broad ligaments (the result of the previous oöphorectomy), was a somewhat difficult procedure. The uterus, when opened after removal, was found to be transformed into an abscess cavity, with rough and sloughing
mucous surface, and containing offensive pus, penetrating down to and involving the muscular walls. The patient's health was completely re-established after the vaginal hysterectomy, and she described herself as an absolutely transformed woman, as regards her sense of well-being and comfort.

IV. *Dr Barbour Simpson* showed a replica of the medal presented to Professor Pozzi last July by his colleagues, friends, and former pupils, in recognition of his position as President of the Seventeenth Surgical Congress, Paris, 1904, and of his promotion to the grade of Commander of the Legion of Honour. Dr Simpson mentioned that a *Livre d'Or* was also presented to Dr Pozzi at the same time, containing twenty-four original contributions by his colleagues, former pupils, and friends.

V. *Dr Haultain* showed a specimen obtained from a multipara a fortnight ago. The history was that, when the students arrived at the case, they were told that the placenta had already been born. The child was born shortly after their arrival, and the placenta came away thereafter normally. On examination microscopically, the purplish mass of the specimen turned out to be a blood tumour formed of capillaries and large blood-vessels, with practically no connective tissue between the vessels. The whitish mass was composed of necrotic tissue. There was no trace of foetal structure or decidual cells. The mass was about the size of a cocoa-nut, and apparently was some abnormal product of conception analogous to "*Fœtus Ovideus*.”

VI. *Dr James Ritchie* showed a specimen of an early ovum. The last period had taken place on 4th July; the abortion was on 31st August; but from the size of the ovum, conception must have occurred only shortly before the date of the period which was missed.
VII. TWO CASES OF PREGNANCY COMPLICATED BY FIBROID TUMOURS, TREATED BY HYSTERECTOMY.


Cases of pregnancy complicated by fibroid tumours for which the operation of hysterectomy is indicated are of rare occurrence. I have previously reported to the Society two such cases: one for fibroids obstructing the pelvis and causing severe pain, the other for a tumour of such extremely rapid growth that it filled the entire abdomen in three months. I now wish to add to this record two further cases. In one the tumour filled the pelvis, and caused such severe pressure symptoms that the operation was a matter of urgency, and had to be performed during the sixth month. The other was operated on at full term, chiefly on account of the obstruction which the tumour offered to the passage, *per vias naturales*, of the child. In over 1000 major operations, I have had to interfere seven times in this manner with fibroids during pregnancy; ovarian tumours I have removed seven times during pregnancy; and in cases of malignant disease in the pregnant uterus, I have performed Cæsarean section and hysterectomy on three occasions.

In each of the cases I now wish to record, Cæsarean section preceded hysterectomy.

The first case is that of Mrs C., aged 37, who was admitted into Ward XXXVI. in October of this year, complaining of great pain in the lower part of the abdomen and in the back. The patient last menstruated in the first week of June. The early symptoms of pregnancy soon asserted themselves. In July, trouble with micturition began—at first the act was painful and difficult, afterwards there was increased frequency. At this time also severe pain in the back set in, followed at a short interval by pain in the abdomen, which confined her to
bed, and which continued until relief was obtained by the operation. Her menstruation began at 16, was of the twenty-eight-day type, and lasted three days. The amount was copious during the first day, and slight during the remaining two days. There was always pain on the first day.

On physical examination the breasts were found to be large, and colostrum was easily expressed from the nipple. The abdomen was enlarged by a swelling which reached to the umbilicus. On the right side it projected markedly, and presented the signs of a pregnant uterus. On the left there was felt a separate swelling of much harder consistence. Per vaginam, the finger felt this swelling passing down into the pelvis and almost entirely filling the cavity.

The cervix was situated far forward, immediately behind and against the symphysis pubis.

Pregnancy plus a solid tumour was diagnosed; the patient was anaesthetised, and an attempt made to dislodge the tumour from the pelvis. This attempt failed however. We were anxious to withhold any further interference until the child became viable, but the pain continued so severe and persistent that it was feared some degenerative change might be taking place in the tumour; moreover, her general condition was becoming each day less favourable, and to add to her misery, and to our anxiety, symptoms of intestinal obstruction and also of ureteral pressure were beginning to manifest themselves. It was therefore clear that we had to consider what could best be done in the mother's interest. With this object in view we determined to open the abdomen, deliver the child by Cæsarean section, and then proceed to remove the tumour.

A mesial incision was made from the pubis to above the umbilicus. On opening into the abdominal cavity the gravid uterus at once presented, and was, after some manipulation delivered through the wound. A large fibroid tumour could now be felt filling the pelvis. To get access to this tumour
it was necessary to empty the uterus. To do so, a longitudinal incision, about 3 inches in length, was made in the anterior uterine wall. Through this the five-and-a-half months' foetus was delivered, the placenta was expressed, and the uterine incision sutured. It was now possible to draw the tumour out of the pelvic cavity, where it was found to be growing from the posterior aspect of the supravaginal portion of the cervix. Supravaginal hysterectomy was performed in the usual manner. The cervical mucosa was removed; the vaginal vault was perforated, and a gauze drain passed down into the vagina. The abdominal incision was stitched in layers. The patient made a most satisfactory recovery.

On section, the central portion of the tumour presented the characteristic appearance of a fibroid, but surrounding this and towards the surface there was extensive degeneration. The tissues were much broken down, the spaces thus formed being filled with glairy-like substance.

The operation just described took place on the 2nd of November, and on the following day Case No. II. went into labour, and a similar operation was performed on her, thus forming a notable example of the interesting phenomenon, which most medical men have experienced, of rare cases coming in sequence.

The following are the chief points of interest in the history:—

The patient, 33 years of age, has been ten months married. There is no history of any previous pregnancy or abortions.

Menstruation began at 13, was regular, lasted five days, and, until two years ago, presented no abnormalities. For the past two years there has been a dull dragging pain, chiefly in the iliac regions and upper parts of the thighs, during the menstrual period. There has never been any intermenstrual discharge. For some time there has been increased frequency
of micturition, but neither pain nor difficulty. Albumen was present in the urine.

Patient last menstruated from the 7th to 12th February 1906. In the latter part of April 1906 patient had severe sickness, and was confined to bed for two or three weeks. On getting up she experienced severe pain in the left side. This was at times agonising in its severity, and was most marked in the left iliac region. The pain persisted for three or four weeks, and then gradually became less severe. When the pain had subsided, the patient was examined by her doctor, who told her she was pregnant, and also that she had a tumour; he kept her confined to bed for seventeen weeks. I saw her in consultation at the end of August 1906, when I found her six months pregnant. Growing from the left side of the uterus there was a hard tumour, which filled the greater part of the pelvic brim.

The patient was most anxious to have a living child, and, as the symptoms were now not so severe as they had been, we decided not to interfere until the full term. I ordered the patient an abdominal belt, and advised her not to remain in bed. The support obtained from the belt had the desired effect: there was no recurrence of the abdominal pain.

The patient came into my Home on 27th October, and subsequent to that date was under my personal observation. On 3rd November she complained of pain all day at intervals; this was felt chiefly in the back, and did not tend to radiate to the front. At 4 p.m. the membranes ruptured. At 6 p.m. the cervix, on vaginal examination, was found to be soft, but only sufficiently dilated to admit the tip of the index finger. The foetal head was found on the right side of the abdomen, above the pelvic brim. On the left side, also just above the brim, there was a firm rounded mass, about the size of a foetal head. Attached to the uterine wall, about 2 inches above and to the left of the umbilicus, there was a projection which, through the abdominal walls, felt like a foetal foot and leg.
At 7 p.m. the patient was anaesthetised and a thorough examination made. The head was found still above the brim, which it was prevented from entering by the tumour. The cervix was still undilated. As the liquor amnii had drained away some hours before, and the child had consequently been exposed to severe pressure between the fibroid and the strongly acting uterus, it was decided that labour should, alike in the interests of mother and child, be terminated as quickly as possible. The safest method for both was undoubtedly Cæsarean section.

The abdominal cavity was opened by an incision extending 2 inches above the umbilicus. The uterus was brought into the wound. The obstructing tumour was found to be a fibroid situated on the left side of the lower uterine segment; it was rounded in shape and about the size of a cricket ball. The projection from the body of the uterus, described above, was found to be an irregularly shaped subperitoneal fibroid situated about 1 1/2 inches internal to the insertion of the left round ligament. The bladder had markedly hypertrophied walls and was found to reach to an abnormally high level.

The uterus was opened by an incision about 4 inches long in the anterior wall. Through this the child was delivered and the placenta removed. The uterine incision was then sutured with thick catgut. The tumour was next shelled out of the uterine wall. In spite of all efforts to promote uterine action, the organ remained in a relaxed, flabby condition. Owing to its atonic state and the consequent oozing, it was found necessary to perform supravaginal hysterectomy.

The child, though small, was in no way malformed.

Mother and child returned home well twenty-eight days after operation.

Remarks.—The presence of fibroid tumours in the uterus may complicate pregnancy, parturition, and the puerperium in
a variety of ways. The site which the growth occupies is the chief factor in determining the significance of the complication. For example, subperitoneal growths in the body of the uterus, unless of considerable size, may not give rise to any symptoms during pregnancy, and may not interfere with the progress of parturition; while a tumour growing in the lower pole of the uterus may give rise to severe pressure symptoms during pregnancy, and may constitute a complete barrier to the passage of the foetus through the pelvis during labour. An intra-uterine growth may interfere with the development of the product of conception and lead to abortion, with risks of hæmorrhage and sepsis, or may hinder delivery, or cause post-partum hæmorrhage. Therefore pregnancy may occur in a uterus the seat of a fibroid; but such a tumour may cause no symptoms during pregnancy, and need cause no anxiety. Here we may leave nature to safely terminate the labour. On the other hand, a fibroid tumour may so complicate a pregnancy that not only are the symptoms during pregnancy urgent and severe, but its presence may place the patient’s life in jeopardy when labour sets in. The cases which I have just related belong to this class. The first was an example of a tumour causing distress and danger during pregnancy, the second was an example of a tumour causing danger during labour. When it is clear that a pregnancy, complicated by fibroid tumour, requires surgical treatment, it is possible that the case may be treated, and scientifically treated, by more methods than one, though, doubtless, there must in each case be one method better than any other. In my opinion, this applies to Case No. II., but not to Case No. I.

The propriety of the treatment adopted in Case No. I. could not be questioned. The tumour filled the pelvis, and could not be dislodged; it presented an impassable barrier to the transit of the child; its presence was a menace to life, and caused symptoms which could no longer be endured by the patient. The indications were so urgent, there was no alternative but to
operate without delay in the interests of the mother. The only method other than the one adopted would have been to remove the tumour, leave the uterus, and thus give the mother a chance of carrying the foetus to term. This did not occur to me at the time, but an examination of the specimen shows that such a method, however ideal, was in this case impracticable.

In Case No. II., the tumour gave rise to no urgent symptoms during pregnancy, and in this case our treatment was to be planned and carried out with the view of saving both mother and child, or, better still, mother, child, and uterus. The possible procedures that occur to me other than the one carried out are two in number:

1. Labour might have been induced at the seventh month and the tumour removed subsequently. Against this plan we have to consider the risk of the induction to the mother, the risk of losing the child, and the subsequent major operation for removal of the tumour.

2. The tumour might have been removed without interfering with the pregnancy. This might have been attempted, but there were not sufficient grounds to ensure the successful carrying out of this procedure.

As events turned out, this result would not have been attained without difficulty and danger. The tumour was placed under the bladder, was sessile, and had a broad attachment to a very vascular part of the uterus, and haemostasis would have been difficult and uncertain. The question of whether the fibroid uterus should be sacrificed after removal of the child and the tumour was considered, and decided in the affirmative: first, on account of the uncertainty of being able to deal satisfactorily with the bed from which the tumour had been removed; and secondly, from the fact that the remainder of the body of the uterus was not healthy. I think, as events proved, the course which we followed was right and proper. The mother and a healthy child were saved, and the former returned
home well and strong; and, though deprived of the power of bearing offspring in the future, I think that, after her experience, she will be glad that such an event is not possible.

Dr James Ritchie said they were very much indebted to Dr Brewis for having submitted these two very interesting cases. The class of case referred to was one of extreme gravity in practice. When one discovered a cervical tumour in a married woman, it was often a matter of great difficulty to know how to treat the case. Although the tumour might not be very large at the beginning of pregnancy, it would probably grow very much during pregnancy. Should immediate operation be recommended, or waiting? He thought Dr Brewis had put before them very clearly the rules for guidance in such cases. It would, he thought, be well to explain to the patient the greater danger of waiting for operation till full term rather than having it dealt with at a comparatively early stage of pregnancy; and, having given the explanation, to allow the patient to choose between early operation and waiting events. In the first case there was no doubt about the procedure which should be adopted.

Dr Lamond Lackie thanked Dr Brewis for the report of two such interesting cases. He said it was quite clear that Dr Brewis had adopted the best possible means of saving those patients, but remarked that it was curious how in some cases nature so frequently seemed to overcome difficulties that at first sight seemed insuperable. The most interesting case he had seen of pregnancy complicated by fibroid tumour was of a lady who had come to Edinburgh on account of a fibroid tumour complicating pregnancy, diagnosed by her doctor. Dr Lackie in examining per vaginam had found it absolutely impossible to feel any os. The pouch of Douglas was entirely occupied by
the fibroid. It was determined to leave the patient for a time, and perform Cæsarean section at a later date. At eight months labour set in, and at once preparation was made for Cæsarean section. Labour went on very rapidly, and on examination it was found that the cervix had descended, and the os was lying practically in the centre of the pelvis, so that the fibroid tumour which had occupied the pouch of Douglas had risen up, and the head of the child presented in the normal way. After the birth of the child the os had ascended again, and the pouch of Douglas was again occupied by the tumour, and it was found necessary to give chloroform and hook the cervix down, pass in the hand, and remove the placenta. The patient made a good recovery, and went home with the tumour very much less in size than it had been during pregnancy.

Dr Keppie Paterson asked if Dr Lackie had followed up the case, but Dr Lackie replied that he had not done so.

Dr Brewis, in reply, said the case cited by Dr Lackie might have been a pedunculated fibroid.

VIII. ON THE PROGNOSIS OF PREGNANCY IN PATIENTS WITH ONE KIDNEY, WITH NOTES OF AN UNUSUALLY COMPLICATED CASE OF LABOUR AFTER NEPHRECTOMY.

By James Haig Ferguson, M.D., F.R.C.P.E., F.R.C.S.E., F.R.S.E.; Assistant Gynæcologist, Royal Infirmary, Edinburgh; Assistant Physician, Royal Maternity Hospital, Edinburgh; and Gynæcologist, Leith Hospital.

In recent years, owing to the brilliant and rapid advances of surgery, the operation of nephrectomy has become no uncommon procedure for various diseased conditions of the kidney. It follows that we as obstetricians will occasionally be confronted with the question: Should a woman with one kidney be advised
to marry and run the risk of becoming a mother? I am assuming, of course, that the remaining kidney is healthy and equal to its duties in ordinary circumstances.

We know that during pregnancy in healthy women the kidneys undergo hypertrophic changes of a strictly physiological character, so as to enable them to cope with the increased work they have to do. In the same way, as is well known, the one healthy kidney in the patient whose diseased kidney has been removed undergoes hypertrophy, which probably began long before the nephrectomy was performed, the diseased kidney having in all likelihood been more or less functionless for a considerable time prior to operation. If in such a case pregnancy should then supervene, further hypertrophy will be required to meet the necessary demands; and as, so to speak, all the patient’s eggs are now in one basket, any undue strain on this kidney will at once mean very serious renal insufficiency.

The case I am about to record shows that in a patient whose remaining kidney is healthy, and has had time to become sufficiently hypertrophied to perform the work of two, the strain of pregnancy can be fairly well borne; for although the patient developed albuminuria, and had a diminished excretion of urea, yet when she was put on proper treatment (though it was somewhat late in the day) the condition yielded fairly satisfactorily to appropriate remedies, and the kidney irritation tended to subside. In fact, this patient with only one kidney had, on the whole, less severe albuminuria and less toxic disturbance than many albuminuric primigravidæ both of whose kidneys are known to be organically sound, though it is possible, and indeed probable, that in my patient’s case the amount and

1 In one case recorded in the discussion on Mr Twynam’s paper on nephrectomy in pregnancy (Lancet, vol. i., 1898, p. 165), it is stated that after removal of one kidney in a man, for laceration, where all the work was thrown suddenly on the opposite organ, the amount of urine and urea became normal in four days’ time.
virulence of the toxin or toxins she was manufacturing were comparatively insignificant. It is manifestly impossible to institute comparisons between different patients on this point.

The only other instance of which I have personally known where pregnancy occurred in a patient with one kidney, was in the case of a lady who was married about two years ago, after having had nephrectomy performed. Pregnancy shortly supervened, and she died, I understand, of eclampsia shortly after a premature labour.

One would, on the whole, I think, prefer, so far as one's limited knowledge goes, that patients who only possess one kidney, even though it is apparently a healthy one, should, if they marry at all, delay marriage till after the menopause. One could not, however, give such uncompromising advice; it would be impracticable, and indeed in many cases hardly justifiable, besides being highly unwelcome to many of the recipients. Each case would require to be judged on its own merits, and after a careful consideration of all the attendant circumstances. Some patients might be determined to take a certain extra risk for reasons all-important to themselves, and such are apt to listen to no arguments which in any way run counter to their own views and inclinations. I should be strongly inclined to urge, in the interests of prudence, that marriage be delayed till at least three years from the operation of nephrectomy, so as to give the remaining healthy kidney ample time for compensatory changes to occur under the influences of the varying vicissitudes of ordinary life—in fact to establish and consolidate a condition of matters which will enable the one kidney safely and easily to do the work usually undertaken by two.

Of course if the remaining kidney were diseased, marriage, where there is any possibility of child-bearing, should, in my opinion, be out of the question.

Whenever a first pregnancy occurs in a patient with only
one kidney, she should be most carefully watched, and placed in circumstances where this watching can be thoroughly and systematically carried out, her urine being examined and tested regularly during the whole duration of pregnancy, with the view of immediately bringing the pregnancy to an end should she show any evidences of renal inadequacy which fail to respond to general treatment.

Special care should be taken to ensure that the excretion of urea is not diminished, and in this connection it is well to remember that the excretion of urea in healthy pregnant women seems to be considerably less than is usually supposed, varying, according to Whitridge Williams, from 20 to 24 grammes in the twenty-four hours. I have certainly in some cases verified this observation, but was inclined to put it down to commencing failure of excretion, and diminishing power in the kidney function, in fact to commencing toxaemia. Be this as it may, there can be no doubt, as Marx has shown, that urea is always diminished in the toxaemia of pregnancy, and that this diminution is a much more valuable, and certainly an earlier indication, than either the presence of albumen or casts, both of which latter may be absent even in bad cases. If this were more generally recognised and acted on, there would, I feel sure, be fewer cases of eclampsia than we now have to deplore.

The same general principles would hold, as regards subsequent pregnancies, in the case of a parous woman who had been the subject of nephrectomy, always bearing in mind the fact that primigravidæ are more specially liable to the toxaemic disturbances which may be associated with pregnancy.

The same remarks might be applied in the case of a woman with one kidney functionless, as, for example, in hydrenephrosis, or where only one kidney is diseased and the other healthy, as proved by Luy's separator or by catheterising the ureters. In such cases of kidney disease it would be of great importance to
discover the exact condition of each kidney, for in my opinion the prognosis as regards the supervention of pregnancy would be worse with two kidneys even slightly diseased, than where only one kidney is diseased (even considerably so) and the other healthy. The advantage one has in the case of the woman with only one kidney is that one knows exactly where one is as regards the condition of the remaining kidney, and can speak therefore with a more certain voice as regards probabilities and possibilities.

I have been unable to find much information in literature on this subject. There is a considerable number of cases recorded where, on account of urgent kidney complications, nephrectomy had to be performed during the actual existence of pregnancy, in many cases with satisfactory results both as regards the mother, the continuance of the pregnancy, and the health of the child.

Fritsch says that pregnancy can be carried through with nephrectomy of one side, and quotes a case of Bovée's in support of this. He says, however, that the remaining kidney, if it becomes in a higher degree a "pregnancy kidney," may easily become insufficient, and that this may lead at once to the most serious eclampsia. Schramm, quoted by Cumston, records a case where the right kidney had been removed and pregnancy and labour were practically normal. He sums up by saying that a patient having but one kidney may go through pregnancy and labour without any injury to her health, but it is probable that such a patient would have diminished resisting power should she be afflicted with chronic nephritis, and that an attack of eclampsia would be fatal to her. In other words, with good fortune, she may pass through her pregnancy and labour safely, but any breakdown will necessarily tend to be greater, and therefore apt to be more disastrous.

The variety of the complications which had to be dealt with in the following case was greater than I have ever before met
with in any one patient, and the cases must be few in which so many obstetrical difficulties have been concentrated in one individual. For in addition to the fact that she had, some years previously, undergone the operation of nephrectomy, the patient was the subject of albuminuria, and had besides a contracted pelvis, placenta prævia, and a cervical polypus, whilst, in the way of obstetric operations, induction of labour and craniotomy were required, and manual removal of an adherent placenta was necessary, in order to complete the third stage.

The notes of the case are as follows:—

F. K., æt. 36, a primigravida, was admitted to the Edinburgh Maternity Hospital at 9.30 p.m., on the 29th December of 1905.

The patient had last menstruated on the 20th of March 1905, and on admission it was noted that in spite of the fact of her being a primigravida, and in the last month of gestation, the foetal head was not engaged in the pelvis, but was freely movable above the pelvic brim. The foetus lay in the left occipito-anterior position.

The patient stated that she was quite well during her pregnancy till the end of October 1905, when her legs became so much swollen that she had to go to bed, where she remained for a week. She had been liable to occasional severe headaches.

On 28th December, the day before her admission to hospital, she was suddenly seized with severe headache, and flashes of light before her eyes, but she noticed no swelling of hands or face. On admission, her urine, which was scanty, contained 2 grains of albumen and 4 grains of urea per fluid ounce. She was thin and very pale, and there was considerable dropsy of the lower limbs, of the abdominal wall, and of the vulva.

When five years of age she had had scarlet fever, followed by nephritis. In February 1896, her left kidney was removed for tuberculous disease. The symptoms which led up to the
nephrectomy and which had lasted for twelve months before the operation, were progressive emaciation, blood in the urine, frequency of micturition, night-sweats, and attacks of severe pain in the left lumbar region. She states that she recovered well from the operation, but that the wound did not heal for twelve months afterwards. Since then she has remained well. She has now no pain or discomfort on micturition, but passes water rather frequently—every two hours or so.

Menstruation began when she was 16 years of age, and recurs at intervals of twenty-four days. It is fairly profuse. She has no dysmenorrhœa or intermenstrual discharge.

Examination of the pelvis showed an intercristal diameter of 10½ inches, and an interspinous diameter of 8½ inches. The diagonal conjugate was fairly normal, just slightly under 4½ inches. The pelvis was, however, much contracted transversely, and was of a kyphotic type.

The patient's general condition improved under milk diet and complete rest in bed. Her urine increased in quantity up to 50 to 60 fluid ounces per diem. The urea varied from 2½ to 4 grains per fluid ounce, and the albumen decreased to 0·4 grains per fluid ounce.

In view mainly of the head not having entered the pelvis, it was decided to induce labour, as there seemed some hope of getting the head through if it were not too firmly ossified. Accordingly a bougie was introduced into the uterus on the evening of 3rd January 1906. There was some bleeding per vaginam after this, and this was at the time attributed to a small polypus which projected inwards from the left side of the cervical canal. There were occasional transient pains during the next twelve hours, and at the same time some further bleeding, not severe, but more than seemed to be accounted for by the cervical polypus. On careful examination after the os became patent, there was found to be a lateral placenta praevia, with apparently a somewhat shrivelled
placental lobe. The pains almost disappeared during the next twenty-four hours (even though the membranes had ruptured prematurely), and there was not much hæmorrhage. On the morning of 5th January 1906, a Champetier de Ribes's bag was inserted through the os, which was about the size of a florin and very rigid. Strong pains came on during the day, and at 3 P.M. the patient was looking and feeling very much worn out, her pulse being 118 to the minute. At 3.30 P.M. she was anaesthetised, the Champetier's bag was pulled slowly down, so as to fully dilate the cervix, as well as to stretch the vagina and perinaeum, the forceps was applied to the foetal head, and every effort was made to effect delivery in this way. All such attempts, however, proved futile, as the head was too large and too firmly ossified to pass through the pelvic brim. I therefore performed craniotomy, and the child was even then with difficulty extracted, as both the cavity and outlet of the pelvis were likewise transversely contracted. The child was delivered at 4.25 P.M., it was a male, weighing 5 lbs. 13 oz., and was 22 inches in length.

The placenta was retained, and after half an hour I inserted my hand into the uterus, found it completely adherent, and verified the diagnosis of partial placenta praevia. After manually detaching and removing the placenta, an intra-uterine douche was given, and it was found necessary to insert three stitches into the perineum. The placenta showed a shrivelled lobe.

The puerperium was uneventful. The albumen steadily diminished and ultimately entirely disappeared, and the patient was discharged well on the twelfth day.

This case is mainly of interest from the fact of the patient having only one kidney with which to face the strain of her first pregnancy and labour. Clearly, labour should have been induced at a much earlier date in order to have been of any service in giving the child a chance of life, but unfortu-
nately the patient did not come under observation until too late for this operation to have been of any real advantage in the child's interests, and it was done therefore more for the mother's sake than from any great hope of saving the child.

It is to be noted that the patient had a history of nephritis after scarlet fever in childhood, from which she seems completely to have recovered, at least in so far as the right kidney was concerned. Her left kidney was removed for tuberculous disease in 1896, nearly ten years before her confinement, so that during all these years she had manifestly been entirely dependent on the right kidney for all her renal functions. Fortunately this kidney proved to be healthy, and rose to the occasion most satisfactorily. But if it was equal to the work required of it in the non-gravid state, the strain implied by the occurrence of pregnancy and labour, and the increased functional activity necessarily produced thereby, set up a condition of relative insufficiency, which fortunately, however, did not go the length of a complete breakdown. Had the pregnancy chanced to have been multiple, or had the toxaemia been greater, one could hardly have hoped for a favourable result.

References.

In the *Handbuch der Geburtshülfe*, by von Winckel (Wiesbaden, 1904), Zweiter Band, ii. Teil, page 1432, practically all the references to kidney operations during pregnancy are given. The reference to Twynam's case is given erroneously under "Frymann."


Dr Brewis said he had listened with pleasure to the most interesting paper from Dr Haig Ferguson, and thanked him for bringing the case before the Society. Dr Ferguson had referred
to the scarcity of instances of pregnancy occurring in the case of a patient with only one kidney. He had looked over his records and found that in April 1896 he had removed the right kidney from a Mrs B., and that in August 1898 Mrs B. had a child. He was told that there was no complication at all in the labour, and that the patient was still quite well.

Dr James Ritchie said they had listened to a very interesting paper. When asked to attend a lady, he advised her to inform him should increased frequency of micturition occur, or if there was too small a quantity of urine, or if there was any swelling of the limbs. If the patient was otherwise healthy, he did not make further examination. If the patient were known to have an abnormal condition of the urine, it was one’s duty to have the urine frequently examined during the whole time of pregnancy; if the patient be known to have only one kidney, one should make perfectly sure that that kidney was acting well by examining as to quantity of urine passed, its specific gravity, and the amount of urea.

Dr Fred. Porter asked Dr Haig Ferguson why in the management of the case of labour, having diagnosed a contracted pelvis and partial placenta praevia, turning had not been attempted. With regard to albuminuria and one kidney only, and Dr Ferguson’s advice for the woman not to marry till the menopause, he considered the advice rather hard, and until one knew what albuminuria and eclampsia were really due to, he would not advise non-marriage. He had had an experience of a lady who had become pregnant after nephrectomy, and though the case had not been under his care, he knew that she had a child two years after the nephrectomy, and that it was an absolutely simple labour, and the child was still living.

Dr Haig Ferguson, in reply, said that he did not say he advised a woman not to marry under such circumstances. As to the treatment carried out, the placenta praevia was not diagnosed till the membranes had ruptured, and it was a very
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Partial placenta praevia; the lobe presenting was somewhat contracted. Further, one could not have turned well in a kyphotic pelvis with a narrow outlet. Even if the condition had been recognised earlier, he did not know that he would have considered version as at all a practical procedure in the circumstances.

IX. SUCCESSFUL TREATMENT OF Puerperal Fever BY ANTI-STREPTOCOCCIC SERUM.

(Abstract.)

By Dr Garnet Leary (Communicated by the Secretary).

In this communication the author gives his experience of anti-streptococcic serum in the treatment of cases of puerperal sepsis occurring during 1900-1902 in an extensive club and mixed-class practice. Recovery took place in all the cases, this successful result being ascribed to the combined and persistent use of intra-uterine douches along with the administration of the serum.

At the onset of symptoms of infection intra-uterine douches of corrosive (1 in 1000) or creoline (3i to pint) were generally given twice or three times daily, carbolic (1 in 40) being substituted after a few days. In cases where, after the lapse of two or three days, no improvement took place in pulse and temperature, and whenever the temperature rose to 103° F. to 104° F., and pulse to 120, curettage by a blunt instrument was performed, and fresh antistreptococcic serum employed and repeated frequently, according to the severity of the symptoms.

Opportunities for making microscopical examination or taking cultures were not available; but the occurrence of rigors, high fever, rapid pulse, sweats, diarrhoea, and marked wasting distinguished most of the cases as of true streptococcic origin. In a smaller number of cases the symptoms, while alarming, were less severe, and yielded to intra-uterine douching. In these the infection was probably saprophytic.
The following cases are detailed, viz.:

Case I.—Multipara, æt. 32, with previous history of heart-disease, was seized with hæmorrhage at sixth month of pregnancy, and when seen some hours later was collapsed, with almost imperceptible pulse. The os was dilated to the size of a florin. Pains being weak and hæmorrhage continuing, a diagnosis of accidental hæmorrhage was made, dilatation completed by the fingers, and a six months' foetus was delivered by forceps. The placenta was stripped from the uterine wall, the uterus irrigated with creoline and corrosive, and the patient freely stimulated. As collapse continued, saline injections were given, foot of bed raised, legs bandaged, etc. After remaining semi-comatose for twenty hours, she rallied slowly to the fourth day, temperature keeping 99° F. to 100° F. On the fourth day the temperature rose with a rigor to 105° F., pulse 168 and thready, and she appeared to be sinking. Cold sponging and administration of quinine and phenacetin causing only slight temporary improvement, 10 c.c. antistreptococcie serum were injected into the abdominal muscles. This was followed at first by another rigor and rise of temperature, but in six to ten hours temperature fell to 102° F., and pulse was stronger and 152. Another injection was given and followed by another rise in temperature to 104° F., and a third injection twelve hours later.

Next day temperature was 100° F., pulse 140, and patient showed much general improvement, becoming for the first time able to mutter a few words and to recognise those around her.

Improvement was gradual and steady from this point, and patient was able to leave her bedroom in two months. After a few months further treatment for her heart lesion, she was in better health than she had been for years.

Case II.—Multipara, æt. 28, was seized with profuse hæmorrhage at the eighth month. The os was dilated to the size of a crown piece, but pains were few and feeble, and as
haemorrhage continued profuse and edge of placenta could be felt present, the membranes were artificially ruptured, turning effected, and the uterus plugged by traction on the foetal legs. After saline injections and stimulants had been given to combat the profound collapse, delivery of a dead foetus was accomplished. The placenta, which was adherent, was then removed piecemeal with difficulty, and the uterus curetted and douched. Collapse was again profound, but patient rallied in a few hours, and made satisfactory progress until the third day, when septic symptoms supervened, with rapid pulse, pain, and distension of abdomen, accompanied by offensive discharge. These symptoms continued, in spite of douching twice daily, until the sixth day, when temperature, which had been 101° F. to 103° F., rose with rigor to 105° F., pulse 140. Intra-uterine douching was continued, cold sponging done, and quinine sulphate, phenacetin, and sodium salicylate given internally, with improvement for some hours, but as temperature again rose to 104° F., 10 c.c. of serum was injected. Ten hours later temperature fell to 100-5° F., pulse 120; patient began to take food, and looked better. Serum was repeated next morning. For two days temperature remained between 100° F. and 102-5° F., pulse 100 to 120, intra-uterine douching being continued. A third injection was then given. The symptoms became greatly improved, but further complications supervened in the form of pelvic peritonitis with abscess in the pouch of Douglas and a mammary abscess. The administration of the serum on several occasions at this stage seemed to give beneficial results, the abscesses being also incised and drained. A threatening abscess in the other breast seemed to be aborted by a timely injection. Recovery was then rapid, and patient left her bed some three weeks later, but a few days afterwards developed phleghmasia alba dolens, from which she made a good recovery after six weeks treatment: was able to resume her work in a factory, and enjoyed good subsequent health.
Case III.—Mrs C., primipara, was delivered by forceps of a large full-time child with difficulty because of hip-disease and slight pelvic deformity. The perineum was torn badly, and stitched, but did not heal well. On third day lochia were offensive; temperature 99.5° F., pulse 104. Intra-uterine douches were given twice daily, stitches removed, and edges of wound purified. At the end of a week, during which temperature kept from 100° F. to 102° F. and pulse 100 to 130, patient had a rigor, and gave much trouble with noisy delirium. During the next few days serum was injected four or five times, each dose being followed in five or six hours by marked improvement. The temperature came down to 99° F., pulse 108, and she became quiet and rational, and took more nourishment. Improvement was steady for three weeks, when, after being up, abscesses developed in both mammae, and slight phlegmasia alba dolens came on in left leg. Serum was used for both conditions, and appeared to markedly ameliorate the symptoms. In six weeks she was quite well, and able for her household duties. It was subsequently ascertained that the midwife in attendance on this patient had come to her from attendance on a fatal case of puerperal septicæmia.

Case IV.—Mrs O., multipara, was delivered by forceps for tedious labour, a small perineal tear being stitched. The perineum suppurated, and on fourth day temperature rose to 100° F., pulse 108, and an offensive discharge was present. In spite of douching, temperature and pulse continued to rise, and on sixth day curettage was done. This was followed on eighth day by a rigor, and patient became semi-comatose for several hours. A serum injection reduced temperature to 101° F., pulse 115. Next day another rigor occurred, with collapse and unconsciousness for nearly twelve hours. Patient was freely stimulated, and two more injections of serum were given. Next day temperature was 100° F., pulse 110, and general condition
quiet and reasoning. She continued to make a remarkable recovery, and was able to get about at the end of the third week.

As Cases II., III., and IV. occurred in succession, at a few weeks interval, the author suggests that the midwifery bag may have been instrumental in transmitting the infection, which view was strengthened by the cessation of the series after thorough sterilisation of the bag and its contents.

Case V. occurred in the practice of Dr T. Leary, J.P., father of the author, in 1902. Mrs S., aet. 20, was delivered by forceps, the perineum being slightly torn, but not requiring stitching. The patient progressed normally until the fourth day, when temperature rose to 101° F., pulse 110. Next day a slight rigor occurred, accompanied by vertigo, restlessness, and some delirium. There was tenderness in the left iliac region, and diminished lochia and milk secretion. Doucheing twice daily with corrosive sublimate was carried out up to seventh day, when temperature, which had hitherto kept about 101° F. to 102.5° F., rose to 104° F., with marked exaggeration of the previous symptoms. The pain over the uterus was so severe as to necessitate morphia suppositories. Pulse was 140, of good volume, and regular. At night patient became prostrate and semi-comatose, and showed tremors and twitchings. As patient seemed worse next morning, antistreptococcic serum was tried, on the suggestion of the author. The improvement by the following morning was remarkable, and temperature had fallen to 100° F., pulse 116. The same evening another injection was given, with equally satisfactory result, the temperature falling the following day to 99.5° F., and the diarrhoea, which had been intractable for days, ceased. Four days later a relapse, with rise of temperature to 102° F., pulse 100, and recurrence of pain, flushing, and diarrhoea, yielded promptly to other two serum
injections. Progress after that was uninterrupted, and patient was able to resume her household duties ten days later. On searching for the cause in this case, the fact was elicited that a lodger in an adjoining room was suffering from erysipelas. In this case, which was therefore in all probability a pure streptococcus infection, the serum seemed to have a more directly beneficial effect than in the other cases. This result may also have been due to the more frequent repetition of the dose, as three serum injections were given within twenty-four hours and two the following day.

General Remarks and Conclusions.—In none of the cases did metastatic abscesses occur as the result of the use of the serum, nor was any local suppuration met with. The serum used was always fresh, and both Burroughs Wellcome's and Parke Davis's preparations were used.

After referring to the diversity of organisms that may give rise to septic conditions after labour, including different varieties of the streptococcus, Loeffler's bacillus, and bacillus coli, either in pure or mixed infections, as accounting in some degree for the apparently contradictory clinical results in cases where serum has been employed, Dr Leary summarises his conclusions as follows:—

1. The serum should be used in all cases which do not give way rapidly under treatment by douching, drugs, etc.
2. A bacteriological examination should, if possible, be made from the cervical and vaginal discharge.
3. Frequent repetitions of the serum should be given, depending on the severity of the case, especially noting the pulse.
4. Treatment of all complications that may arise should include use of the serum.

Dr Keppie Paterson said it was a very interesting paper to which they had listened. He said he had himself used serum
in two of his cases without any evident benefit—in one case several injections had been given. He felt that the injection of serum in test cases of fever in the puerperium was very much empirical until one could make sure what germ they had to deal with. In one of his cases he had obtained a blood culture, and bacillus subtilis was the germ found. It was really necessary to obtain a culture from the secretion within the uterus and from the blood in these cases. Then one might hope to benefit the patients by the use of the particular serum.

Dr Lamond Lackie considered that an intra-uterine douche of 1 in 1000 corrosive was too strong to be used. The curettage also was not a very satisfactory treatment, for there was great risk of opening up new channels of infection. As to his present experience of the use of antistreptococcic serum, it had been eminently unsatisfactory. Any success that had been obtained in any case, he thought, might quite well have been due to the local treatment—the careful washing out of the uterus with saline or sterilised water. The difficulty was to know exactly what the sepsis was due to. To overcome this difficulty, a polyvalent serum had to be introduced, made from various species of streptococcus, and that form of serum was supposed to be more able to counteract the poison. But it seemed to him that one would need to use an enormous dose of the serum in order to give the antidote of the particular streptococcus present. In sapremia the serum was practically useless, but with local treatment one obtained satisfactory results. In real cases of septicæmia one would like to have a serum, but serum had had no effect in his experience. A Committee in New York had come to the conclusion that the serum was absolutely worthless in these cases. In cases in which good appeared to have been obtained, it seemed difficult to know exactly what had done good. A temperature might be 101° F. in the afternoon, and next day it might be normal, the fall being due to natural causes, the blood alone having overcome the poison.
Dr Haig Ferguson quite agreed with Dr Lackie as to the failure of the serum to do any good even in cases where blood-cultures and the secretion in the uterus had been examined and the streptococcus found. In these cases one would have expected, a priori, some advantage to have arisen from the exhibition of the serum. Personally, however, he had seen either no benefit, or very little, from its use. As to scraping the uterus, it was a dangerous thing to do—opening up fresh surfaces. As to the use of 1 in 1000 corrosive in an intra-uterine douche, he thought it to be very dangerous to use in a puerperal uterus. Nothing stronger than 1 in 4000 should be employed.

Meeting III.—January 9, 1907.
Dr J. W. Ballantyne, President, in the Chair.

I. The following gentleman was elected an Ordinary Fellow of the Society:—A. M. Crennan, M.B., Ch.B., 36 Woodburn Terrace, Edinburgh.

Dr Haultain showed—(a) Twisted Parovarian Cyst with an intraligamentary haemorrhage—the ovary not being at all involved. (b) A Specimen of Diffuse Uterine Fibrosis, in which, as usual, the mucous membrane was much hypertrophied. (c) A Sarcomatous Uterus, round celled, which filled up the entire cavity, perforated the wall, and involved the peritoneal cavity. The operation had been performed seven or eight months ago, and at present the patient was quite well. (d) Uterus removed for perforating abscess of its wall. The case was one of septicæmia after abortion. On opening the abdomen it was found filled with purulent material, and the uterus was found perforated. It seemed a desperate case; the temperature was about 104° F. at the time of operation, but the patient is absolutely
so far recovered. (e) Three specimens of mucous polypus and adenomatous growth, associated with fibroid uterus. In one of the specimens the mucous polypus is growing on the base of a fibroid. (f) A multiple fibroid of uterus, giving rise to retention of urine. The special interest of the specimen was, that on the right side the tube seemed as if it had passed down into a sulcus, which seemed to be formed by a fibroid in the round ligament, which had turned over. But the condition was a very difficult one to understand.

III. CASE OF ACUTE ALBUMINURIA, CAUSED BY THE PRESSURE OF A TUMOUR ON BOTH URETERS—OPERATION—RECOVERY.

By Dr Frederick Porter.

The President and Fellows,—I thought this case of sufficient interest to place before this Society. So far, I have failed to find any record of a case presenting a similar train of symptoms, but there is possibly some Fellow present who has had experience of a similar case.

Mrs M'L., age 34, multipara, has had three children, youngest four years of age. All her labours were natural and easy. I saw this patient first on 19th April 1905, when she complained of general weakness, pain in the back, pain in the right hypochondriac and lumbar regions, especially when she walked. These symptoms were relieved by lying down, except the pain in the back, which was more severe. She informed me that she suffered from the above symptoms for the past five years, and consulted me as she was feeling more run down than usual. For the last six or eight months her menstruation was regular every twenty-one days, but very scanty, the period lasting one day. There was slight dysmenorrhea. She suffered considerably
from flatulence, and had every appearance of a chronic dyspeptic. Heart and lungs were apparently sound. There were no haemic bruits; pulse 74 per minute; soft tension.

**Abdominal Examination** revealed on palpation a freely movable tumour, which was easily palpable on deep inspiration, and with slight pressure disappeared from the hand and seemed to dip down under the liver. In size and shape it seemed to me to have the characteristics of a large kidney, and I diagnosed the case as a movable hydronephritic kidney. Rectovaginal examination revealed no abnormality. Urine was acid, slight mucus-like deposit, no albumen, sugar, or blood. Deposit on microscopical examination revealed a number of large squamous and pyriform cells, and a few leucocytes. I ordered the patient a kidney belt, which relieved the back weakness, but with no other appreciable results.

I examined the urine at intervals of a month, and found it always practically similar to my first examination. One specimen exhibited a larger number of squamous and pyriform cells and leucocytes than any previous specimen.

I may here state that I examined this patient's urine so frequently, as I was anxious to discover the significance of the presence of these cells, as I had previously observed that in several urines, and as I thought I was dealing with a pure kidney condition, I might find out their exact nature. I will refer to this later.

**History of Present Illness.**—On 3rd November 1905, patient complained of severe headache.

4th November.—Headache had disappeared, and she felt in her usual health.

5th November.—She complained of breathlessness, with a choking sensation, and felt sick. She lay down in bed for an hour, but as this increased the above symptoms, she rose and sat up till her usual bed-time. She slept all night.

6th November.—Complained of breathlessness, but rose and
did her house duties. She noticed, when dressing, there was considerable swelling of the lower limbs.

7th November.—Her husband noticed there was swelling of the face and abdomen. On examining the legs at night he saw they were swollen as far as the ankle. She complained of sickness throughout the day.

8th November.—On dressing in the morning, she found she could not get her corsets to meet, on account of the general swelling. Her arms and hands were greatly swollen. Other symptoms similar to the previous day, except that she vomited twice. I was asked to see her in the evening, and found a general œdema of the whole body. Face, arms, hands, chest, legs, and feet, all pitted freely on pressure. She was very breathless, and complained of pain in the right iliac region, and said she had passed a small teacupful of urine in the twenty-four hours. Pain in the back was still present, but she was quite free from pain in the right hypochondriac region (the previous seat of pain). She had very severe headache. Pulse was regular (72 per minute), tension high.

Heart on Palpation.—Apex beat was strong and heaving, and was shifted about \( \frac{1}{2} \) inch to the left.

Auscultation.—Sounds were clear, second accentuated and metallic; there were no murmurs.

Abdomen was distended and œdematous. I could not detect the movable tumour in the right hypochondriac region; over the right iliac there was resistance on palpation, and on deep palpation she complained of pain. Percussion note in this region was duller than the opposite side, and remained so after patient was put in the lateral position.

Urine was alkaline, sp. gr. 1022. After adding acetic acid and boiling, it gave a copious deposit of albumen which was almost solid. There was also a little blood present.

Microscopically.—Red and white blood-cells, a large amount of epithelial cells, and a few hyaline casts.
As I assumed my previous diagnosis was correct, I came to the conclusion that the kidney was displaced into the pouch of Douglas, and the ureter had become twisted in the process, thus causing the nephritic symptoms.

Patient was given a saline aperient and a mixture of potass acetate, hyoscyamus, buchu, etc., and put on a milk diet.

9th November.—Headache had disappeared; patient passed a normal amount of urine, which contained less albumen; there was no blood, but casts still present. Dr Haultain examined the patient in the evening, and practically corroborated the diagnosis. On vaginal examination he found a body lying in the pouch of Douglas, which he thought might be the edge of a kidney.

10th November.—Patient felt better; headache still absent, and she was less oedematous; face was still puffy, but there was no oedema of legs and arms. In the evening she was removed to the Deaconess Hospital, with a view to operation.

She remained in bed till 15th November, where she felt quite comfortable. Urine still contained a considerable amount of albumen, and casts were still present. Mr Alexis Thomson operated, and removed a multilocular pedunculated cyst, which was attached to the broad ligament, and which he found pressing on both ureters.

Patient remained in hospital a fortnight, and though the operation was entirely successful, the nephritic symptoms did not improve, but steadily got worse. I believe, while in hospital the amount of albumen was estimated for the first day or two after the operation, but when the albumen was found to be increasing, an estimate was no longer taken. I regret that I have no accurate notes of the daily output of albumen.

When patient returned home, I put her on a milk diet, gave diuretic mixture she had previously, and kept her in bed. The albumen steadily decreased in amount, and on 22nd January (nine weeks after operation) there was no trace. On question-
ing her about the diet she got in hospital, she informed me that two days after the operation she had been on an ordinary convalescent diet—chicken, rabbit, milk pudding, apple tart, etc., and this no doubt accounted for the increased albuminuria.

Her after-history was without interest, except that I found a difficulty in getting her to take nitrogenous food without causing a return of the albuminuria. After the urine was free from albumen, I waited a week and supplemented the milk diet with different preparations of plasmon, biscuits and powder, which I ordered in milk puddings, and plasmon cocoa (this was experimental). I found on this diet there was a return of albuminuria. I changed the diet, and gave her oatmeal porridge, green vegetables, tomatoes, milk puddings, and milk ad lib. After a fortnight there was no return of albuminuria, and I gradually introduced chicken soup, veal, tea, etc.

I examined her urine, at first fortnightly and then monthly, but found no trace of albuminuria. She is now on an ordinary light mixed diet, and she is in every way better. She suffers no pain anywhere, and at present is four months pregnant. Her urine is free from albumen, but there is still a number of squamous and pyriform cells present.

This case, I think, may strike you as presenting some analogy to the albuminuria of pregnancy. When I was asked to see this patient on 8th November 1905, I had examined her urine ten days previously, and then found no trace of albumen. Thus there is no doubt the albuminuria was of sudden onset. It is significant also that the movable tumour which was situated in the right hypochondrium was no longer in that position, and finding a dull resistant area in the right iliac region (which previously did not exist), I feel I was justified in the inference that the tumour was displaced into the pelvis, and was at least a factor in causing the nephritis.

As the operation showed, my diagnosis was incorrect. Had it been a displaced kidney with a twisted ureter, then I think
the symptoms this patient suffered from might all have been attributed to this, with some possible weakness in the other kidney. As the case now stands—“a tumour attached to the broad ligament and pressing on both ureters” (these are the surgeon’s words for what he found)—I feel that I cannot logically conclude that this could be sufficient to cause such severe symptoms in any person with healthy kidneys. The question, I feel, that naturally follows, is: Are this patient’s kidneys healthy, or are they in a state of nephritis? From textbook descriptions of symptoms of nephritis, I think I am justified in saying that this patient suffered prior to the displacement of the tumour, and does not at the present time suffer from nephritis. From observations I have made on urines of pregnant and other women, and with my present knowledge of those urines, I believe that this patient suffered from some catarrhal condition of one or both kidneys, and I arrive at this decision from the condition of her urine.

I fear, Mr President, I can only give you a hypothetical reason for this belief. I have found in three cases I have met within the last eight months a similar condition of the urine to this patient. In two of those cases an albuminuria supervened, one at the sixth month and another at the eighth month of pregnancy. The other case escaped, and, I believe, on account of a very strict diet. All I can say about the urines of those cases is, that they all showed, microscopically, a number of large squamous and pyriform cells and leucocytes. These may be cells from the bladder, as authorities on the subject say that cells from the bladder and kidney are very difficult to distinguish. My experience (which may be fallacious) has taught me that in bladder cases it is seldom those cells are met with so freely without the presence of pus, and whenever I find those cells persisting in a urine, I always examine the urine frequently, and place the patient on a strict diet, as I believe they are suggestive of a catarrhal condition of the kidneys.
In conclusion, I think I might safely say that if this patient had not sought medical advice when she did, and I had not found what I supposed to be a movable kidney, this case might have been diagnosed as a case of uncomplicated nephritis. The lesson this case has taught me is to make an abdominal and pelvic examination in acute albuminuria in women.

The President said that the Society had had an interesting case record put before it—one that presented just the amount of problematicalness that would lead to different opinions as to the possible causation. Most of the Fellows were familiar with tumours beginning in the pelvis and growing into the abdomen, and thus giving rise to a new group of clinical features, e.g., in fibrosis of the uterus. According to Dr Porter's explanation, the opposite was the case in this patient, although of course the cyst must have been down in the pelvis at the first, and had then grown up, and been displaced downwards again. The President cited a case where a tumour, thought to be a kidney, had been displaced downwards, and apparently had been the cause of a bad attack of haemorrhoids. Two years subsequently it had been found to be a gall-bladder full of gall-stones which was down in the pelvis.

Dr Haultain said that from the history of the case, from the fact that the tumour had been felt in the right iliac region, and also from the fact of the albuminuria (which he had not seen before associated with tumours of ovary or uterus), he was led to believe that he had to deal with a kidney, and in accordance with his belief that gynaecologists should only take cases associated with pelvic organs, he had asked his colleague, Mr Alexis Thomson, to see the case and give his opinion upon it. Mr Thomson had been vague about the diagnosis, but had opened the abdomen, while he (Dr Haultain) had had the pleasure of assisting him, and had found an ovarian cyst. He
thought it showed one the great importance of going very thoroughly into these cases, but that however thoroughly one did go into them, that sometimes one's diagnosis must be absolutely wrong. He had operated upon a considerable number of ovarian and fibroid tumours, and had never seen anything like the amount of albuminuria present in this case. What exactly had been the cause of it was difficult to say. There had been no great dilatation of the ureters, but it seemed as if there must have been some pressure on the ureter on one side, although it was not noticed at the time of operation. Abdominal section had been indicated, and the operation was successful.

Professor Kynoch said he had had pleasure in listening to the paper. He had been going to ask if there had been any dilatation of the ureter, or any kinking of it, but Dr Haultain had already said there was not any.

Dr Ritchie said that Dr Porter had, before the operation, diagnosed a movable kidney. What was the condition of that kidney after the operation? One of the practical lessons of this case was that when albuminuria was present, it was of great importance that the patient be dieted very carefully till the albuminuria had completely disappeared.

Dr Porter, in reply, thanked the Fellows for their kind reception of the communication. As to Dr Ritchie's question, the patient had a general slight enteroptosis, both kidneys were slightly movable, and the liver slightly displaced. As to the suggestion that the albuminuria was something apart from the tumour: it might have been so, but he had examined frequently before, and knew the position of the tumour, then, called in suddenly and finding no tumour, but a dullness in the right iliac region, he was justified in taking up the explanation he had given.
IV. INTRACTABLE UTERINE HÆMORRHAGE AND ARTERIO-SCLEROSIS OF THE UTERINE VESSELS.

By Elizabeth H. B. Macdonald, M.A., M.D., Ch.B., Carnegie Research Scholar, University College, Dundee.

Many cases of severe uterine hæmorrhage, occurring near the menopause and without obvious cause, have been reported within recent years. The pathological findings in these cases have been almost as various as the constructions put on the pathological conditions in the attempt to explain the hæmorrhage.

Nearly all have shown thickened blood-vessels, and the vessel changes have been regarded by many observers as the causal factor. In particular, Reinecke, in 1896, reported four cases where hysterectomy was performed for bleeding, and where the pathological examination showed the most marked changes to be in the vessels. He explained the hæmorrhage as due to the inability of the thickened, rigid vessels to respond to vasomotor stimulation. Cholmogoroff, Pichevin, and Petit, and more recently Barbour and others, have reported similar cases. But the connection between uterine arterio-sclerosis on the one hand, and uncontrollable uterine hæmorrhage on the other, has not been clearly established. Cases are known where a marked sclerotic condition of the vessels has been unattended by hæmorrhage, and the occurrence of serious hæmorrhage has been noted where the vessels showed no marked change.

Pozzi, in 1899, still seeking the cause of hæmorrhage in the condition of the vessels, differed from other observers in finding the thickening in and around the vessel walls due mainly to an increase in elastic, and only to a less extent in fibrous, tissue. The great increase in the elastic tissue of the organ gave to it, he considered, a peculiar resistance, and paralysed its contracting power, so that hæmorrhage readily occurred. Anspach, on the
other hand, in a recent paper (1906) demonstrates the physiological increase in elastic tissue in multiparous uteri, and suggests that the cases of bleeding, which, as being in his opinion dependent on a pathological condition of the musculature, he designates "metrorrhagia myopathica," may be due to a failure in the normal increase of elastic tissue.

Theilhaber, noting the extreme difficulty of distinguishing physiological from pathological changes in the blood-vessels of an organ subject to such functional variations as the uterus, and believing that the majority, if not all, of the changes described as arterio-sclerosis are conditions normal in a parous uterus, lays stress on the part played by the musculature in the occurrence of hæmorrhage. But exactly the same difficulty in distinguishing what is pathological from what is physiological arises here. What is the normal proportional increase of fibrous tissue to muscular tissue with advancing age and repeated pregnancies? When does Theilhaber's "muscular insufficiency" arise?

Other observers have sought the cause of the hæmorrhages in ovarian changes. That all the causes have a very definite connection with the periodic ovarian stimulation on which menstruation depends, is quite clear from the histories. None of the patients manifesting uncontrollable hæmorrhages of obscure origin was past the menopause; and, as Barbour justly remarks, "Arterio-sclerosis after the menopause has been frequently described, but never as accompanied by serious hæmorrhage."

A consideration of the mode of occurrence and control, so far as we know it, of the normal menstrual hæmorrhage, may throw some light on the causation of abnormal uterine hæmorrhages. It is clear that the normal hæmorrhage is brought about and controlled by several factors, and that a disturbance in any one of these may cause irregularities.

That a gradually increasing pelvic congestion occurs and
culminates in haemorrhage mostly by diapedesis, but partly also at the height of the congestion by rupture of some of the endometrial capillaries, has been sufficiently demonstrated; as also the fact that this periodic congestion is dependent on the ovaries. Whether the general rise of blood pressure is due to an internal ovarian secretion exerting its influence through the blood, or is determined by nervous influences, or depends on both these factors, is still doubtful. But at least it is safe to assume that variations in the normal stimulation may result in abnormalities of menstruation.

No less important than the ovarian stimulus is the response of the uterus, and here it will be convenient to consider separately the response of the musculature, including the blood-vessels, and of the endometrium.

The part played by uterine contractions in controlling haemorrhage has been fully described by Theilhaber. He points out that during the greater portion of the menstrual period the uterus is large and flabby; then contractions occur which become gradually longer, while the bleeding becomes correspondingly less, until finally the flow ceases completely, strong and continued contraction being necessary for this complete cessation. Similarly, in the puerperium, the cessation of lochial discharge is dependent on contraction of the muscle. Thus, he argues, if the muscular contraction is insufficient, hyperæmia results, with its probable secondary results in swelling and œdema of the uterine parenchyma, and following these, long-continued menorrhagia may readily occur. Anspach explains the actual occurrence of menstrual hemorrhage as due to obstruction to the venous return, whereby congestion is produced, resulting naturally in diapedesis, the obstruction being caused by weak uterine contractions narrowing the veins, but failing to narrow in a corresponding degree the thicker-walled arteries. This is essentially the view of Theilhaber, leaving us to infer that the cessation of the hæmorrhage will be brought about by con-
tractions strong enough to close the arteries as well as the veins.

Any explanation of uterine haemorrhage that even only apparently separates, in regard to its action, the uterine muscle from the blood-vessels, appears to me to be defective. The uterus may be ideally considered as a muscular expansion of the vascular walls, as Keiffer, from his study of the histology of the nervous system in the uterus, points out. Vasomotor stimulation causes contraction or relaxation of the whole uterus. The involuntary muscle of the vessel walls is to be regarded as essentially part of the uterine musculature, subject for the most part to the same variations and the same pathological changes. From this point of view it appears possible that during the height of menstrual congestion the pressure within the vessels is such as to paralyse their contracting power, and that as the pressure lessens, partly from escape of the blood and partly probably from natural diminution of the ovarian stimulus, the vessels regain their tone, and the uterus responds to the vasomotor stimulation by contractions sufficient to stop the haemorrhage. For the complete cessation of the flow, strong and lasting contraction is necessary, but this is brought about as a response on the part of the entire musculature to vasomotor stimulation. It follows that any cause interfering with the normal response of the musculature may cause irregularities of menstruation.

The response of the endometrium to the menstrual stimulus is important and interesting. The gradually increasing congestion causes a definite swelling of the mucosa, so that the stroma cells become more distinct in outline and later polyhedral from mutual pressure, while the glands appear larger from swelling of their epithelial cells. The surface capillaries show a remarkable power of distension to accommodate the increased supply of blood, and appear also to increase in number, so that some observers have thought that new capillaries are formed.
But it is possible that the delicate-walled collapsible tubes become apparent only when in a more or less distended condition. The actual haemorrhage occurs by diapedesis through these delicate capillary walls, and partly also, in all probability, by rupture of some of them, the corpuscles finally forcing their way between the individual cells of the surface epithelium, or, by dislodging one or two adjacent epithelial cells, finding a freer exit.

What is true of normal haemorrhage is true also as regards the mode of occurrence of abnormal uterine haemorrhage. There is no suggestion in any of the recorded cases of severe bleeding that rupture of the presumably diseased vessels had occurred. The haemorrhage occurs by capillary oozing, an over-distension of the endometrial capillaries being first produced; and the ease with which haemorrhage occurs depends to a considerable extent on the healthy condition of the capillaries and their resisting power. One would expect, therefore, that any disturbances in the circulation, whether arising from increased arterial supply causing over-filling of the capillaries, or from venous obstruction producing over-distension by backward pressure, would tend to produce uterine haemorrhage. And there is little doubt that such circulatory disturbances would result in the appearance of haemorrhage much more commonly than they do, were it not for the peculiar character of the endometrium, its unique readiness of response to stimulation.

So far, therefore, the causes of abnormal uterine haemorrhage fall naturally into three groups:—

1. Abnormalities in the periodic ovarian stimulation.
2. Conditions giving rise to muscular insufficiency, either from
   (a) actual deficiency of muscular tissue, or
   (b) loss of tone, and consequent deficient response to vasomotor stimulation.
3. Conditions giving rise primarily to continued congestion of the endometrium, either from
   (a) increased arterial supply, or
   (b) venous obstruction.

1. Of ovarian changes and their effect on menstruation, we know comparatively little. We know from actual experiment that the growth of the uterus depends directly on the healthy functional activity of the ovaries, that the complete removal of the latter results in atrophy of the uterus and of the genital organs generally, and that the retention of even a small piece of healthy ovarian tissue is sufficient to prevent these regressive changes. Physiologically, there is a gradual lessening of ovarian activity as the menopause is approached, and this is accompanied by these general regressive changes, atrophy of the uterine muscle and mucosa, thickening of the walls of the vessels with narrowing of their lumina, and the gradual cessation of menstruation.

Menorrhagia in connection with ovarian disease, especially early cystic changes in the ovary, is well known to occur, and was noted many years ago by Lawson Tait. The hæmorrhage in these cases is unaffected by curetting, or, indeed, by any treatment save removal of the diseased organ. The endometrium often shows no appreciable change from the normal—a noteworthy point, in view of the manifold forms of change which it is liable to show in cases of venous congestion. Exactly how the menorrhagia is brought about is not clear. Brennecke's explanation of the cases which he named "endometritis hyperplastica ovarialis" was based on Pflüger's theory that menstruation is directly dependent on ovulation. But this theory has since been shown to be insufficient, and Brennecke's explanation covered only those cases where lasting congestion and consequent hyperplasia, with menorrhagia as a secondary result, occurred. Czempin recognised cases of severe menorrhagia unconnected with endometrial changes occurring in association with adnexal
diseases. These, he suggested, might be due to an exaggeration of the normal stimulation, resulting in arterial congestion and consequent severe and lasting haemorrhage. Since the menstrual stimulus is associated essentially with an increased blood pressure, producing its effects in the uterus by creating a sudden hyperæmia, it seems reasonable to suppose that an exaggerated stimulus should result in menorrhagia.

The probability of disturbed ovarian function occurring at the menopause is readily appreciated, and the marked connection between the approaching menopause and uncontrollable uterine haemorrhage strongly suggests the possibility of ovarian changes being a causal factor in the haemorrhages. Cases of spontaneous cure occurring when ovarian activity ceases and the menopause is fully established, strengthen this possibility. Gardner and Goodall, in a recently published paper, refer to such cases, and point out that if ovarian stimulation acting on a uterus affected by "chronic metritis" is the cause of the menorrhagia, then the menorrhagia should continue until ovarian function ceases, the condition of the uterus remaining unaltered. But they report a case where severe menorrhagia, occurring near the menopause and associated with all the usual signs of "chronic metritis," disappeared under conservative treatment, yet normal menstruation, indicating ovarian activity, remained.

It is interesting to note that several of the reported cases of uncontrollable haemorrhage laid to the charge of arteriosclerosis or muscular deficiency have shown ovarian changes. Thus, in the case reported by Barbour, the right ovary was cystic, with very little ovarian substance left, while the left was small and sclerosed; and of Anspach's three cases of "metrorrhagia myopathica," two showed ovarian changes to a slight extent.

Further, it is evident that impairment of the functional activity of the ovaries may occur independently of any demon-
strable lesion, and may be the cause of haemorrhage in those cases where no pathological condition is found. Indeed, Freund goes so far as to say that only in cases of bleeding from carcinoma has an anatomical basis for the haemorrhage been demonstrated.

2. It is obvious, from a consideration of the part played by the musculature in the control of menstrual haemorrhage, that failure of the muscle to contract efficiently may be associated with haemorrhage of the severest kind. Such failure may be due to

(a) actual deficiency of muscular tissue. Thus, insufficient muscular development, such as not infrequently obtains at the time of puberty; or actual atrophy and degeneration, such as occurs normally at the menopause but may occur as a premature and so far pathological change; or "sclerosis" of the uterus, whether due to a primary diathetic condition (Brionde, Richelot) or a secondary result of infection (Bland-Sutton), all come under this heading, and in all the muscular coat of the vessels participates in the pathological changes. Without actual deficiency of muscle, insufficient contraction may be due to

(b) loss of tone in the musculature. This may occur as a simple atony associated with a lowering of tone throughout the body from some general cause, and possibly then accompanied by manifestations of muscular atony in other parts of the body, gastric symptoms, etc., or as a local change from the various causes, producing atony of the uterine muscle either directly or through fatigue of the nerve-cells. The effects of various poisons, of alcoholism, etc., on the nerve-cells has not yet been shown, but these have possibly a direct effect in producing atony of the musculature.

In cases of menorrhagia arising from this cause, intermenstrual leucorrhoea is a not infrequent symptom, the explanation being the lowering of tone in the vessel walls and the consequent ready escape of leucocytes. It is doubtful whether muscular
insufficiency alone, apart from this element of lowering of tone, ever gives rise to leucorrhoea, since the capillaries in a healthy condition have a remarkable power of resisting pressure, and accommodating themselves by enormous dilatation to an increased mass of blood. Typically, deficiency of the musculature, without deficient vitality of the vessel walls from loss of tone, will result in menorrhagia, the hæmorrhage becoming more prolonged and profuse as the secondary hyperplasia of the uterine parenchyma becomes more evident.

It is in this class that Theilhaber would place the great majority of the cases of uncontrollable hæmorrhage occurring at the menopause, and in this he is enthusiastically supported by Palmer Findley. Normally, the regressive changes in the musculature associated with the menopause are accompanied by corresponding regressive changes in the blood-vessels which become accommodated to a decreased blood supply. Anything, therefore, preventing this normal diminution in blood supply, anything keeping the blood supply at its former level in face of the retrograde changes in the muscle, will cause hæmorrhage—hæmorrhage which these authors regard therefore as due to muscular insufficiency. But the regressive changes in the musculature are admittedly physiological, normal at the menopause, and would not give rise to hæmorrhage were it not that the vessels are prevented from closing proportionately. It would seem more logical, then, to regard the hæmorrhage as a result, not of the atrophied condition of the muscle, which is physiological, but of the patent condition of the vessels, which is pathological. It is evident that a normal blood supply acting on an insufficient musculature will have the same practical result as an increased blood supply on normal musculature. The question is whether the muscular atrophy is premature and therefore pathological, and justly to be blamed as the causal factor in the hæmorrhage, or whether the blood supply is being maintained at a pathologically high level, either through
failure to diminish when it naturally should, or from a real, and as yet unexplained, increase in pressure.

Although many of the reported cases of intractable hæmorrhage show intermuscular fibrosis, with atrophy and degeneration of muscle, yet there is no general agreement that atrophy of muscle, beyond that occurring normally at the menopause, is characteristic. The point is extremely difficult to determine. Thus, in four cases reported recently by Wittek, three show intermuscular fibrosis, and the fourth does not. But the exceptional case was a nullipara. Shaw, investigating cases of chronic metritis, finds no marked increase of connective tissue at the expense of muscular, but rather a hypertrophy of both elements, due, he considers, to efforts on the part of the uterus to rid itself of the thickened mucosa.

Cases of hæmorrhage where the musculature is insufficiently developed, or where its atrophy is definitely premature, are undoubtedly to be placed in the category of myopathic hæmorrhages. In this class also may justly be placed those cases which have as their starting-point an acute febrile disease such as typhoid; or are associated with anaemic conditions, particularly chlorosis, or with chronic wasting diseases, such as phthisis. All these are definitely associated with changes in involuntary muscle, and show their effects, as a rule, on the heart. Otherwise, changes in the uterine musculature are probably for the most part secondary to circulatory disturbances.

3. Cases of intractable uterine hæmorrhage due primarily to circulatory disturbances form an important group. Continued congestion of the endometrium may be due to

(a) an increased arterial supply. In determining this, the endometrium may be primarily at fault, as in cases of direct infection, placental retention where the remnants act the part of an irritant foreign body, and malignant disease of the mucosa. Inflammation and tumours of the adnexa, as also tumour formation, particularly fibro-myoma, in the uterus itself, will
likewise determine an increased arterial supply, and to these may be added any local irritation, mechanical or psychical. Histologically, as Freund has shown, this arterial congestion will be characterised by an increase in the number of capillaries, and a widening of the vessels, in which naturally the veins take part more readily and to a greater extent than the arteries, the widening in the veins being of a diffuse character affecting mostly the capillary venous network on which the strain of the increased blood supply first tells.

(b) Venous obstruction may arise from a general condition, such as heart- or kidney-disease, chronic lung affections, chronic constipation, etc.; or from local obstructions to the venous return, such as would be caused by tumours within or without the uterus; or from displacements of the uterus. The resulting passive congestion does not, according to Freund, cause any increase in the number of capillaries, but results first in irregular dilatation of the larger veins, particularly of those in the fundus; the pressure may further tell back on the arteries, and produce thickening of their walls.

Long-continued congestion from whatever cause arising, brings about a very typical reaction in the mucosa. There appears to be little doubt that a large number of the cases variously described as "hyperplastic endometritis," "hypertrophic glandular endometritis," "interstitial endometritis," etc., are simply, as Van Meerdervoort describes them, secondary results of long-continued congestion of the mucosa. The differences in the various forms, including "fungous" and "polypoid endometritis," are merely of degree, and he suggests "chronic cedema" as a more correct and appropriate title for the whole class. Löfquist arrives at very similar conclusions, suggesting that all the various changes are degrees of what he terms "decidual reaction." The changes are slow and gradual; the distension of the capillaries does not result in haemorrhage, as in the more rapid menstrual increase in blood pressure,
because the tissues have time to adapt themselves to the increased blood supply. Hyperplasia of the tissues results, affecting first the mucous membrane, and extending in the course of time to the entire uterus, giving one of the forms of "chronic metritis."

Many attempts have been made to elucidate "chronic metritis," some observers regarding it as due always to infection of a more or less remote date, others as secondary to chronic endometritis, others as a primary condition giving rise to chronic endometritis by interference with muscular contraction and consequent hyperemia. That there are many forms of pathological change involved and so far confounded is probable. But one form of the affection—where the uterus is generally enlarged, with thickened walls showing no evident disproportional increase in fibrous tissue, but rather a general swelling and hyperplasia of all the constituent elements, the endometrium at the same time exhibiting one or other of the usual forms of "glandular endometritis"—is almost certainly due primarily to a disturbance in the circulation. This is the form of chronic metritis found in the various displacements of the uterus.

Clinically, these cases are characterised by a gradually increasing menorrhagia, and this is what we should expect from the pathological condition. The menstrual stimulus, normally resulting in a comparatively rapid over-distension of the capillaries, produces its effect more slowly through the thickened mucosa with its already comparatively distended and more numerous capillaries, but when hæmorrhage does occur, at the very height of the congestion, it is more profuse than normal because of the more widely distended condition of the capillaries. Similarly, the bleeding will last longer, partly from the lowered tone of the vessels from prolonged dilatation, and partly from inefficiency of the edematous muscle, together resulting in less efficient response to the vasomotor stimulation, and so failure to arrest the hæmorrhage with normal rapidity.
But not all cases of venous congestion become clinically apparent as menorrhagia. Whether abnormal haemorrhage results, appears to depend to some extent on the resisting power of the endometrial capillaries. The vessels of the endometrium are peculiar. Macgregor has described them carefully, distinguishing between the "thick-walled" and the "thin-walled" vessels. The latter are merely tubes lined by a single layer of delicate endothelium, and show enormous power of dilatation. The "thick-walled" vessels, on the other hand, derive support from a condensation of the stroma cells around them, and these, Macgregor states, while showing many changes in the way of thickening of their walls, hyaline degeneration, etc., never dilate. This is open to question. The thick-walled vessels, which it seems hardly correct to call "arterioles," may become dilated in cases of long-continued venous congestion. This was well shown in a recently observed case of retroflexion, in which there had been no abnormal haemorrhage. The mucous membrane was very markedly thickened, giving rise on curetting to the suspicion of malignancy, and its appearances were those of an advanced "chronic cedema," with great increase in the number of glands and swollen stroma cells showing their outlines and anastomosing processes in great perfection. Most striking was the large number of dilated "thick-walled" vessels, of globular outline and with a marked condensation of the stroma around them. The condition was produced in all probability by backward pressure from the long, over-distended, thin-walled capillaries, the healthy nervous tone of the capillary vessels preventing the relief of pressure by diapedesis. The patient in this case was comparatively young, 32, and unmarried. Where the congestion arises from an increased arterial supply, there is a tendency to metrorrhagia, in addition to the menorrhagia commonly observed. Any sudden stimulation, mechanical or otherwise, determining a sudden further increase in the blood supply, may cause haemorrhage. We may suppose that the
explanation is a sudden dilatation from vasomotor paralysis of
the vessels formerly in a state of exaggerated tonus.

Influence of the Menopause.—In determining the causal factor
in any case of intractable uterine haemorrhage, therefore, many
conditions must be considered. After excluding the cases
probably arising from muscular insufficiency and eliminating all
the usual causes of long-continued congestion, there still
remains a class unexplained. Yet a careful consideration of
the possible known causes markedly reduces the number of
these obscure cases. Thus the patient whose case is reported
by Pichevin and Petit, had had typhoid at 30, followed by
menorrhagia, which was, however, cured by a supervening
pregnancy, but returned in a severe form demanding hysterect-
omy after another pregnancy two years later. Again, of
Pozzi's cases, while the elastic tissue proliferation on which he
lays stress may mean nothing more, according to recent
researches, than that the uteri examined were parous, one case
had had typhoid, and the other had had chlorosis, and at the
time of operation had albuminuria, an important symptom of
increased blood pressure. It is of further interest to note that
none of these patients was very near the menopause.

Those cases becoming evident only at the menopause have
probably their origin in circulatory troubles, the congestion
having lasted perhaps for years previously without giving rise
to any troublesome symptoms.

We do not know how ovarian activity acts in maintaining
the uterus in a healthy condition, but a twofold action at least
suggests itself. The periodic vasomotor stimulation causing
reflex contraction maintains the musculature in an efficient
working condition; and ovarian secretion in some obscure way
preserves a healthy uterine tone. When ovarian stimulation
begins to fail, the uterus suffers in this twofold way, so that
there is a certain amount of atrophy from disuse, and a tendency
to degeneration from the cutting off of some trophic influence.
These effects will be equally produced in a uterus already affected by hyperplasia from continued congestion, and they are sufficient to determine the disturbance of compensation which results in menorrhagia. The menstrual stimulation is essential in starting the haemorrhage; the prevailing uterine conditions prevent its normal arrest.

Pathological Changes in the Uterine Blood-vessels, and their Influence in Determining Haemorrhage.—So far the vessels have been dealt with as essentially part of the uterine musculature, and in no way to be regarded as of primary importance in the causation of haemorrhage. But arterio-sclerosis has been so extensively regarded as the causal factor that the subject deserves special attention.

There can be no doubt that the vessel changes designated "arterio-sclerosis" are in many cases normal changes, and in no way to be regarded as responsible for the occurrence of uterine haemorrhage. Exactly similar changes are found unconnected with haemorrhage. Marked degenerative changes, designated by Anspach "periarterial" and "perivenous" degeneration occur normally in every parous uterus. In a specimen stained by haematoxylin and eosin these areas appear pink with few and scattered nuclei; with Van Gieson's picro-fuchsirn method they appear a brighter yellow, in clear contrast to the yellow of surrounding muscle; and with Weigert's resorcin-fuchsirn stain for elastic fibres they take a dark blue or black colour. This definite increase in elastic tissue round the vessels is characteristic, and appears to occur during the puerperium. The elastic tissue of the uterus generally is increased with every pregnancy, so that it is always possible to tell a parous from a non-parous uterus in a Weigert preparation. The fine elastic fibrils become thickened and curled, and show a tendency to clumping. In the vessels, the inner elastic lamina no longer appears as a clear, unbroken, wavy fibre, but is thickened and broken up, and there is an increase of elastic fibrils through-
out the media. Melnikow-Raswendenkow believes that the place of lost parenchyma in any organ is taken by elastic tissue. Pick records a case of uterine haemorrhage resisting treatment in a woman of 63, which may have been due to an evident failure in the normal increase of elastic tissue around the uterine vessels.

The normal involution of arteries after pregnancy is to be distinguished from a pathological change. Naturally there is enormous hypertrophy of the entire musculature in the gravid uterus, with new formation of blood-vessels, many of which must undergo entire obliteration during the process of involution. This is brought about by a process recognised as "endarteritis obliterans," in which there may be enormous overgrowth of the intima, practically occluding the vessel; contraction of the new-formed connective tissue throughout the media and in the adventitia helps the process. Normally there is a slight increase of fibrous tissue at the expense of muscle when involution is completed; the vessels share in this, their adventitial coats being relatively slightly thickened after each pregnancy. It appears, therefore, that thickening of the intima, with irregular increase in its elastic tissue, thickening of the media, with increase in the fibrous tissue of both media and adventitia; later, degeneration of the coats and of the surrounding tissue, with deposition of elastic tissue, may all occur as physiological changes.

The following case, in which the uterus was removed on account of severe menstrual pain, and which is probably primarily one of glandular endometritis due to infection, the changes in the musculature being secondary, shows vascular changes which may be taken as physiological for a uterus with a corresponding history:—

Mrs R., aged 36, was admitted to the Dundee Royal Infirmary on 4th December 1905. She had been married eighteen years, and has had nine pregnancies, the last five
years ago. The first two pregnancies resulted in miscarriage at the third month, the third was normal, the fourth was premature (twins at the sixth month), the fifth ended in a miscarriage at the fifth month, the three following were normal, and the last ended in a miscarriage at the fifth month. Menses began at 14, occurring regularly every three to four weeks, unaccompanied by pain. She had some trouble which she described as a "growth of the womb" after the seventh pregnancy, eight years ago, but this disappeared under treatment by "douches and medicine." Since the last pregnancy she has not felt well, and for more than a year has had severe menstrual pain, which has become much worse during the last two or three months. The pain lasts from two days to a week, beginning before the onset of the discharge; is worst for two or three hours after the onset, and continues after the flow ceases. The pain makes her sick. The discharge is normal in amount and character, and there is no intermenstrual discharge. She suffers from severe headaches and occasional frequency of micturition.

On admission, she was found to be thin and pale, and as the physical examination gave rise to the suspicion of interstitial fibro-myoma of the uterus, hysterectomy was decided on.

Operation.—Professor Kynoch removed the enlarged uterus by the vaginal route. The patient made an uninterrupted recovery.

Path. No. 4559.—The specimen consists of the uterus, which is generally enlarged, measuring, after hardening in alcohol, 10½ cm. × 5 cm. × 5 cm. On section, the uterine walls are seen to be thickened, and the endometrium to be strikingly thickened. The uterine cavity is 8 cm. long; the anterior wall at its thickest part measures 2½ cm., and the posterior 2½ cm. The mucous membrane shows a smooth undulating surface of a pinkish colour, and is of normal thickness in the cervix, greatly thickened just above the internal os, and less markedly thickened towards the fundus; at its thickest part it measures on the anterior wall 7 to 8 mm., and on the posterior 9 to 10 mm.
Histological Examination: Mucous Membrane.—The most marked change is the great increase in the number of the glands, a few of which are dilated. The glandular epithelium is swollen and oedematous. The stroma is loose and oedematous, and the vessels show marked condensation of the stroma around them. The junction between mucosa and muscle wall is strikingly irregular, glands penetrating the muscle to an unusual depth, and carrying with them strands of stroma (Fig. 1).

Musculature.—The proportions of muscular and fibrous tissue appear about equal. The tissues are oedematous, the muscle nuclei appearing swollen, and patches of embryonic cells are seen throughout the musculature between the muscle bundles.

Vessels.—The larger arteries are thickened in all their walls. The lumen is irregular in many cases, from projection of the media and occasionally of the intima. With Weigert’s stain these irregular projections of the intima are seen to contain a good deal of elastic tissue, and the thickened inner elastic lamina is well shown, as also the deposition of elastic tissue in and around the degenerated adventitia. The intimal thickenings are shown to be almost entirely fibrous by Van Gieson’s stain, and the degenerated areas around the vessels appear bright yellow. The media appears rather poor in nuclei, and the degenerated areas are almost free of nuclei, in a haematoxylin preparation. The “periarterial” degeneration is very marked in some parts, especially in the smaller vessels near the endometrium (Fig. 1). Some of the arteries show a remarkable proliferation of the intima causing almost complete obliteration of the lumen. The veins show similar changes. There is an irregular proliferation of the inner coat, with an increase in fibrous tissue, and a thickening of the outer coat with degeneration extending into the surrounding tissues—“perivenous” degeneration (Figs. 6 and 7).
The case is of interest in several ways. The enormous hypertrophy of the endometrium in the absence of any tendency to hemorrhage, and the marked penetration of the glands into the underlying muscle without in the least suggesting a malignant process, are evidences that the primary trouble is in the endometrium. Cornil noted this penetration of the glandular elements as characteristic of chronic metritis. The cause of the pain is obscure. Possibly it was simply an exaggeration of the pain commonly experienced at the height of menstrual congestion: possibly the much thickened mucosa, acting as a foreign body, induced more severe contractions than normal in the endeavour of the uterus to expel the foreign body, and the increased blood pressure from ovarian stimulation in the premenstrual stage started the contractions, which became more severe as the congestion increased. The increase in the musculature may then be of the nature of a true "work-hypertrophy." The existence of patches of embryonic cells throughout the entire muscle wall, but most commonly in its inner half, is noticeable, and suggests extension of an infective process from the endometrium. Probably the case is to be classified as one of chronic metritis, secondary to chronic infective endometritis, the musculature being as yet but slightly affected by the infective process.

The senile changes occurring in the uterine vessels are illustrated in the following case:—

Mrs D., aged 51, millworker, was admitted to the Dundee Royal Infirmary on 7th May 1906. She had had seven pregnancies, all normal, the last twenty-one years ago. Menses began at 13, and occurred regularly every twenty-eight days, lasting for two days, the discharge being scanty and accompanied by slight pain; the menopause occurred four years ago. For two years there has been a white discharge, fairly copious, and lately the discharge had been bloody at times. She had
been in the Infirmary in the beginning of 1905, with symptoms of mitral incompetence, some chest trouble and diarrhoea suggesting enteritis, and again in February 1906, with gastrointestinal symptoms.

**Physical Examination.**—Patient is a worn-out old woman, and was intoxicated on admission. She has a slight cough; there are dullness and tubular breathing without accompaniments at the left apex. There is a soft systolic mitral murmur. She complains of frequency of micturition. Examination under chloroform showed the cervix to be much shortened, the vaginal aspect normal except for small submucous haemorrhages. There was bleeding from the orifice. A swelling, possibly the fundus, was felt lying to the left; and, suspecting malignant disease of the body of the uterus, Dr Buist decided to do vaginal hysterectomy.

**Operation.**—Dr Buist operated on 18th May. An incision was made in the posterior fornix and into the pouch of Douglas. A tumour mass was found on the left side, nodular, and not very mobile. The right broad ligament was crushed and divided, and the fundus brought down, when the uterus was seen to be small and senile, but otherwise apparently normal.

The tumour mass could not be brought down, and median celiotomy showed it to be in the sigmoid flexure of the colon with the left uterine appendages adherent. The adhesions were crushed and divided and the hysterectomy completed. The sigmoid tumour was isolated by Renton’s clamps and removed, and the bowel sutured end to end.

The condition of the patient after the operation was never very hopeful, owing to the chest condition, and on the 21st an offensive vaginal discharge set in, becoming later putrid and black in colour, and death occurred on the 22nd.

**Path. No. 4750.**—The specimen consists of the uterus, which is normal in contour but smaller than usual, measuring 6 cm. × 3\(\frac{1}{4}\) cm. × 2\(\frac{1}{4}\) cm. The cervix appears normal save for a
few subepithelial haemorrhages. The vessels entering the uterus are visibly thickened and prominent, and on section of the uterus the vessels stand out very distinctly in the vascular zone at the junction of the middle and outer thirds of the wall. Within this zone, extending into the mucosa, the muscular wall presents a curious, firm, homogeneous appearance. The mucosa is atrophied, and stained with blood in some places; its limits cannot be distinguished by the naked eye. The uterine wall measures 1½ cm. in thickness, and is firm.

Histological Examination: Mucous Membrane.—This is atrophied to a considerable extent, the glands persisting in groups between which fibrous tissue strands run right up almost to the surface epithelium. In many parts fibrous strands run along under the epithelium. The persisting glands are small, with swollen epithelial cells. There is considerable extravasation of blood into the mucosa, while here and there red blood corpuscles may be seen making their way to the surface between the individual cells of the intact surface epithelium. The stroma is dense and its component cells are swollen and oedematous; fibrous strands invade it in all directions.

Muscular Wall.—The muscle is everywhere separated up by bands of fibrous tissue. The muscle shows evidence of degeneration and atrophy, its nuclei, especially near the endometrial surface, being swollen and degenerate-looking, and occasionally fragmented.

Vessels.—The vessels occur in characteristic groups, with very narrow lumina (some appear entirely obliterated) and a wide area of degeneration surrounding them (Fig. 2). These areas are so extensive that neighbouring areas closely approach each other, and give a very striking appearance to the stained section, in which the degenerated tracts are readily recognised by the naked eye. The process is most marked in the middle third of the muscular wall (the homogeneous area). These areas stain darkly with Weigert's stain, although no definite
structure can be made out in them (Fig. 3), and they appear bright yellow, in contrast to the yellow of the muscular tissue, in Van Gieson preparations, with an occasional remnant of red, fibrous tissue, persisting in the midst of the structureless yellow mass (Fig. 2). The larger vessels of the vascular zone show various degrees of thickening and degeneration of their walls. Many show calcification commencing between the intima and the media (Fig. 8). The intima is not particularly affected throughout; with Weigert's stain it shows a thickening and breaking up of the internal elastic lamina. There are irregular projections into the lumen in many cases, but these appear to be due mostly to an irregular proliferation of the media, over which the uniformly thickened intima extends. Both media and intima are degenerated, nuclei being very few and far apart. The adventitia is thickened throughout, and the degenerated areas in and around the adventitia stain deeply with Weigert's elastic stain. The increase in the adventitia appears to be due chiefly to elastic tissue, with which the media also is spun through, the elastic fibres again blending into a definite layer at the internal elastic lamina. The veins show similar changes. There is an increase of fibrous tissue in the inner coat, and a marked deposition of elastic tissue in the degenerated outer coat. There was thrombosis of a branch of one of the ovarian arteries where it entered the uterus at the broad ligament attachment—a thrombosis evidently of old standing, since there was organisation with formation of new vessels in the midst of the thrombus.

The senile change in this case was very advanced considering the age of the patient, but the fact that when admitted to hospital she was in a state of intoxication, throws some light on the cause of the premature senility. From the histological examination, the case appears to have some points in common with those cases reported as "apoplexia uteri" by von Kahlden and others, where there was haemorrhagic infiltration of the endometrium, associated with sclerosis of the uterine arteries.
Fig. 1.—Path. No. 4550. No hemorrhage. "Periarterial" degeneration in small vessels near the mucosa. Note also the unusually deep penetration of the glands into the muscle, and the cellular infiltration between muscle bundles. Haematoxylin and eosin. (x 50.)

a, a¹, Degenerate areas round small arteries. b, Glands penetrating musculature.

Inset, pages 104-105.
Fig. 2.—Path. No. 4750. Senile case. Extensive "intramural" and "periarterial" degeneration in vessels near the mucosa, with marked narrowing of lumina. Van Gieson. The degenerated areas stand out in sharp contrast to the surrounding tissue, which is extensively fibrous. (× 65.)

$a, a^1$, Narrow ring of fibrous tissue, remains of adventitia.
Fig. 3.—Same group of vessels as shown in previous figure. Weigert's elastic stain. Note persistence of internal elastic lamina, and presence of elastic tissue, which appears black, in area corresponding to light (yellow) area in previous figure. (x 65.)

\(a\), Inner elastic lamina.
Fig. 4.—Path. No. 2505. Menorrhagia. Extensive "intramural" and "peri-arterial" degeneration in vessel from vascular zone. Van Gieson. Lumen almost obliterated. Note persistence of fibrous shreds (black) in midst of light-degenerated area. (× 130.)

Fig. 5.—Same artery as Fig. 4. Weigert. Elastic tissue (black) appears in place of the light area, and at one side this mass appears almost fused with the internal elastic lamina. (× 130.)

A hematoxylin and eosin preparation of the same artery shows an appearance closely resembling that in Fig. 1—a light area round the vessel, with few nuclei.
The occurrence of the leucorrhœa, beginning two years after the menopause, is undoubtedly to be associated with the disturbed compensation in the heart, which became evident about the same time. Later, the venous obstruction resulting from the sigmoid cancer added to the circulatory disturbance in the uterus, and the discharge thereupon became hæmorrhagic and more troublesome and persistent.

It is evident, therefore, that even very advanced premature senile change in the uterine vessels, with calcification in some of the arteries, and consequent rigidity, degeneration of vessels throughout the entire uterine wall, along with marked fibrosis of both musculature and endometrium, are all insufficient of themselves to cause serious hæmorrhage, even in the presence of an incompetent heart. It is equally evident that in a normal senile uterus, an incompetent heart and venous obstruction such as would arise from cancer of the sigmoid flexure would not necessarily give rise to any uterine symptoms. The local condition determining the discharge in this case is probably the premature degeneration of the vessels, diapedesis through their degenerated and "toneless" walls, in presence of a sluggish arterial supply on the one hand, and venous obstruction on the other, being unusually easy. Alcoholism as a factor in bringing about this premature decay of the vessels is well known, but how the effect is produced is still obscure. The absence of the periodic menstrual stimulation in this case sufficiently accounts for the absence of sudden severe hæmorrhages.

Several cases have been reported where severe uterine hæmorrhage was associated with general arterio-sclerosis. But this association does not simplify matters at all, except so far as to make it probable that the uterine arterio-sclerosis found was of a similar nature to the general change. Many cases of general arterio-sclerosis never show uterine hæmorrhage. So in cases of bleeding where there is a history
HEMORRHAGE AND ARTERIO-SCLEROSIS OF UTERINE VESSELS, of syphilis many years previously. Syphilis we know to be one of the most common causes of general arterio-sclerosis. But by no means all cases of syphilis are attended by uterine haemorrhage. What determines the occurrence of the haemorrhage in some cases?

The following case is of interest:

E. M., aged 50, unmarried, was admitted to the Dundee Royal Infirmary on 30th April 1906. One pregnancy (twins, six months) twenty years ago, since which time she has been blind (coloboma, chronic iritis, cataract). Menses began at 15, and occurred every three to four weeks, lasting seven days. Irregular bleeding began in November 1903, the first haemorrhage lasting seven weeks, unaccompanied by pain, the second coming on after an interval of five weeks and lasting for four, and the third, after an interval of six weeks, lasting for five weeks, at which time she was curetted, the curettings showing nothing noteworthy. The physical examination at this time showed the os to be patulous, edges oedematous and slightly rough; the fundus was nearly 3 inches above the symphysis; there was slight tenderness in the left iliac region, and here the left tube could be palpated as a smooth, fairly firm, elastic oval swelling. There was uterine haemorrhage on manipulation. The bleeding recommenced eleven days after the curettage, and recurred at intervals up to the time of admission, the last haemorrhage having begun two months before admission, and continued up to that time.

Physical Examination.—Patient is very weak, giddy, and faint. There is slight pain all over the abdomen. She is pale, with dilated capillaries on the cheeks. Pulse 104, of "water-hammer" variety; and examination of the heart shows presence of aortic systolic and diastolic murmurs.

Operation.—Hysterectomy was performed by Dr Buist a week after admission. A perivaginal incision was made, and
a roughly "banana-shaped" hydrosalpinx of the left side removed, clear fluid escaping. The left ovary, which was slightly cystic, was crushed and removed; and the normal right ovary was left. The patient died on the second evening after the operation, and the post-mortem examination showed widening of the aorta, with some atheroma; the kidneys contracted and unequal in size, and the liver fatty.

Path. No. 4738.—The specimen consists of the uterus, and the cystic left tube. When inflated the tube appears roughly to be equal in size and similar in shape to a banana, with an extremely thin, smooth, transparent wall.

The uterus is of normal contour, but generally enlarged; the serous surface is smooth and free from adhesions. The lips of the cervix are somewhat hyperaemic and very slightly nodular; the cervix is $3\frac{1}{2}$ cm. broad, and shows a transversely oval aperture measuring $1\frac{1}{2} \times 1$ cm. The uterus measures $9\frac{1}{2}$ cm. $\times 5\frac{1}{2}$ cm. $\times 4\frac{1}{2}$ cm.; the cavity from fundus to external os measures $7\frac{1}{2}$ cm.; in breadth, from the centre of the canal outwards in the direction of the right cornu, it measures $1\frac{1}{2}$ cm., but in the direction of the left cornu, owing to the hydrosalpinx, is reduced to $\frac{3}{4}$ cm. The muscle appears normal, though very pale, and the blood-vessels appear distinctly on the cut surface. The mucous membrane is uniformly smooth and pale, measuring 1 to 2 mm. in thickness on the anterior wall, which itself measures $2\frac{1}{2}$ cm.

Histological Examination: Mucous Membrane.—The surface epithelium is intact and smooth throughout the greater part of the cavity; towards the fundus it shows a tendency to become polypoid. The glands are not increased in number, but appear larger than usual, with very markedly swollen epithelial cells. The stroma is oedematous, and its cells swollen, and many large dilated blood spaces lined by a single layer of endothelium are to be seen just beneath the surface epithelium. The thick-walled capillaries appear normal in many cases, but
some are thickened by condensation of the stroma around them, and one or two show hyaline degeneration (Fig. 13). Vessels having definite fibrous and muscular walls are found within the mucosa, occurring often quite close to the glands (Fig. 12), and in sections stained by Weigert's stain for elastic fibres, these show a well-marked inner elastic lamina.

The junction between mucosa and muscle is sharply marked, and here the number of dilated lymphatic spaces and the numerous groups of vessels with thickened walls are striking.

Muscular Wall.—The muscle appears on the whole well-preserved. There is no marked increase in the amount of fibrous tissue, but in some parts the fibrous tissue which throughout the specimen penetrates between the individual muscle fibres, appears to have increased and produced atrophy of the enclosed muscle fibres. No broad bands of fibrous tissue are to be seen in the specimen except such as form the adventitial coats of the larger vessels. The fibrous tissue throughout shows a tendency to degenerate.

Vessels.—The larger vessels in the vascular zone show a marked thickening of all their coats. In the arteries, the intima, as a rule, is irregularly thickened, forming definite projections into the lumen in some cases. In sections stained by haematoxylin and eosin, the thickened intima is seen to be poor in nuclei and more or less degenerated; with Van Gieson's stain there appears a considerable increase in fibrous tissue which is markedly degenerated; while Weigert's elastic stain shows a definite increase in elastic fibres throughout the intima in many of the larger arteries. This is strikingly seen in a branch of the uterine artery at its point of entrance to the uterine wall (Fig. 14). The media also in this vessel is greatly thickened, and while the muscle nuclei are fairly well preserved, as seen in a haematoxylin preparation, there are signs of atrophy of the muscle in parts. The muscle fibres are seen, in a Van Gieson preparation, to be interpenetrated by a
degenerating fibrous tissue, which apparently presses on and destroys the muscle cells. This is also to be seen in the arteries within the uterine wall, though to a much less extent; the usual condition is a hypertrophy of the media without evident degeneration. The adventitia is thickened and degenerated in the larger arteries, appearing in Van Gieson sections as a granular red or pink mass, and not taking Weigert's stain. The veins do not show much change from the normal. In some cases both coats are thickened, the inner showing irregular proliferation filling up the lumen, and the outer showing an increase in elastic tissue, which also extends in fine fibrils through the inner coat. The smaller arteries show swelling of the endothelial cells as a rule, or slight irregular proliferation of the intima; slight thickening of the media; and marked thickening in the adventitia (Figs. 9 and 10). The groups of vessels so affected occurring amongst the glandular tissue at the junction of mucosa and muscle are particularly striking (Fig. 11).

_Cervix._—There is a cystic condition of some of the glands, and here and there a subepithelial hæmorrhagic infiltration. The vessels are slightly thickened in all their coats, but there is no marked increase in the elastic tissue. The arteries retain their well-marked internal elastic lamina, which appears thickened only in one or two of the larger vessels.

It is noticeable that in this case there is no typical "periarterial" or "perivenous" degeneration. The degeneration here is in the fibrous tissue of the thickened adventitial coats, the degenerated areas looking pink and granular with Van Gieson's stain, and not staining at all with Weigert's. So far, it might appear that there is a failure in the normal increase in elastic tissue. But, on the other hand, there is, in the larger vessels particularly, a definite increase in elastic tissue in the intima; and the uterus in this case had been only once pregnant. The possibility of infection must not be
overlooked, since there was evidence of adnexal inflammation. Addinsell describes degeneration of the fibrous tissue as the third stage of the pathological process in "chronic infective metritis."

Certainly failure of increase in the elastic tissue will not explain the haemorrhage in another case examined, that of a woman, aged 45, with a history of severe menorrhagia for ten years, and in whom death suddenly occurred three months after curetting, from septic peritonitis, evidently originating from an acute endometritis (Path. No. 2505). The vessels show marked and extensive degeneration within and around their walls (Fig 4). The intima is not markedly affected, but the media in most of the larger arteries is very greatly thickened and degenerated; and in the most advanced cases both media and adventitia are represented in Weigert sections as solid clumps of elastic tissue (Fig. 5). The veins have thickened inner coats of well-formed fibrous tissue, and show an increase in elastic tissue in their outer coats, in the position occupied by degenerated areas of few nuclei in haematoxylin and eosin preparations. The vessel condition is practically identical with that found in the senile case already described, although the changes have not extended to the smaller vessels to the same extent. The musculature in this case is separated up by bands of fibrous tissue, which is well formed and not degenerated. The cause of the menorrhagia is not evident.

Is there, then, an arterio-sclerosis of the uterine vessels apart from that brought about by physiological causes? If so, will the condition necessarily be accompanied by haemorrhage?

If we consider how the physiological changes are brought about, the question becomes clearer. Westphalen and Thoma have endeavoured to show that the peculiar vessel changes in the uterus are essentially due to the changes in blood pressure to which the functionally active uterus is subject. The periodic increase in blood pressure at the menstrual periods, and still more the pressure changes incident to pregnancy and the
puerperium, cause changes in the uterine vessels to which no other vessels in the body are subject to the same extent. The uterine vessels are, so to speak, shorter-lived than any others. If, now, it be supposed that changes in blood pressure in these arteries arise from some pathological condition, apart from pregnancy, etc., similar changes will presumably occur.

Theoretically, we may suppose that persistent high tension in the uterine and ovarian arteries will bring about as a first result, through increased vasomotor stimulation, an exaggerated response on the part of the musculature, so that a true "work-hypertrophy" takes place, i.e., hypertrophy of the uterine muscle generally, including the muscular coats of the arteries. Since arteries acquire their coats in proportion to the pressure they are called on to resist, it is probable that the adventitia will be strengthened by an increase in fibrous tissue. The strain must necessarily tell on the intima. In all parous uteri the inner elastic lamina of the arteries is thickened. In the case described, where general arterio-sclerosis was present, the larger arteries showed a marked increase in elastic tissue in the intimal coats. Probably this is the nature of the compensatory change when the artery wall is subjected to a sustained increase in blood pressure. Later the continued pressure will bring about degenerative changes; in the intima, whose nuclei disappear to a great extent; and in the media, where fatty degeneration and atrophy of the muscle may occur. We may further suppose that if the increase in pressure be gradual and sustained, as would occur in a case associated with general arterio-sclerosis, the compensatory change will extend gradually to smaller and smaller branches of the vessels, reaching eventually the endometrial capillaries. When degenerative changes have occurred, and the vessels can no longer react to the increased blood pressure, in other words, when compensation is disturbed, haemorrhage will result. The importance of menstruation in starting the haemorrhage has already been seen.
All these changes are illustrated in the case described above, in which there was general arterio-sclerosis, and a fairly clear history of syphilitic infection dating back twenty years. The peculiar pathological features in the case are—(1) the very distinct affection of the intima, which showed irregular proliferation and an increase in wavy elastic fibres out of all proportion to the general elastic increase, which was only very slightly marked, throughout the uterus; (2) the marked fibrosis around the vessels, particularly the smaller vessels, unassociated with fibrosis of the uterus generally; (3) the occurrence of groups of thickened vessels at the junction of mucosa and muscle, and the tendency of these vessels to invade the mucosa; (4) the existence of vessels with definite walls and a well-marked internal elastic lamina within the mucosa, and thickening and degeneration of the "thick-walled" endometrial capillaries.

The case is clearly one of uterine arterio-sclerosis associated with general arterio-sclerosis. A clear case of pathological uterine arterio-sclerosis existing as a purely local condition has yet to be demonstrated.

The changes in the vessels due to physiological processes cannot be regarded as causes of haemorrhage. They may go to an extreme degree without the occurrence of any abnormal bleeding. This is only natural. Further, since these changes are essentially brought about by the changes in blood pressure associated with the functionally active uterus, they are possibly indistinguishable from changes due to a pathological increase in blood pressure. In the causation of haemorrhage, the important thing is the pathological increase in blood pressure which gives rise to the vessel condition. To speak of the arterio-sclerosis as the cause of the haemorrhage is a mere confounding of words. The haemorrhage is a symptom of the condition of which the arterio-sclerosis is a sign. The association between hyperpiesis and arterio-sclerosis in other parts of the body is
Fig. 6.—Path. No. 4559. "Perivenuous" degeneration in large vein. Note slightly irregular proliferation of the inner coat. Degenerated area has the same appearance as in "periarterial" degeneration. Hematoxylin and eosin. (× 50.)

Fig. 7.—Same vein as in Fig. 6. Weigert. Note elastic tissue in outer coat, and fine fibrils throughout the irregularly thickened inner coat, as also in all places appearing degenerated in previous figure. A section stained by Van Gieson, of same vein, shows the corresponding areas bright yellow. (× 50.)

a, a1, Degenerated areas in and around outer coat. b, Irregularly thickened inner coat.
Fig. 8.—Path. No. 4750. Senile case. Calcareous degeneration beginning in superficial layers of media in large artery. (× 30.)

a, Intima. b, Media. c, Calcifying area.
Fig. 9.—Path. No. 4738. Arterio-sclerotic case. Severe haemorrhage. Group of medium-sized arteries showing thickening of all their coats, the adventitia being composed of a lightly staining, sparsely nucleated fibrous tissue. This is clearly a different condition from the "periarterial" degeneration seen in previous figures. Haematoxylin and eosin. (× 290.)

Fig. 10.—Similar group to that shown in Fig. 9. Van Gieson. The fibrous tissue of adventitial coats and surrounding the vessels appears black. Note that this fibrous tissue does not invade the surrounding muscle to any extent. Note also the fibrous strands throughout the media, and the marked irregular thickening of the intima. (× 60.)
Fig. 11.—Same case as Figs. 9 and 10. Group of thickened vessels occurring just under the mucous membrane. (× 90.)

a, Mucosa. $a'$, Detached glandular epithelium. $b$, Muscle.
Fig. 12.—Same case as above. Weigert. Small vessels with definite walls and well-marked, internal elastic lamina occurring within the endometrium. (x 200.)

a, a¹, Unstained glandular epithelium. b, Unstained stroma of mucosa. c, c¹, Inner elastic lamina.
Fig. 13.—Same case as above. "Hyaline" degeneration of an endometrial capillary. Note the circular arrangement of the stroma round the vessel. (× 220.)
Fig. 14.—Same case as above. Irregular proliferation of intima in a branch of uterine artery where it enters the uterus. Haematoxylin and eosin.

a, Intima. b, Media. c, Adventitia.
Fig. 15.—Same artery as Fig. 14. Part of the wall to show the marked increase in wavy elastic fibres in the irregularly thickened intima. Weigert. (× 100.)

Fig. 16.—Path. No. 4750. Similar case. Part of the wall of uterine artery to compare with Fig. 15. The intima is not so much thickened, and its elastic tissue is clumped together. Note the greater amount of elastic tissue throughout the media in this case as compared with previous figure. (× 100.)

a, Intima. b, Media. c, Adventitia.
well known though not clearly understood. It seems clear in some cases that the increased blood pressure precedes the change in the vessels and is the cause of it, although the case is complicated by the fact that the vessel change may itself induce a rise in blood pressure by increasing the peripheral resistance. The real difficulty is that the aetiology of atherosclerosis occurring anywhere in the body is still obscure. After all the well-established causes, including syphilis, alcoholism, various forms of poisoning, etc., have been excluded, there remains a class of unexplained cases arising independently of these causes in comparatively young people, and associated in some way with an increased arterial tension. Similar conditions may arise in the uterus, possibly associated with some form of local toxaemia. But the essential point is the condition behind the vessel change. It is readily conceivable that if an increase in arterial pressure occurred suddenly, or occurred in a uterus of deficient musculature, haemorrhage of a severe kind might occur before any marked changes in the vessels had had time to occur. Thus Simmonds' case of uncontrollable haemorrhage showed a sclerosis of the uterine artery alone. At the opposite extreme are those cases where the changes have extended to the vessels of the endometrium, and where the diagnosis can be made from curettings.

References.

HÆMORRHAGE AND ARTERIO-SCLEROSIS OF UTERINE VESSELS,

   — “100 Hysterectomies, etc.,” Lancet, 27th May 1905, p. 1406.


32. Pick.—Volkmann's Sammlung klinischer Vorträge, Nr. 283.
The President conveyed to Dr Macdonald the thanks of the Society for bringing this piece of work before them. Her paper was a most thorough, a most scientific, a most academic discussion of the subject. It was a difficult subject, and Dr Macdonald had tackled it in a thoroughly scientific way. It was also a difficult paper for them to discuss, because the questions raised in it were, many of them, novel and somewhat complex.
It seemed to him that, apart from the purely scientific way of presentation, the practical view came to be that the uterus at the menopause became very rapidly old; that the uterus, so to say, might be 70 while the patient herself was still between 40 and 50; and that in the ageing of the organ the vessels might become old before the rest of the uterus. It occurred to him that it might be found that the same sort of changes occurred in the placenta in cases of accidental hæmorrhage where there was no traumatism. It would be a very good supplement to her work to compare this condition in the uterus with a placenta of that kind. He himself thought that in looking over these microphotographs, he had seen sections of placenta that closely resembled them.

*Dr Haultain* seconded the President's eulogy on the very excellent paper which Dr Macdonald had given them. The subject was very wide, and one they could not discuss in its entirety. There were one or two important practical points which had been brought before them. In the first place, there could be no doubt that hæmorrhages from the uterus might be threefold—endometric, ovarian, and from the uterine wall. The endometric variety, which they all knew so well, with the capillary changes and so on, and which naturally could be cured in the majority of cases by curetting. It was perhaps with the other two varieties that the paper dealt more particularly. With regard to the ovarian variety, there was no reasonable doubt that the ovary had a strong influence on uterine hæmorrhage. From time to time they met with cases in which the ovary and it alone was the cause of uterine hæmorrhage. Some years ago, before hysterectomy was such a common operation, the removal of the ovaries was undertaken for severe intractable cases of hæmorrhage for which curetting would not do any good. It struck me that in several cases bleeding still continued after the removal of the ovaries; although in the majority of cases menorrhagia and metrorrhagia frequently were cured by
the removal of the ovaries, which made it certain that there was an important ovarian influence. But it was in these cases where, after the removal of the ovaries the bleeding continued, in which there was some condition in the uterine wall, or the vessels penetrating that wall, which gave rise to the condition. He had had upon five occasions to remove uteri for that condition, where there was no malignancy, where the ovarian condition, as far as one could see, was perfectly normal, but where in spite of persistent curetting, and in one case in spite of the removal of the ovaries, the bleeding had continued. Three of these cases were in young women under 25. In the other two cases the women were well past the menopause. The condition found in four of these was almost identical—a very considerable arterio-sclerosis, and in three of these very considerable thickening of the uterine wall, analogous to that found in so-called fibroid and in subinvolution. Further, in making some investigations in fibroids, one found in a considerable proportion of fibroid uteri, that this condition of the blood-vessels existed. It seemed to him that possibly this accounted for those cases where, after the removal of the ovaries, there was still bleeding from a fibroid uterus. Post-climacteric hæmorrhage could go on in a uterus already afflicted with fibroid disease. There was certainly a class of case where nothing but removal of the uterus could cure the condition, which might be not only post-climacteric, but might occur in a very young woman. And it seemed to him a far better operation in young women in whom curetting did not cure the condition, and where the patients were invalided, to remove the uterus and leave the ovaries, than to remove the ovaries and leave the uterus; because in the former cases the ovarian influence was not removed, and the removal of the uterus itself did not seem to act in the same way as removal of the ovaries, for it was an organ which did not appear to have an internal secretion.

Dr Ritchie said he had listened with very great interest to
the paper. Dr Macdonald’s opinion seemed to him to be that the arterio-sclerosis was practically a physiological change in aged uteri, and that haemorrhage did not arise quite so much from changes in the vessels as from what was behind them. He asked Dr Macdonald to state in her reply whether this was the opinion which she advocated.

Dr B. P. Watson said he could not offer the explanation Dr Fordyce desired. As to the particular uterus which Dr Barbour had described and which he had had the pleasure of examining, the vessel changes in it were very much the same as Dr Macdonald had described. The vessels of the mucous membrane were specially affected, and showed great thickening of the walls and hyaline degeneration. There was no arterio-sclerosis of any other vessels, and no history of any cause likely to produce the condition. One ovary was cystic, but no other abnormality was present. He said the paper had been a most interesting one, and the microphotographs shown were very clear, so that he would have liked to have seen the actual sections, which must be very fine.

Dr Porter said he was not competent to discuss the paper, but expressed his pleasure at having heard it read. He inquired whether there was any history of haemophilia in any of the cases.

Dr Elizabeth Macdonald, in reply, thanked the Fellows for the way in which they had received the paper. In reply to Dr Ritchie, she said she did take up the attitude that the vessel changes were of secondary importance in the causation of haemorrhage. She had come to this conclusion from a consideration of the case of premature senile change, where the vessels were extensively degenerated, and where there was no haemorrhage to speak of. As to septic infection causing the vessel changes, there was no doubt that it was one of the most general causes of vessel degeneration. But in the case quoted the patient had suffered from menorrhagia for ten years, and
the infection had been quite a recent one, not lasting for more than three months, so that it could not in this case explain the menorrhagia of twenty years' standing.

Meeting IV.—February 9, 1907.

Dr J. W. Ballantyne, President, in the Chair.

I. The following ladies and gentlemen were elected Ordinary Fellows of the Society:—Mary C. Hamilton, L.R.C.P. & S.E., L.F.P.S. Glas., Sick Children's Hospital, Edinburgh; Elsie M. Barnetson, M.B., Ch.B., 31 Morton Street, Joppa; J. A. MacLeod, M.B., Ch.B., Royal Maternity Hospital, Edinburgh; H. S. Reid, M.B., Ch.B., Royal Maternity Hospital, Edinburgh.

II. The President showed—(a) A pair of cystic kidneys from a foetus. There had been some difficulty with the labour, and the child was still-born. Only a very rapid post-mortem examination was permitted, and the liver and both kidneys were found to be enlarged. The kidneys only were removed; each weighed over 4 ounces, and one was 10 cm. long and the other 9½ cm.—about three times the normal size. There was not very much to be made out on naked-eye examination, save a general spongy appearance, but under the microscope the kidney tissue was seen to consist of hundreds of thousands of small cystic cavities. These kidneys are supposed to be not really cystic, but a form of adenomatous degeneration, and so are really to be classed as tumours rather than cystic degenerations. (b) Frozen sections of a female foetus, born in Maternity last September. At birth it was thought to be normal, but when Dr Ballantyne was going round the ward the next day he noticed that the child was carrying its head very low on its shoulders, and
ventured a diagnosis of cervical spina bifida, though there was no external indication thereof. It died in a few days, and the specimen showed very well the condition of hidden cervical spina bifida.

III. Dr Barbour showed—\(a\) A FIBROUS TUMOUR OF OVARY, so wedged in pelvis and pressing against uterus that a diagnosis of uterine tumour was made. There were pressure symptoms on the rectum, and there was difficulty at the operation in pulling the tumour past the promontory. \(b\) RUPTURED OVARIAN CYST, WITH PSEUDO-MYXOMA PERITONEI. The cyst contained gelatinous material. The omentum was hanging down like an apron, infiltrated with this tissue. \(c\) DERMOID TUMOUR OF OVARY, WITH A TWISTED PEDICLE. The tumour had been diagnosed as a fibroid of ten years' duration, and during that time it had not produced any symptoms. The patient was suddenly seized with symptoms partly suggestive of torsion of the pedicle, but instead of sickness there were symptoms of obstruction of the bowels, which was found on operation to be due to paralysis of the bowel, the result of commencing peritonitis. There was difficulty in overcoming the paralysis of the bowel for two or three days, but the patient did very well.

IV. A CLINICAL AND ANATOMICAL STUDY OF THIRTY CERVICAL FIBROIDS REMOVED BY ABDOMINAL HISTERECTOMY.


As is well known, the cervix and body of the uterus essentially differ in their anatomical aspects from the earliest periods of the development of the organ. These striking differences they maintain throughout the life of the individual, not only in
their anatomical, but also in their physiological and pathological features. Upon such it is not necessary to dwell, except in the essential particular which is associated with the development and growth of uterine fibro-myomata, which forms the text of the following observations.

The development and growth of these tumours in the cervix is rare, and is said to account for about 5 per cent. only of all cases of uterine fibro-myomata. In this connection my operative experience is not in strict accord, as out of 260 cases of hysterectomy for these neoplasms, I have on thirty occasions met with their primary development in this situation. But when the large number of corporeal fibro-myomata I have seen, in which operative treatment was unnecessary, is considered, this percentage may fairly be taken as about the normal. At the same time, it must be remembered that
submucous cervical fibroids and interstitial tumours of the intravaginal portion are by no means rare, and are removable through the vagina.

Divisions of Cervix.—To study and classify these growths one must take into account the anatomical description of the cervix into three portions—supravaginal, intervaginal, and intravaginal, which is of such great importance in the description of hypertrophic conditions. These may be described as being differentiated from one another by the attachment of the vaginal walls; the "intra" being below the attachment of the anterior vaginal wall, the "supra" being above the attachment of the posterior wall, and the "inter" the intervening portion between these two (Fig. 1). Tumours of the intravaginal portion alone do not here call for description, as their removal by the abdominal route, or indeed the removal of the uterus, is uncalled for, and they may thus be dismissed. I therefore confine myself to those associated with the intervaginal and supravaginal portions with subsequent involvement of the intravaginal portion.

1. Table of cases in which cervix alone was involved—

   (a) Supravaginal portion  .  \{ Posterior 3 \} \{ Anterior 1 \} 4
   (b) Supravaginal and intervaginal  \{ Posterior 4 \} \{ Anterior 2 \} 6 22
   (c) Supravaginal, intervaginal, and intravaginal portions  \{ Posterior 8 \} \{ Anterior 4 \} 12

2. Cases complicated with corporeal fibroids  .  7 7
3. Case complicated with one month's pregnancy  .  1 1

The supravaginal tumours were more of the subperitoneal type, and, with one exception, grew from the posterior wall, and embedded themselves downwards in the recto-vaginal septum. They thus bulged the posterior vaginal wall forwards,
but in no way affected the free portion of the cervix, except that it was displaced high up behind the pubis, and was difficult to reach.

Six supravaginal and intervaginal growths were met with, two in the anterior and four in the posterior wall. As the result of the want of involvement of the intravaginal portion, the external os was in no way affected, and remained as a slight projection on the base of the tumour, with a small opening at its tip (Fig. 2). All these tumours were sufficiently large to fill the brim of the pelvis, and grew upwards and downwards, assuming the typical ovoid shape. The bladder in all instances was displaced upwards into the abdomen—in the anterior tumours by the actual growth itself, and in the posterior by the stretching of the anterior wall. In each the growth was incarcerated in the pelvis, and, as might be
expected, gave rise to well-marked pressure symptoms, particularly associated with micturition.

The entire cervix was involved in twelve instances. In eight the growth developed in the posterior wall, in four the anterior wall. In these cases, through the stretching and thinning of the uninvolved cervical lip, the os externum was much dilated, and easily admitted the tip of the finger.

All were sufficiently large to fill the true pelvis, and thus conformed to the typical ovoid shape, as in the previous tumours.

The disposition of the peritoneum is of interest, as it naturally is varied according to the position of the tumour in the anterior or posterior wall. When anterior, the retro-uterine pouch is in no way interfered with, and the peritoneum extends downwards over the upper third of the posterior vaginal wall; while in the posterior tumours the peritoneum is lifted up over the top of the growth, and thus separated from its usual relations to the vaginal roof. In the latter instances the tumour occupied the recto-vaginal septum, and was in close apposition to the rectum and vagina, a relation of very considerable importance with regard to operative removal (Fig. 3). When anteriorly situated, the peritoneum along with the bladder is lifted high in the abdomen, and separated from the anterior abdominal wall for a considerable distance.

In all of the cases but one the growths were unimodular, although in eight instances they were associated with fibromatous nodules in the uterine body. In the multinodular growth which grew from the anterior wall, and involved the entire cervix, the displacement of the surrounding organs was extreme. The bladder was drawn round to the right side of the pelvis, while the fundus uteri was displaced into the retro-uterine pouch. The entire brim of the pelvis was filled by the tumour, and the usual landmarks were thus completely obliterated (Fig. 4).
Clinical Features.—As might be expected from the situation and size of the tumours, intrapelvic pressure symptoms were mainly in evidence. These in the majority of instances were associated with the functions of the bladder, mainly in the direction of retention of urine. Firstly, this was complained of at or about the menstrual period, when the tumour was temporarily engorged, but later it occurred at other times; and in one instance it was permanently present; here the irregular pressure on the base of the bladder continued to make catheterisation difficult, as from the prolonged distension of the bladder it remained atonic and pouchèd, so that unless the catheter actually passed into the upper diverticulum only partial evacuation was procured. Pain, as the result of pressure on the pelvic nerves, is, strangely enough, not a
marked symptom; it is by no means so evident as in incarcerated fibroids of the body. Hemorrhage was a most unequal symptom, and in only ten of the twenty-two cases could be considered severe; seven of these being instances where the entire cervix was involved. In eight there was neither menorrhagia or metrorrhagia.

It is probable in some instances the hæmorrhage was increased by some attempt at the expulsion of the tumour below the mucosa. In this type not only is there a special disposition towards hæmorrhage, but also a tendency to sloughing and gangrene, probably due to some impairment in the blood supply. Hæmorrhage must not, therefore, be considered a constant symptom, although frequently present.

In my own experience, in only two instances did the tumour show any signs of degeneration. These were oedematous
and gangrenous. In a case, however, of Professor Simpson's, in which I had the honour of assisting him in its removal, a large central degeneration cyst was present, similar to those met with in the so-called fibro-cystic myomata of the uterine body; the contents were spontaneously coagulable on evacuation.

Operation.—The operation for the removal of these growths, though by no means simple, does not present the formidable difficulties which from their situation one would anticipate, as they are usually readily enucleated from their surroundings. Perhaps the most troublesome difficulties are the absence of the usual landmarks from the displacement of the surrounding structures, the close relation to the ureters, and the inability to recognise the elongated and stretched uterine arteries. In one case, where the tumour arose from the anterior lip and filled the brim of the pelvis, incarcerating the retroverted fundus with the ovaries in the pouch of Douglas, and pushing the distended bladder far round to the right side, when the abdomen was opened nothing but a large indefinite mass could be seen, which required to be enucleated from its subperitoneal bed before the true relation of parts could be made out (Fig. 4).

As might be expected, the incision in the vaginal wall is preferably to be commenced anteriorly after stripping the bladder down. In a typical case, the following may be described as the method of operating. On opening the abdomen, the small uterine body will be seen situated on the top of the growth. This is laid hold of by a pair of strong vulsella and forcibly pulled upwards. The infundibulo pelvic ligaments are tied and the broad ligament cut. The round ligaments are similarly dealt with. In anterior growths, the loose peritoneum covering the tumour is then incised from pelvic wall to pelvic wall anteriorly, and, with the bladder, is freed from the mass; this is usually easily accomplished, but care must be taken not to tear through the large plexus of vesical veins, which may cause most troublesome haemorrhage. The
uterine arteries are now ligatured as low as possible and divided.

An opening is then made into the anterior vaginal fornix. This is enlarged laterally, extending round the tumour mass, the vaginal wall being gripped in small sections by forceps before cutting. By this means, bleeding from the vaginal arteries, wherever present, is controlled, and they can be easily detected and tied.

When the growth is from the posterior wall, the loose peritoneum covering is incised in like manner and the tumour enucleated from the rectum and its bed, care being taken to keep close to the tumour laterally to avoid the ureters. After enucleation, the anterior vaginal vault is opened and the tumour removed by a process similar to that in the anterior growth. After all vessels have been tied, the bed of the tumour is packed with gauze and the end drawn down into the vagina. The two layers of the peritoneum are now stitched completely over the gauze by continuous thin suture in Lembert fashion. The gauze is withdrawn after forty-eight hours, by which time all oozing has been controlled. The vagina is then gently syringed out daily with warm sterilised water. In supravaginal growths, after enucleation the remaining portion of the cervix is cut across and treated by the subtotal method.

In posterior growths, the close connection of the tumour to the rectum from which it has practically been stripped, forms a distinct source of danger, in so far as the bed of the tumour may subsequently become infected by the Bacillus coli directly from the bowel. In three of my cases this complication occurred, and in two of these it proved fatal. It is well, therefore, in these instances to see that the bowel is not only freely evacuated but cleansed by means of weak antiseptic enemata.

In cases where there is a distinct muscular capsule to the growth, it is undoubtedly safer to incise it transversely from side to side at the same level as the peritoneal incision, and
proceed to enucleate the tumour from the capsule. The cavity which remains is then packed with gauze and the end drawn through the vagina; by this means there is no baring of the rectum, and the risks of infection from this source minimised (Fig. 5).

Fig. 5.—Uterus and posterior cervical fibro-myoma removed, the latter enucleated from its capsule.

In these cases the tumour may be enucleated after vertically splitting the uterine body and thus reaching the bed of the tumour from above. This is the method adopted by Bland-Sutton and Rutherford Morison. A distinct capsule, however, is not always present, and complete removal is essential.

The combination of large corporeal and cervical fibro-myomata is, fortunately, rare, and the difficulty and danger of their removal is very great. Personally, I know of no operation in gynaecology which offers so great difficulties, from the want of definite landmarks and the distortion of surrounding im-
ported organs. Each case seems more puzzling than the other. The dislocation of the bladder and ureters, the splitting of the layers of the mesosigmoid, and the want of room to work from the incarceration in the true pelvis, all tend to prevent conventional method of action and demand originality.

Perhaps the most interesting of these it has been my fortune to meet was the removal of the specimen I show of combined fibroid and pregnancy five months, in which labour was present.

I have, unfortunately, to record three deaths in the thirty cases operated upon, a mortality of 10 per cent., which undoubtedly compares most unfavourably with my experience of hysterectomy for corporeal fibroids, which shows a mortality of slightly more than 1 per cent.

That the operation is legitimate, however, even with such results, there can be no gainsaying, as the symptoms present in all cases were severe and dangerous, and doubtless would shortly have caused the death of the individual, a very different status from the victims of corporeal fibroids, in whom the operation is undertaken for discomfort and semi-invalidism, and the life of the patient is only threatened in a comparatively few instances.

Two of the deaths occurred in posterior cases, and were due to septic infection; this was probably predisposed to by the large area of enucleation, which involved baring the rectum. In these cases, therefore, I now always, if possibly, enucleate from their capsule, so that stripping from the rectum may be avoided. The third death was also due to septic infection from a sloughing cervical tumour associated with a large corporeal growth.

The President said they had listened with the greatest interest and pleasure to Dr Haultain’s paper. It was only after seeing a great number of cases that one was able to
make out the small points of difference that existed, more especially with regard to the relationship of parts to other organs, and the relation of the tumour to the uterus itself. Dr Haultain's communication had greatly cleared up the topography of these cervical fibroids, and would enable them in the future to classify them into anterior and posterior varieties, and according to the three segments of which the cervix is composed. The deductions from such topographical knowledge were very interesting with regard to treatment, and to the close proximity of the rectum. He had wondered when Dr Haultain was describing his cases, whether there had in any case been any infection of the tumour itself from the rectum. His own personal operative interference with cervical fibroids was limited to two cases: one which he had enucleated from the cervix, and in which he had had to face tremendous haemorrhage at the time; and the second, in which he had done a pan-hysterectomy. Both cases had made a good recovery. In both of them the tumour had affected the intravaginal portion, and had been anterior also in both cases. Certainly, he thought that Dr Haultain's paper showed that with very few exceptions it was a very risky thing to approach these growths through the vagina, and that abdominal hysterectomy was the right thing to do. He was sure the Society was much indebted to Dr Haultain for bringing the cases forward in such a masterly way.

Dr Barbour said that the President had touched on most of the points he had intended to refer to. He congratulated Dr Haultain on the clear and lucid description of these tumours in respect to the parts of the cervix from which they grew, and with regard to the displacement of the peritoneum. It was a very interesting fact that tumours growing from the cervix posteriorly lifted the peritoneum up, and that the pouch of Douglas was displaced to such a height. Dr Haultain had drawn attention to the interesting fact that usually the fibroid
tumours of the cervix were single—that is to say, that one did not often see a fibroid of the cervix and several of the uterus; and, indeed, that one might almost assume that a cervical fibroid will be a single tumour, although now and again there were exceptions. For that reason he wondered whether one of the tumours figured was a cervical fibroid. It seemed to extend a good way up into the anterior uterine segment, and to be as much a uterine as a cervical tumour. He wished to ask if there was any liability to kidney complications in any of the cases; and to Dr Haultain's reply in the negative, he said it was interesting that although there must be considerable pressure on the ureters, yet there was no disturbance from the kidneys. Dr Haultain had brought out an interesting and important point with regard to the operation—in regard to leaving the capsule in the case of any tumour that comes to be in relation to the rectum. In olden days the operation of enucleation was a dangerous one for the patient, and to have left a portion of the capsule behind, would have been considered to have increased the risk of the operation. But it was now evident that if the tumour was thoroughly cleaned out, it was quite safe to pack with gauze, and that with good drainage from below, the risk of infection was less. He looked on the paper as a very important contribution, not only to the topography of the tumours, but also as to the operative treatment, and was in a line with the splendid work Dr Haultain had already done on the subject.

Dr Brewis said that he had listened with the greatest pleasure and with considerable profit to the very valuable paper of Dr Haultain. Dr Haultain had treated the subject so fully and dealt with it in so admirable a manner, that there was very little left to say. His experience of this class of case accorded entirely with that of Dr Haultain, with one exception. He had thought he had met with all possible varieties of cervical fibroids, but he found he had not met with two of the
examples that Dr Haultain had figured. He said there was really nothing to criticise, though he would state his experience. As to the frequency of cervical fibroids, his experiences coincided with that of Dr Haultain. In 10 per cent. of the cases requiring abdominal section he had found cervical fibroids. Dr Haultain had classified the tumours into the usual divisions of the cervix. He thought they might also be designated as submucous, interstitial, and subserous. With regard to symptoms, every cervical fibroid was more or less intrapelvic, and when growing big enough gave rise to pressure symptoms. The outstanding, and frequently the only symptom, was retention of urine. He was accustomed to tell his students that if a non-pregnant patient above a certain age came complaining of retention of urine, almost certainly she had a fibroid tumour, and in nine cases out of ten it would be a cervical fibroid. He had also met with haemorrhage in some of his cases, and in such the tumour had usually been of the submucous variety. As to the treatment of these tumours, the various anatomical features they presented required different technique. They had to avoid the bladder in front, the rectum behind, and the ureters at the side. He had had several cases of cervical fibroid that had been limited entirely to the supravaginal portion of the cervix, and each case had been done by the supravaginal operation. In one case the tumour had grown backwards, and opened up the meso-rectum, and was very difficult to remove. He had had a number of cases similar to the ones represented—subserous cervical fibroids growing either from the anterior or posterior aspect. In these cases, after having opened the abdomen and divided the peritoneum, he had shelled the tumour out of its capsule, put stitches into the bed of the tumour, and drained per vaginam, closing the abdomen without removing the uterus. He had done this in subserous tumours, growing both from the anterior and posterior aspect of the cervix. Submucous or interstitial differed quite from that
variety. They formed a more or less elliptical tumour. If large, they filled up the whole pelvis, and were very difficult to remove; because, as Dr Haultain pointed out, the uterine vessels were spread out alongside, elongated, and difficult to ligature. From want of room it was also difficult to avoid the ureters. He had removed at least six of such cases by pan-hysterectomy, much as described by Dr Haultain. In a number of cases he had found that this operation was simplified by splitting the uterus; after having divided the broad ligaments as far down as possible, and pushed down the bladder, he had split the uterus down vertically from the fundus, and enucleated the tumour. Enucleation might be difficult, and not safe to practise. In such a case, even without enucleation, the splitting of the uterus and tumour was of the greatest service, because one can pull up one half and ligature the vessels, and then do the same on the other side; it was then a simple matter afterwards to open the vagina. Enucleation was of the greatest benefit, not only in cervical fibroids, but also in corporeal fibroids. In the most difficult cases, where sometimes one did not know where one was, one could incise and get a blunt instrument between the capsule and the tumour and shell it out, and might shell out several in that way. After that was done, that which had been very complicated became quite simple. He cited one remarkable case in which the patient had come to him after the eighteenth operation. He was told that each time she had presented herself previously to her doctor, there was a fibroid at the vagina, and that several inches of it were removed. When the patient came under his care for the nineteenth operation, he had removed the whole uterus. Dr Haultain's paper was one of the greatest value, and perfect in all its details, not lending itself to any criticism.
V. HYSTERECTOMY FOR FIBROID TUMOURS IN PREGNANCY. TWO CASES.

By A. H. F. Barbour, M.D., University Lecturer on Gynaecology.

The interesting paper by Dr Brewis on two cases of pregnancy, complicated by fibroid tumours, treated by hysterectomy, read at the December Meeting of our Society, induces me to place on record two cases of operation for similar conditions, performed during the last few months. These cases differ from those recorded by Dr Brewis in that the operation was done at an earlier period, when it was not a question of Caesarean section. Under the rarity of the condition I may mention that these are the first cases that have come under my notice in connection with my experience at the Royal Infirmary, which extends now over many years. The clinical histories of these cases are as follows:

CASE I. Fibroid Tumour of Cervix.—After five normal pregnancies and labours patient became pregnant, and had repeated hæmorrhages during pregnancy, followed by a natural labour at term. Eighteen months later an abortion at the sixth month, the hæmorrhage during the pregnancy preventing her knowing her condition until abortion occurred. A year later, after four months' amenorrhœa, a tumour the size of a foetal head discovered in the pelvis, growing from the posterior lip of the cervix and displacing the uterus upwards. Pan-hysterectomy a fortnight later. Recovery.

CASE II. Fibroid Tumour of Posterior Wall of Uterus.—An abortion at the third month, a year after marriage. Eight months later became pregnant again; and now, after four and a half months' amenorrhœa, has a uterine fibroid about 4 inches in diameter to the right, displacing pregnant uterus to the left.
The tumour has a broad base of attachment, and has rotated the uterus, so that the right appendages lie anterior. As patient desired immediate operation, supravaginal hysterectomy was done. Recovery.

A comparative study of the cases raises the following interesting questions.

As regards the situation of the tumour and the consequent displacement of the uterus, we note that the cervical fibroid measures 4 1/2 inches transversely, 2 1/2 vertically, and 3 anteroposteriorly. It springs from the posterior half of the cervix, its attachment extending up into the lower uterine segment. It is a single tumour, there being no other in the uterine wall. It must have been present for some time, as fibroid tumours of the cervix do not grow rapidly; indeed we have evidence of its presence as far back as 1903, when the patient had her sixth child. The repeated haemorrhages in pregnancy in a patient who had had five previous normal pregnancies point to the development of this tumour, although it was not of sufficient size to interfere with her sixth labour. Her seventh pregnancy was also marked by haemorrhages, so frequent that the patient was unaware of her condition until a sixth month's fetus was expelled prematurely.

It is an interesting fact that conception occurred with a tumour which, making allowance for its more rapid growth during the early months of pregnancy, must have been of considerable size. This shows that the sterility characteristic of these tumours is not due to their bulk, but to associated changes in the uterine mucosa.

Another interesting question is how far the patient was gone in pregnancy. She gave a history of four and a half months' amenorrhoea, and of having felt foetal movements for six weeks, that is from the third month onwards. The fundus stood about 1 inch above the umbilicus. At first I was inclined
to think that she was only four and a half months pregnant, and to attribute her having felt foetal movements from the third month to the fact that the tumour in the pelvis, displacing the uterus upwards, had brought it into contact with the abdominal wall at an earlier period than is usually the case. From the size of the uterus, however, and especially the length of the foetus, which measures 13 inches, it is evident that the pregnancy is of five and a half months’ duration. In this case, what she described as her last menstruation must have been a hæmorrhage some weeks after conception.

The second case shows a fibroid tumour of the posterior wall of the uterus, measuring about 4 inches in diameter, and with a broad base of attachment extending from the level of the Fallopian tubes to the lower uterine segment. Before operation it looked as if we had to do with a tumour attached to the right side of the uterus, displacing the pregnant uterus to the left; on abdominal section, however, it was found that the tumour had caused rotation of the uterus, so that the right uterine appendages were opposite the abdominal incision. From the size and position of the tumour, delivery of a child, in the event of pregnancy going on until the child was viable, could only have been possible by Cæsarean section.

These cases also raise the interesting question of the reasons for operative interference, and whether immediate operation was necessary. In the case of the cervical fibroid the appearance of the part of the tumour presenting at the vulva decided the question. The tumour was undergoing infection, and though there was no temperature it was evident that it would not be safe to allow pregnancy to go on in the hope of getting a living child. Even had the tumour not been undergoing necrotic changes it would have been a doubtful policy to temporise, because labour had come on prematurely in the previous pregnancy; and to defer operation until labour was advanced would have greatly increased the risk to the patient. The
dilatation of the cervix seen in the preparation shows that as a matter of fact labour had already begun, though no pains had been noticed, before the patient was on the operating table.

The necessity for immediate operation was not so obvious in the second case. Although it is doubtful whether pregnancy would have gone on until a viable child could have been obtained by Cæsarean section, yet, had there been an opportunity for keeping the patient under observation, the operation might have been deferred. In forming an opinion in a case of this nature one has to be guided by the patient's wishes, and had she been anxious to run a certain amount of risk for the possibility of having a living child, I should have advised delay. Both the patient, however, and her husband wished to have as little risk as possible, and requested immediate interference.

With regard to the operation itself, little requires to be said. In the first case pan-hysterectomy was performed, care being taken to prevent infection of the peritoneal cavity as the tumour was lifted out of the pelvis. In the second case supra-vaginal hysterectomy was performed, the cervix being left. In both cases I was struck by the fact that the operation of hysterectomy is not made more difficult by the existence of pregnancy. While more ligatures are necessary to control venous hæmorrhage, the stretching of the peritoneum and opening out of the ligaments, resulting from the pregnant condition, facilitates the dealing with bleeding points and the covering over of the pelvic floor with peritoneum. Both patients made an excellent recovery.
I. Dr Brewis showed—(a) A four months' foetus (extra-uterine) removed by vaginal section, and a portion of the placenta. The patient was aged 35; had had five children, the youngest of whom was five years old; the last period was on 21st October, the operation on 22nd February. The primary rupture took place on the eighth week, as far as could be ascertained, for she had been seized at that time with severe pain in the lower abdomen, resembling the pains of labour; the pains were not followed by any collapse. The vomiting and pain had continued till the time of operation. On examination the whole of the lower abdomen had been found to be distended with a tense swelling, not firm and resistant, but more like an ovarian cyst. Towards the symphysis, and in the left iliac region, there was distinct resistance and dullness on percussion. Per vaginam, the uterus was found to be enlarged and pushed to the front by a tense cystic swelling, filling up the posterior part of the pelvis. The diagnosis of tubal rupture of an extra-uterine gestation was made. He had operated from below, as was his custom in most of these cases. The patient was very feeble; hæmoglobin 50 per cent.; and he had carried out venous transfusion while the patient was getting the anaesthetic. He had opened through the posterior fornix opening into the sac, from which had poured fluid which looked like liquor amnii. He got hold of a foot of the infant and delivered rapidly, and had taken away a piece of the placenta and blood-clot. The foetus was living at birth; the cord was attached to the upper part of the sac; in the left iliac region was the rest of the placenta, but he had not considered it wise to remove the placenta from that site. The sac was packed with gauze (16 yards were used). The rupture had been between the layers of the mesometrium, the embryo and
membranes had escaped into the portion of the pelvis uninjured, and the pregnancy had continued. As the sac enlarged, it lifted up the peritoneum from the anterior surface of the rectum and the anterior abdominal wall, and the explanation of the vomiting was that the pregnancy had continued—it was the vomiting of pregnancy. He took it that the sac was in imminent danger of undergoing secondary rupture. He pointed out the advantage of operating from below; for if this had been opened from the front he would have encountered the placenta first, and the patient would have succumbed to any operative procedure from above. But from below the operation had been easy and comparatively safe. The placenta had not yet come away, but was coming away in pieces, and the patient was doing quite well.

(b) **Large subperitoneal fibroid**, showing mucoid degeneration, with a very small pedicle.

(c) **Cervical fibroid**, growing from the anterior wall of the cervix, and removed by pan-hysterectomy.

(d) **Two dermoids** removed from the same patient, who was married and had had a large family.

(e) **Double pyosalpinx**, removed by the operation of hystero-salpingo-oophorectomy—it was a tuberculous case. The tube had ruptured at the time of operation, and pus escaped over the field of operation; but the patient had recovered without a bad symptom—the pus being sterile.

(f) **Ovarian tumour**, from a patient who had been operated on by Thomas Keith, nineteen years before. It was a case in which Keith had evidently not thought it wise to remove the whole tumour, and had stitched the cyst-wall to the abdominal wound, leaving a portion of the tumour. When the case came under his care, the tumour had filled the greater part of the abdomen, and was attached to a large surface of the anterior abdominal wall. The tumour had been removed by taking away a great part of the anterior abdominal wall.
II. Dr Haig Ferguson showed—(a) A pelvic abdominal tumour from patient æt. 38, diagnosed as uterine fibroid, producing severe œdema of right lower extremity from pressure upon right external iliac vein. This was practically the only symptom caused by the tumour, as the patient had no metrorrhagia, no severe menorrhagia, and only a copious watery intermenstrual discharge. The specimen showed—(1) large submucous fibroid; (2) fibroid which was removed from between the layers of the right broad ligament, and which was continuous with the submucous fibroid. Apparently the tumour commenced interstitially, and grew simultaneously outwards between the layers of the broad ligament and inwards as a submucous fibroid, the two portions being united by a narrow neck. Pressure symptoms were completely relieved by operation.

(b) Pelvis of primipara, who was unconscious from acute eclamptic toxæmia at full time, with strong labour pains, and demanding rapid delivery. Head lay persistent occipito-posterior, and was not engaged at the brim. Forceps proved unavailing, and as child was dead, craniotomy was performed. Patient never regained consciousness. The measurements of the pelvis were:—Interspinous, 9¼ inches; intercristal, 9¾ inches; conjugata vera, 3½ inches; conjugata diagonalis, 3¾ inches; transverse (widest point), 5½ inches, (available), 4½ inches; left oblique, 4¼ inches; right oblique, 5 inches; cavity fairly roomy; transverse at outlet, 4½ inches. Projecting into the lumen of the brim opposite the right iliac pectineal eminence was a spinous process, causing shortening of left oblique diameter by ½ inch, as compared with right. Type:—The pelvis was apparently a justo-minor, complicated with rickets. It seemed to be after the type described by Litzmann, in that it had an ungainly and angular appearance, and in the marked prominence of the pubic crests. There was a slight scoliosis. The head lay in the R.O.P. position, the occiput becoming
impacted on the abnormal spinous projection on the right iliopectineal line—a fact which could be easily made out during the conduct of the labour, and necessitating craniotomy. Unfortunately, the birth of the foetus did not modify the toxaemic condition, the fits continuing, and the patient dying in toxaemic coma.

III. EXOPHTHALMIC GOITRE IN ITS RELATION TO OBSTETRICS AND GYNÆCOLOGY.

By Sir J. Halliday Croom, M.D., Professor of Midwifery in the University of Edinburgh.

The relationship of exophthalmic goitre, known as Graves' disease or Basedow's disease, to pregnancy, parturition, and to various forms of gynaecological disease, has received comparatively little attention in this country, and as I have observed a number of cases within recent years, I venture to record some conclusions I have arrived at, although I fear in the main they are negative.

It is unnecessary to describe the symptoms characteristic of this disease, nor in a short paper can I deal with the theories as to its etiology. Suffice it that amongst many supposed causes brought forward by various authorities we find changes in the blood, changes in the heart muscle, enteroptosis, floating kidney, auto-intoxication from digestive disorders, impairment of the lymphatic circulation, changes in the ganglion cells of the cortex, changes in the medulla, lesions of the sympathetic, lesions of the restiform bodies, and finally hypersecretion of the thyroid gland.

This last point, the question of the thyroid, is an extremely difficult and important one. Richardson, whose essay on the subject is classic, says that the spontaneous enlargement and hypersecretion of the gland is more than improbable; and
Gibson, in his able and valuable paper on "Adaptation and Compensation," condemns non-functional hypertrophy in any part of the human organism in characteristic language as "a base figment of the imagination."

As we shall see later, there seems to be a direct relationship between pregnancy and the thyroid, a point to which attention has been drawn recently by the researches of Nicholson and others into the connection between eclampsia and the thyroid gland. And if we consider the undoubtedly close connection between the thyroid and metabolism and assimilation, we must at least admit the plausibility of Thomson's claim that the *causa causans* is a toxæmia, and that this produces a perversion or an increase in the quantity of the thyroid secretion. It is certain that pathologically the changes which take place in the thyroid gland are usually a parenchymatous hyperplasia with changes in the colloid material and degenerative changes in the protoplasm and nuclei. There is, however, no definite histological change in the organ that can be called specific of exophthalmic goitre, and all the above changes may be found in patients who present none of the symptoms of Graves' disease.

The disease is, roughly speaking, ten times more common in women than in men. This I take to be an undisputed fact. But, judging from the statistics of my own hospital work, which has been entirely confined to the Maternity Hospital and the gynaecological wards of the Royal Infirmary of Edinburgh, it would seem to be a comparatively rare condition associated either with pregnancy or uterine affections. At all events, looking back over my work in the Maternity Hospital, and going over the statistics of the hospital, which include 15,000 cases, I have only met with one case in which there was any reference made to goitre, and in that case there were neither tremors nor exophthalmos. During the fifteen years in which I had charge of the gynaecological ward in the Royal Infirmary, I
met with only two cases of exophthalmic goitre which were associated with uterine affections; to these I shall refer later. I have occasionally seen cases of exophthalmic goitre in association with my colleagues in the ordinary medical wards of the Royal Infirmary, but in these cases, except irregular menstruation, there was no affection of the genital organs whatever.

It must therefore be apparent that the disease must be more common in the better classes than amongst those who attend hospitals; and from all that is known of its etiology, this is just what one would expect of a disease arising, as it does very often, after shock and mental anxiety in highly strung nervous systems.

When regard is had to the age at which exophthalmic goitre is most prevalent, we find that it coincides with the active period of uterine life. Taking a table from Murray's most interesting paper, I find that the youngest case was 15 years old and the oldest 65. The most common period lay between 16 and 35, but quite a number occurred between the ages of 40 and 50, a period coinciding with the normal changes which take place in the genital system at the menopause.

That there is a relationship between the generative apparatus and the thyroid, there can be no question. My experience entirely coincides with that of Martin, whose extremely able and interesting paper has just been published, that a great many girls suffering from exophthalmic goitre have special discomfort during menstruation, and I have noticed that the thyroid gland enlarges in some cases at the same time. It is not necessary, nor in my experience is it common, to have pathological conditions of the pelvic viscera associated with exophthalmic goitre. It seems to me that the periods when exophthalmic goitre is most likely to be developed or exaggerated, are the three epochs when the generative system is at the height of its activity,—at puberty, at menstruation, and during pregnancy. May I quote a sentence from Martin's excellent work: "Growth is more
active than ever at the age of puberty, and with the onset of activity of the generative organs the vitality of all parts of the organism is raised, and the glands involved in the metabolism are put to an unprecedented strain; especially is this so in the female sex."

The question of the condition of the thyroid during pregnancy has received a very considerable amount of attention. That there is a greater or less increase of its volume during pregnancy seems to me to be beyond dispute, and that it gradually disappears after delivery is an ascertained fact. Freund it was who first systematically examined the relations between the thyroid gland and the female genitals. He arrived at the conclusion that the relation occurs not through the nervous system but through the blood. Heidenreich was of opinion that the pregnant uterus hindered respiration, and thus led to an accumulation of blood in the gland. The general opinion, however, seemed to be that the enlargement was sympathetic. Such was the way the question stood when Lange approached the subject, and in a very interesting and original paper discussed the matter, taking his statistics from observations made by himself from October 1893 to January 1898. The result of his examinations very much corroborated those of Freund, and he found that a hyperplasia of the thyroid was an almost constant concomitant of pregnancy. Lange made his observations most carefully, eliminating all apparently obvious causes leading to mistake. It is, for instance, the tendency of many pregnant women to put on fat, and therefore he only took women with thin necks, so as to make no possible error; and, furthermore, in measuring the neck after accouchement, especially after tedious labour, he only did so after twenty-four hours, as the neck is apt to be turgid and swollen immediately after labour.

The important conclusion he arrived at was that hyperplasia of the thyroid is a physiological appearance in pregnancy, and
that in the majority of cases it begins about the sixth month, and ceases at an indefinite period after labour. He points out that with kidney affections peculiar to pregnant women there is no hyperplasia, and in an able paper by Nicholson, this matter is very fully discussed. Upon this matter I have no intention of entering to-night.

Considering, therefore, the frequency with which this disease occurs; considering, further, the fact that it occurs in women during the active period of menstrual life; considering, further, the intimate connection which apparently exists between the thyroid gland and menstruation and pregnancy—one would naturally expect to have exophthalmic goitre more commonly associated with uterine conditions than seems to be the case.

Kleinwächter, in his work published in 1890, paid particular attention to the relationship between the sexual organs and this disorder, pointing out that in many cases the sexual development was wanting. In the case which he particularly described, there was a loss of the hair; the mammary glands were atrophied, almost completely so; the mons veneris was poor in adipose tissue and destitute of hair; the labia were flabby, especially the minora; the vulva was gaping; the whole vagina was loose, with slight prolapse of the anterior vaginal wall; the portio vaginalis was scarcely the size of a kidney bean; the uterus was sunk down, the cavity was small, with the walls very thin and flabby; both ovaries were small and tender. These changes, in fact, entirely correspond with senile marasmus. Similar changes in the sexual sphere were noted by Möbius and Cheadle.

Cholmogoroff records a case as follows:—A woman, æt. 32. Eight previous full-term labours, last in November 1892. Well built; moderate development of subcutaneous fat; no exophthalmos; slight tremor of the hands; frequent and severe attacks of palpitation, which had existed before marriage, and had
been explained by the doctor as due to anæmia. There was considerable increase of the thyroid gland. This increase in the thyroid was noticed in the fourth pregnancy. The gland gradually grew larger with each pregnancy. Patient’s mother, æt. 60, had a large goitre, and a sister a smaller one. In the mother and sister there were no symptoms of Graves’ disease.

The patient came under Cholmogoroff’s care owing to a bleeding of three weeks in connection with an incomplete abortion. The breasts atrophied in spite of the pregnancy; before this the breasts had been well developed. In the end of 1893, there occurred a tenth pregnancy, resulting in abortion. The symptoms became worse in each succeeding pregnancy.

Jouin refers to a connection between the menopause and Graves’ disease. He observed in forty-three cases that the uterine lesion preceded the Graves’ disease. Improvement in the local condition, he avers, is always accompanied by improvement of the general condition.

Doléris, on the other hand, believes that the treatment of the uterine disease might cure women having tachycardia simulating Graves’ disease, but in the case of those having true exophthalmic goitre it would be imprudent to promise to cure them of their goitre by treatment directed against their uterine disease.

In those cases that have come under my own observation, I have only met with abnormality in the sexual organs in three cases.

Case I.—Sent to me by Dr Haggart of Aberfeldy. The patient had well-marked exophthalmic goitre. She was sent to my care specially because she was suffering from profuse menstruation and recurrent attacks of retention of urine.

On examination, a fibroid tumour was found blocking up the pelvis. On placing the patient under an anaesthetic, she expired at once, before she had been touched with a view to
operation. This case is particularly interesting to me, as it is the only case that I ever lost under the administration of an anaesthetic. Unfortunately, no post-mortem was permitted.

Dr Luke, the anaesthetist to the Royal Infirmary, informs me that exophthalmic goitre is one of the most trying cases with which an anaesthetist has to deal. They are in many ways worse than a simple goitre or Derbyshire neck, as, owing to the extreme nervousness of the patient and the great vascular excitement, the conditions favouring sudden cardiac failure are present in a marked degree, and conditions are not improved by the possible, and indeed probable, narrowing of the air-way by the thyroid growth. Such cases he would place, as far as risk is concerned, alongside of aortic aneurysm, and bad cases of mitral stenosis and tricuspid regurgitation.

Case II.—A single lady, æt. 50, with extremely marked exophthalmic goitre, with profuse hæmorrhage almost continuous. She had a large ovarian tumour on the right side, and a polypus projecting from the cervix. She had been practically bedridden for two years, as much owing to the Graves' disease as to the hæmorrhage.

I first of all removed the polypus, and sometime afterwards performed ovariotomy. She made the usual recovery, and at the end of a month left the Home. It is interesting here to observe the fact that six months afterwards the goitre had very considerably diminished, and the exophthalmos, tremor, and tachycardia were very much better. At the end of three years, although still an invalid, and unable to support herself by her own exertions entirely, the symptoms were very much ameliorated.

Case III.—One of the most interesting cases I have met with, was that of a girl with well-marked exophthalmic goitre,
who had reached 20 years of age and had not menstruated. It was for the local condition she was brought to me. On examination, I found that the amenorrhea was due to an imperforate condition of the hymen, which was bulging, and there was a distinct tumour on the right side suprapubically. She had had regularly for years back the usual monthly discomfort, but no haemorrhage at all. I treated the case in the usual way, and she made an excellent recovery. There was no marked change in the condition of the exophthalmic goitre. I saw her ten years after that, and she still suffered from invalidism, due to her tremors and tachycardia.

I have no record of any special abnormality in the sexual organs of those cases where the disease occurred in young single women, except that, in the majority of cases, the tendency was rather to menorrhagia than to amenorrhea. In one only, after the continuance of the disease for some years, amenorrhea became developed. But as the girl's emaciation was extreme, and no obvious benefit was to be got from local examinations, none was accordingly made.

On the other hand, I have seen two girls in whom the disease developed just after puberty. Neither girl menstruated until she was about 20, and then only scantily. Both married, and were sterile. On examination, I found an infantile condition of the pelvic organs.

Kleinwächter refers to two cases in young women, in the first of which menstruation was retarded and scanty; and in the second case the menstrual period lasted six weeks.

Hoedemaker records the case of a young woman, æt. 29, who had suffered from exophthalmic goitre for two years. In her he found changes similar to those that describe the climacteric.

Bamour also records a case in which the uterus was atrophied, and the ovaries and tubes not palpable.

On the other hand, in my experience I have found, as I
have said, that menorrhagia is the symptom when the disease is early and progressive, and amenorrhoea only pronounced when the disease is far advanced, or when it occurs very early in puberty.

With regard to the occurrence of the disease in older unmarried women, I have had occasion to examine ten such. In not one of these ten cases have I found anything abnormal, except irregular and, for the most part, profuse menstruation. I am driven to the conclusion, therefore, that in many cases recorded, the atrophy of these organs was due more to the psychic effect than to any result of the actual disease, mental shock being, as I have already said, a very frequent cause of this condition. Nothing is more common than to find that the menstrual function is disturbed by psychic and mental conditions, and to these I attribute the amenorrhoea rather than to the existence of the disease itself.

Furthermore, it must be kept in view that in a large number of the cases recorded the amenorrhoea and atrophy were the consequences not of the disease itself, but of its exhausting influences and long duration.

Out of fifteen cases occurring in women under 30 years of age, which have been under my own observation, or have been seen with others, where a local examination was made, no apparent lesion of the pelvic organs could be discovered. An interesting point is that there was no record of any dysmenorrhoea, and that the condition of the flow was rather increased than otherwise.

So far as the histories of my cases are concerned, the onset in every one had followed more or less nervous shock. One specially interesting case was that of a girl, æt. 26, who, in addition to well-marked Graves' disease, had profuse menstrual discharge, and at the same time had monthly attacks of mania coincident with her menstruation, so bad that on several occasions she had to be confined in the padded ward in hospital.
In this case, after consultation with my colleagues, I removed her ovaries, with a view first of all of controlling the haemorrhage, and secondly, in the hope that the removal of the ovaries might also have the desired effect upon the mania. I heard from her regularly for two years after the operation, and she remained free of the maniacal attacks during that time, but her condition of exophthalmic goitre remained unchanged, although the menopause had been completely established.

Sänger reports three cases of women he examined with this disease. In one case there was amenorrhœa, which Sänger explains as lactation amenorrhœa. The uterus was not atrophied.

In the second case the menses were somewhat scanty, but this Sänger attributes to the approaching climacteric and the marked adiposity of the patient. In this case also the uterus was not atrophied.

In the third case the woman was pregnant.

In these three cases, therefore, Kleinwächter’s contention that this disease is associated with atrophy is not borne out. On the other hand, some, like Caracoussi, have described several cases where there has been atrophy of the mammae.

Therefore, from my own experience, as well as from the records of the cases that have been reported, especially abroad, I must arrive at the conclusion that there is no interdependence between pelvic disease and Graves’ disease, because the same conditions, such as fright, or mental shock, which would precipitate Graves’ disease, would at the same time affect the pelvic organs as well.

With regard to the effect which pregnancy has on exophthalmic goitre and _vice versá_, as I have already pointed out, this disease is practically unknown in the Maternity Hospital in Edinburgh, and therefore the records of the cases which occurred under my charge are all from my private case book.

I have myself observed twelve cases of exophthalmic goitre
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during pregnancy, with the following results. In all of them the condition as to eyes, thyroid, and heart was very marked. It would extend this paper beyond due limits were I to record these cases in detail; enough for me to say that in eight of the twelve the course of pregnancy was unaltered, and the delivery was uncomplicated, and, so far as I was able to judge, the affection in each of those eight cases was aggravated for a time after the labour was over.

Of the four remaining cases, in Case I., the patient, æt. 30, had post-partum haemorrhage, so profuse as to require the uterine cavity to be plugged. She recovered slowly from her haemorrhage, and afterwards suffered from superinvolution of the uterus. The labour took place eight years ago, and she has not menstruated since, and the uterus and ovaries remain small and atrophied. The exophthalmic goitre, though somewhat modified, is still sufficiently marked to make her an invalid. In this case I attribute the atrophy of the uterus and ovaries to the excessive haemorrhage.

The second case was seen with the late Dr Duddingstone Wilson. A lady, æt. 34, five months advanced in pregnancy of a third child. Well-marked exophthalmos; the thyroid very considerably enlarged; pulse 140 per minute; marked tremors; profuse perspiration. I was asked to see the case because of some haemorrhage; diagnosis, accidental haemorrhage; treatment, as the haemorrhage was slight, palliative. The symptoms of exophthalmic goitre had been present for six months before her present pregnancy, and had been induced, as she believed, by a fall from a dogcart. Previous to that accident, she had been in good health, rather robust; since then she had become emaciated until the occurrence of the present pregnancy, when her symptoms became slightly aggravated, until during the past five months she had become very much emaciated, and been unable for her household duties. As the haemorrhage increased very markedly, it was determined to terminate the pregnancy,
and this was done by dilating the cervix and turning. The placenta was found in its normal situation, the haemorrhage was comparatively slight, and the patient recovered very slowly from the immediate interference.

In Case III., I was asked to see a patient, æt. 29, pregnant of a first child three months, because of symptoms of miscarriage. When I saw her she had well-marked exophthalmic goitre, the exophthalmos being very pronounced, and the goitre but slight. The pulse was 130 per minute, and the tremors, though present, were not striking. The miscarriage, when I saw it, was inevitable, the os being open and the ovum protruding. I therefore emptied the uterus, and although every precaution was taken, the haemorrhage was so profuse that she was reduced to profound anaemia, and remained in bed for three months. During this time, although the lines of treatment were mainly those of anaemia, and no special treatment was given for the exophthalmic goitre, yet in the course of the three months her symptoms of exophthalmic goitre very much diminished; the exophthalmos was less pronounced, and the pulse fell to under 100. It is well worthy of notice that in this particular instance the result of the profuse haemorrhage was that the patient developed superinvolution, and that there was no menstruation again for twelve months afterwards.

I saw Case IV. only after delivery was over, and that because of a severe convulsion three hours after delivery. The convulsions occurred at varying intervals, and with increased rapidity, until the patient died during an attack. She had had during the whole of her pregnancy and for a year before, well-marked exophthalmic goitre, with the usual group of symptoms of exophthalmos, goitre, tremors, and tachycardia.

There is no lack of cases recorded showing that pregnancy considerably favours the formation of this disease. There are also many cases recorded by others which show that pregnancy often makes this disease considerably worse. Considering the
high degree of susceptibility of the nervous system, and the well-marked hydramia and anaemia characteristic of pregnancy, results such as this are what one would expect.

In a recent paper, Wilson of Birmingham records eight cases of exophthalmic goitre in pregnancy which had come under his notice. In only two did menstruation continue normal. In two there was menorrhagia, in four there was more or less amenorrhœa, and in one of these there was premature atrophy of the sexual organs.

Trousseau and Charcot taught that pregnancy had a favourable influence on exophthalmic goitre, but they were unaware of the fact that the thyroid gland enlarges during pregnancy in the normal condition. Bucquet, again, on examination of twenty-one cases, arrived at the conclusion, first of all, that exophthalmic goitre can be provoked by pregnancy at a date more or less remote from confinement. The cases he quotes, however, are very uncertain, and his conclusions very indefinite. Further, he points out that when exophthalmic goitre occurs previous to pregnancy, the influence exerted by the pregnancy upon the goitre is very uncertain; in his own words, it may be "either neutral, benign, or aggravated." He further quotes three cases, two of which seem accurate, that pregnancy may transform simple goitre into an exophthalmic goitre; and of the ten cases in which pregnancy occurred during exophthalmic goitre, one was unaltered, three were aggravated, and six were improved. He arrived at the conclusion, therefore, that amelioration of the symptoms is to be expected when pregnancy occurs in a woman suffering from exophthalmic goitre. But his conclusions must be taken with a certain amount of reservation, because at least seven of the cases which he quotes were complicated by typhoid fever.

A more recent contribution to the subject is that of Audebert of Paris. He records a case in which the disease developed in the seventh month of pregnancy. There was a goitre and
EXOPHTHALMIC GOITRE,

exophthalmos, as well as much anasarca and scanty urine. Delivery was followed by partial recovery, although the tremors and exophthalmos persisted. Audebert is inclined to look upon the disease in this case as a manifestation of the auto-intoxication of pregnancy. While a conclusion cannot be deduced from one case, the theory is interesting and suggestive, in view of our increasing knowledge of the complex relationships of the thyroid in pregnancy.

To bring the whole matter to an issue, it seems to me that the conclusions to be arrived at are as follows:—

First, that exophthalmic goitre is a comparatively frequent disorder of women.

Secondly, that the thyroid is enlarged during pregnancy.

Thirdly, that exophthalmic goitre and pregnancy are a very rare combination, as shown by the fact that out of 15,000 cases I have not met with one in hospital practice, and with only twelve in private and consulting practice.

Fourthly, that the influence of pregnancy upon exophthalmic goitre is very uncertain, and that in the majority of cases it aggravates it.

Fifthly, that the effect of exophthalmic goitre on pregnancy is practically nil; and that, so far as my observations and those I have collated from other sources abroad go to prove, most pregnancies complicated with exophthalmic goitre follow a regular even course; and that of the accidents that occur, the most frequent is haemorrhage, and occasionally abortion.

Sixthly, that the relation between pelvic disease and exophthalmic goitre is rare, and that the effect of exophthalmic goitre on the reproductive system is in recent cases to cause irregular menstruation, mostly in the direction of menorrhagia, while in very advanced cases it may cause amenorrhœa.

From these conclusions it must be apparent, therefore—

1. That girls suffering from exophthalmic goitre need not be precluded from marrying.
2. That after marriage they need not be precluded from pregnancy.

3. That if pregnancy occurs, there is no reason, except in advanced cases, to interrupt the pregnancy, even in spite of the fact that the children of women with exophthalmic goitre may be expected, according to some authorities, to develop neuropathic manifestations.

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The President said that the Society had heard with great interest the elaborate paper by Sir Halliday Croom. Although the results were somewhat negative at present, still the facts had been put before them in such a way that they knew what they were, and could draw conclusions from them.

Dr Barbour said the Fellows had to thank Sir Halliday very much for bringing before them an important subject which, he thought, did not lend itself very much to discussion. But the paper was an important contribution to the subject on account of its rarity. The importance of the condition had been brought before him in connection with the literature of frozen sections. In going into the cause of death in forty cases, one of them (which had given them one of the most important sections of the third stage) was from the sudden increase in the size of a goitre, which caused death from asphyxia, the post-mortem examination revealing that otherwise things were normal. This showed that the presence of goitre might be a serious condition in connection with the onset of labour, a point which Sir Halliday had not referred to in connection with his subject. It would be interesting to know whether any facts would come out during the discussion, with regard to its importance in connection with labour, for we would expect occasionally to hear of complications in connection with labour, even in the giving of the anaesthetic. Sir Halliday Croom's conclusions, although negative, were very important, because he thought that in the text-books it was stated that the presence of goitre was a rather serious condition, and should be a contraindication to pregnancy. Edgar made as strong statements regarding goitre, as in connection with heart affections, stating that patients with Basedow's disease should not marry. It would be reassuring to be able to tell patients that goitre in pregnancy was not such a serious condition. As to the gynaecological aspect of the question, the results there seemed to be negative also. He thought Sir Halliday had shown
that the occurrence of goitre with pelvic conditions must be looked upon as a coincidence. He had himself had two cases — (1) a patient with a fibroid tumour, who had been sent to him for operation; but the patient had a goitre without exophthalmos, but of sufficient size to be a contra-indication to operation, and he had sent her to Professor Chiene, who had removed the goitre, and the patient had then returned to have the fibroid removed. (2) The second case was one who had come for a minor operation—the repair of the perineum. The condition not being an urgent one, he had thought it better not to operate. He thanked Sir Halliday for his very important clinical contribution to the Society.

Dr Brewis said he was sorry he was quite unable to discuss the paper. All he knew of exophthalmic goitre in relation to gynaecology and obstetrics, he had learnt that night. He had great pleasure in expressing his admiration for the very able and interesting paper that Sir Halliday Croom had given them. He could recollect two cases of exophthalmic goitre occurring in gynaecology. The patients were both young girls, and in both of them there was menorrhagia. In one case there was a large retroverted uterus to account for the menorrhagia, and in the other a small intra-uterine polypus. These were the only instances of exophthalmic goitre he remembered. He had operated several times on patients with large goitres—removing ovarian tumours and fibroid tumours, and had had no hesitation—his only concern was with regard to the anaesthetic. The conclusions Sir Halliday had drawn were of great value.

Dr Ritchie had listened with very much pleasure to Sir Halliday Croom's paper, and he was specially interested with his conclusions. In relation to marriage, goitre stands in a different position from Graves' disease. During pregnancy the former would certainly become worse; in Graves' disease the result on the thyroid would be uncertain. Although Trousseau and Charcot had recommended marriage with the expectation
that pregnancy would cure exophthalmic goitre, Trousseau had later a somewhat sad experience of the effect of pregnancy on that disease. Dr Ritchie was interested to note Sir Halliday's experience of post-partum haemorrhage in Graves' disease, because Lawson Tait's was similar. The etiology of exophthalmic goitre was not known, but Sir Halliday had made a very strong case for its being primarily nervous.

Dr Oliphant Nicholson said he had listened with great interest to Sir Halliday Croom's paper. He had attended two cases of pregnancy complicated by typical Graves' disease during the last five years, both in multiparae, and both improved markedly afterwards. With a disease like exophthalmic goitre, which ran a very uncertain course, and which might end in spontaneous cure in two or more years, it was difficult to say at what stage of the disease pregnancy had supervened; whether in the stage of progression, or at the stage in which improvement was just setting in. In some cases the disease might be apparently cured after pregnancy, but it was difficult to say whether or not the cure was really due to the pregnancy. In one of his cases, in the later months of pregnancy, the tachycardia had improved very much, the size of the thyroid had diminished a great deal, and all the symptoms became less pronounced. In the puerperium things improved still more, and later on the symptoms passed entirely away. This patient had since been under the care of Dr Giles, and was regarded as completely cured. The whole question of the influence of pregnancy upon different diseases was a most interesting and important one; pregnancy, undoubtedly, exerted a beneficial influence on some diseases, and a baneful one on others. He was strongly of opinion that the explanation of the different effects produced was to be found in the manner in which the condition of pregnancy modified the thyroid activity. As regards labour in the cases mentioned, both were difficult. He had not then known the dangers of chloroform in such
cases, and had given a large quantity, and the patient had not seemed any the worse for it. He wondered whether the danger of anaesthetics in these cases was a mechanical one from suffocation, owing to the size of the goitre, or whether there was in this disease any special tendency to heart-failure. He had had no special difficulty with regard to the breathing. In both cases there was considerable post-partum haemorrhage in the form of a steady oozing. This kind of haemorrhage was what one might expect in cases of Graves' disease, owing to the type of circulation present; characterised by a marked relaxation of all the smaller blood-vessels. Sir Halliday Croom did not mention anything about the lactation in these cases; in both his cases there had been a very great secretion of milk. The connection between the thyroid gland and lactation was very obscure, indeed the whole subject of the thyroid in relation to pregnancy was so paradoxical, that at present one could draw no definite conclusions at all. When thyroid was given to nursing women it might increase the secretion of milk, and in cows Hertoghe had shown that it acted as a marked galactagogue. In myxœdema, even after the menopause was past, if one gave very large doses of thyroid, it happened sometimes, as Bramwell had recorded, that the breasts commenced to secrete milk abundantly. On the other hand, in animals the mammary gland sometimes secreted milk in large quantities after the thyroid gland had been removed. This happened in a bitch from which he (Dr Nicholson) had removed the entire thyroid gland a year previously. This animal was not pregnant, and yet the breasts became gorged with milk, and pups from another bitch were suckled on two different occasions. In the present state of our knowledge it was impossible to reconcile such contradictory observations. It was a good thing that Sir Halliday had brought up the subject of thyroid gland and pregnancy, because it was one that gained every year in importance, and seemed to have been much neglected in the past.
Dr Church was glad he had had the pleasure and honour of hearing Sir Halliday's paper on this important subject. A few years ago, on analysing 1000 cases of his own, he had come across one case where exophthalmic goitre existed. It was in the case of a lady's last pregnancy, and twins were born. He thought the trend of the discussion had been to show that pregnancy instead of increasing and aggravating the condition seemed to be a curative agent. It was so in the case to which he referred. Though the symptoms had been most marked before pregnancy, she got almost entirely free of them after the twins were born. One child had died; the other, now aged 14 or 15 years, was subject to epilepsy, but that disease was in the family. In regard to this far-reaching subject he had thought it well to mention this case.

Dr B. P. Watson wished to mention a case under his care of exophthalmic goitre associated with gynaecological disease. There was menorrhagia, dysmenorrhoea, and pain in the back. There was marked exophthalmos, with a history of the patient having become very nervous of late years, subject to frequent sweatings, intermittent attacks of diarrhoea, and marked tremors. In every way it presented the characteristics of exophthalmic goitre. He had found that she had a large, tender, retroverted uterus, which was rather fixed at the time of examination. Under treatment the uterus had become smaller and movable, and was replaced, and a pessary inserted, and from that time onwards the symptoms of the exophthalmic goitre were less marked. This was eighteen months ago, and now there was only slight exophthalmos; she was not nearly so nervous, and was very much improved. She had had one child five years ago, and no other since; but whether the sterility was due to the exophthalmic goitre or to the position of the uterus, he could not say.

Sir Halliday Croom, in reply, said he had really no reply to make. The only object of writing a paper was to record one's
own personal experience so far as possible. And as he had the fortune to have some hospital appointments for some years, he had thought it right to record the experience he had had. He did not think it would serve any good purpose for him to go over all the points suggested or spoken of that evening. He thought he had referred to them all pretty fully in his paper. He thanked the Society for the way it had received the paper.

Meeting VI.—May 8, 1907.

Dr J. W. Ballantyne, President, in the Chair.

I. The following gentleman was elected an Ordinary Fellow of the Society:—A. M. Dick, M.B., Ch.B., Royal Infirmary, Edinburgh.

II. Dr Haig Ferguson showed—(a) uterus with adenocarcinoma of the body, removed from a woman, æt. 42, married, and with two children; the patient was also the subject of myxœdema. She had suffered from metrorrhagia for some time, and after being curetted, the report of the pathologist was that the condition was one of potential malignancy. He had, however, no doubt from the clinical condition, and removed the uterus per vaginam, because the patient was so very fat. He thought the ovaries were also malignant, but the report upon them was that there was a marked fibrosis, and no evidence of malignancy. The special interest of the case was that it was one of adenocarcinoma in a multiparous woman.

(b) Extra-uterine pregnancy, removed from a woman from whom four years ago he had removed the left Fallopian tube for pyosalpinx, leaving behind the left ovary, because it was so densely adherent. From the right side, at the same
time, he removed the ovary for a small ovarian cyst about the size of a tangerine orange, but had left the tube on that side. Two months ago there were symptoms of extra-uterine pregnancy, and he had then removed the right tube with a tubal pregnancy, in which there was an attempt at tubal abortion. This was a distinct case of migration of the ovum. The left ovary had ovulated, and the ovum must have found its way into the right tube, though the migration was not a long one, for the left ovary was prolapsed and adherent and close to the right side.

(c) Double pyosalpinx, from a young lady recently married. She had complained of abdominal pain, the result she thought of a boxing match with her husband. On both sides of the uterus were great masses, and distinct evidence of the gonococcus was found.

III. Dr Haultain showed—(a) A fibro-myoma of the round ligament, 3 lbs. in weight, quite distinct from the uterus. (b) Section showing tubercular endometritis, from a patient who had complained of no symptoms. She had been recommended to him on account of sterility. On examination, an anteflexed uterus was found. There was a history of some slight pain (heat the patient termed it) after making water. He decided to dilate the cervix and curette, and the report of the uterine scrapings was that it was tubercular. Then, upon examining the urine, tubercle bacilli were found.

IV. Dr W. Fordyce showed—(a) Carcinoma of the uterus (three specimens—two cervical, one corporeal), removed by vaginal hysterectomy; (b) Uterus showing combined fibroid tumour and carcinoma; (c) Interstitial fibroid showing necrobiosis; (d) Cervical fibroid tumour; (e) Multiple fibroids of uterus, removed for pressure symptoms; (f) Multiple fibroids, removed for post-climacteric hæmorrhage.
V. EPILEPSY AND THE STATUS EPILEPTICUS IN CONNECTION WITH PREGNANCY AND LABOUR, WITH ILLUSTRATIVE CASES.

By Robert Jardine, M.D., Professor of Midwifery in St Mungo's College, Glasgow; Senior Physician to the Glasgow Maternity Hospital.

In most works on midwifery the subject of epilepsy is discussed in a few sentences of general remarks. Again, in some books on epilepsy, the effect of pregnancy and labour on the condition is hardly mentioned. It is thus difficult to gain information on the matter.

In his recently issued book on epilepsy, Dr W. Arden Turner gives his experience of the influence of pregnancy, the puerperium, and lactation in forty-one epileptic women, with a history of sixty-one pregnancies. He tabulates the results in the following way:

<table>
<thead>
<tr>
<th>Event</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quickening induced relapse</td>
<td>7</td>
</tr>
<tr>
<td>Pregnancy was the original cause</td>
<td>2</td>
</tr>
<tr>
<td>&quot; induced relapse</td>
<td>14</td>
</tr>
<tr>
<td>&quot; was temporarily beneficial</td>
<td>6</td>
</tr>
<tr>
<td>&quot; made no difference</td>
<td>1</td>
</tr>
<tr>
<td>Accouchement was the original cause</td>
<td>5</td>
</tr>
<tr>
<td>&quot; induced a relapse</td>
<td>17</td>
</tr>
<tr>
<td>Lactation was the original cause</td>
<td>3</td>
</tr>
<tr>
<td>&quot; induced a relapse</td>
<td>6</td>
</tr>
<tr>
<td>Total pregnancies</td>
<td>61</td>
</tr>
</tbody>
</table>

Forty-one cases.—Of twenty-five of these cases the family or other history bearing upon heredity was studied, and thirteen cases, or 52 per cent., gave a history of family epilepsy or alcoholism, a percentage which corresponds with that ascen-
tained as the relative proportion of a family predisposition amongst epileptics in general.

In the two cases where pregnancy was given as the original cause, the women were both young, and pregnant for the first time. In one of the cases where there was freedom from attack in one pregnancy, the fits became more frequent in a second pregnancy. He says: "There are undoubted cases on record in which fits have been permanently arrested by pregnancy, and others in which a temporary remission has been observed; but it will be seen from the figures here given, that it is more common to find a relapse of the attacks, or the conversion of a minor type of the disease into the combined major and minor type. Nerrlinger's figures on this subject show that of ninety-two women with one hundred and fifty-seven pregnancies, 28 per cent. showed complete cessation of the fits during pregnancy, and 35 per cent. were made distinctly worse."

In regard to accouchement and the puerperium, he says: "There were five cases in which the disease clearly originated at this time, and seventeen in which it led to a serious relapse. Of the first series, the onset was in the form of serial epilepsy, or the status epilepticus (puerperal eclampsia), and the disease continued in a chronic form for many years afterwards. In one case it commenced during the fourth confinement, and in three others during the first. These cases are particularly interesting, as they argue strongly in support of the view of Féré, that puerperal eclampsia, like many other 'eclampsias,' is merely epilepsy in an acute form, and that the disease, once started in this way, may persist for years. Two cases were illustrative of this, by the fact that after the original eclamptic attack the further continuance of the malady was in the form of minor seizures over a period of eighteen and ten years respectively.

"Of the second series—those cases in which a relapse was caused by confinement—there were two, in which a remission
of twelve and eighteen months respectively was broken by the eclamptic seizures of the puerperium. In the others they merely formed an incident in the course of the confirmed disease.

"It was not uncommon, in cases of already existing epilepsy, for puerperal convulsions to be delayed until the later pregnancies.

"The incidence of serial epilepsy, at or immediately succeeding parturition, is therefore a common feature in epileptic women, and raises the question as to the diagnosis of some forms of puerperal eclampsia. A history of pre-existing attacks would determine the diagnosis of epilepsy; while the existence of a neuropathic family history, or the presence of stigmata of degeneration, would point to eclamptic attacks as being of epileptic nature. The presence of albuminuria does not of necessity form the main element in the differential diagnosis, as albumen has been found in the post-paroxysmal urine of epileptics (Voisin and Péron), although it is not of common occurrence.

"It is therefore clear that many cases of puerperal eclampsia are really examples of serial epilepsy, or the status epilepticus, induced during the puerperium in predisposed and neuropathic persons."

I have given these long quotations from Dr Turner, as they represent the views of a man who has had a very large experience in epilepsy. With most of his statements I am in agreement, but I cannot agree with the statement that many cases of puerperal eclampsia are really examples of serial epilepsy, or the status epilepticus. I have now seen considerably over one hundred cases of puerperal eclampsia, and, before the present series, there were only two which I considered were really epileptic cases. In one of them there was no albumen in the urine, and in the other there was a considerable quantity, but in the latter case there was a distinct history of
previous epileptic seizures. The two conditions resemble each other so closely that it is difficult to distinguish between them, but there are so few cases of eclampsia which subsequently have fits, even in connection with pregnancy, that I think we are justified in concluding that a true case of puerperal eclampsia is not one of epilepsy. It is impossible to follow up the subsequent history of hospital cases, but in my private cases I have not met with one in which epilepsy has developed. In this connection it will be interesting to hear the experience of others, and in that way we may get the results of a fairly large number of cases.

Case I.—Mrs T., æt. 27, iii.-para, full time, was admitted to the Glasgow Maternity Hospital on 27th February 1907, at 7.30 A.M., with a history of having had twelve fits since 4.25 A.M.

The patient’s father died in an asylum, where he was confined apparently on account of melancholia. Her mother is alive and well. She had had seven sisters, one of whom died at the age of 20, after having had epileptic fits for six years. The other sisters are quite healthy, but one is very rickety. She had no brothers. She had always been a healthy woman, and had never had any serious illness. There was no history of any injury and no evidence of syphilis. She had never had a fit prior to the morning of admission.

The patient was married on 6th February 1903; her first child was born in October of the same year, and the second in June 1905. Both children were delivered with forceps at the patient’s home. She had had no miscarriages.

During the present pregnancy the patient’s health had been good. There had been no swelling of the face or legs, and no headache until the evening before admission. On that evening she had complained of headache, and had not felt well, but there was no other symptom until she took the first fit at 4.25 A.M.
On admission, the patient was quite unconscious, and had several fits in the reception room before she was removed to the labour ward. The fits were of the ordinary eclamptic type. There was no cry at any time. The pulse was full and bounding, and the respirations were hurried.

I saw the patient at 10 A.M., and up to that time she had had twenty-one fits. She was at once put under chloroform, and 16 fl. oz. of blood were drawn from a vein in the right arm, and 3 pints of saline solution (1 dr. of sodium chloride and acetate to each pint) were transfused. While this was being done, I found that the os was about half dilated, so I finished the dilatation manually and delivered the child by version. The uterus retracted well, but there was considerable bleeding from the cervix, which had been lacerated bilaterally. After I had allowed her to lose a good deal of blood I stitched the cervix with catgut. The pulse remained fairly full and strong.

The delivery was finished at 10.45 A.M., and the patient was free from fits until 6.20 P.M. (i.e., an interval of eight hours). During this time she had been able to swallow 6 fl. oz. of milk, 3 fl. oz. of imperial drink, gr. viii. of calomel, and later a dose of magn. sulph., and although she was not sufficiently conscious to answer questions, she could be roused when spoken to. From 6.20 P.M. to 8.20 P.M. she had fourteen fits. A hot pack was given at 8 P.M., and from 10 P.M. on the 27th until 3 A.M. on the 28th (i.e., for five hours) she had no fits. At 11.15 P.M. an intravenous injection of two pints of the saline solution was given into the left arm. After midnight the patient perspired freely. The pulse-rate had varied from 96 to 116, the temperature from 100·2° to 101·4° F., and the respirations were 28. The urine was found to be quite normal, without a trace of albumen.

28th February.—The fits began again at 3 A.M., and she had from four to seven per hour until 10.30 A.M. At 3.15 A.M. and 6.30 A.M. 30 grains of chloral and 60 grains of potassium bromide
were given per rectum. Part of the first injection was returned, but the second was retained. At 10.30 A.M., an intracellular injection of 2 pints of the usual saline solution was given beneath the right breast, and the fits became less numerous. At 12.45 an attempt was made to draw off some cerebro-spinal fluid, but none could be obtained, although the needle was inserted four times. Venesection was now performed in the right arm and 9 fl. oz. of blood were withdrawn, and 2 pints of saline solution, with double the quantity of sodium acetate, were infused. The fits remained infrequent until 3 p.m., when they again became more numerous and gradually increased in number until she had thirteen between 8 and 9 p.m. In the afternoon, between 3 and 5 p.m., three-quarters of a grain of morphia was given hypodermically, in three doses, without the least apparent effect on the fits. At 9 p.m., 30 gr. of chloral and 60 gr. of potassium bromide were given by the rectum, but the fits continued at the rate of twelve per hour. At 10.30 p.m., lumbar puncture was again tried, and at this time a little over a fl. oz. of cerebro-spinal fluid was withdrawn. The fluid was very slightly opalescent, but did not contain more blood than could be accounted for by the puncture. A slight deposit settled from the fluid, and this was found to consist of polymorphonuclear leucocytes with a larger number of lymphocytes (small mononuclear leucocytes). The withdrawal of the cerebrospinal fluid did not produce any change in the patient's condition. The fluid escaped from the needle by drops, except during the fits, when it ran freely. Between the fits there did not seem to be any increase in the tension.

After the fluid was withdrawn a dose of stovaine was injected, and almost immediately there was a lessening of movements in the legs during the fits, but the fits continued to recur about every five minutes. In a few minutes there was absolute paralysis of the lower limbs. The paralysing effect spread up to the arms, and movement in them became much
less marked. The diaphragm was not affected. Shortly after
the stovaine had been administered, the movements, which had
all along been much more marked on the right side, now became
confined to the left side. In a short time the fits ceased to
affect the left side and returned to the right. The patient
became extremely collapsed, and the pulse disappeared entirely
from the wrist. Strychnine ($\frac{1}{30}$ gr.) was given hypodermically,
and a pint of hot milk and 3 fl. oz. of brandy were injected into
the stomach through a tube. The pulse rapidly returned to the
wrist, but the patient remained collapsed for a considerable time.

1st March.—The patient remained in much the same con-
dition all day. The pulse kept remarkably good, the skin
acted well, the bowels moved freely, and plenty of urine was
passed, partly by catheter and partly unconsciously in bed. The
patient was fed at intervals with milk, water, and brandy
by the stomach tube. At 5.50 p.m. 2 pints of the usual saline
solution were infused into the abdominal walls, and at night
$\frac{1}{4}$ gr. of morphia was injected subcutaneously. The fits occurred
at the rate of from six to fourteen per hour.

2nd March.—At 8 A.M. the fits became much more frequent,
and she had twenty between 8 and 9 A.M., and thirty between
9 and 10 A.M.; the fits were slighter than on the previous days,
but the patient passed almost immediately from one to another.
The pulse was still remarkably good, but the patient's general
appearance was bad. The fits hardly affected the legs, and the
movements of the arms were not nearly so marked as during
the first two days. An attempt was made to examine the fundi
oculi with the ophthalmoscope, but nothing abnormal could be
detected except that the discs looked rather too red. No optic
neuritis could be detected. The superficial layers of the cornea
were beginning to show evidence of destruction, and this, with
the continuous movements of the head, made the examination
very difficult. Between 12 noon and 1 p.m. the patient had the
greatest number of fits during any hour, viz., thirty-two.
At this time Mr Hogarth Pringle kindly saw the patient with me, and we discussed the advisability of trephining, but concluded that it would be of no avail.

From 6 p.m. the patient gradually sank, and she died at 7.40 P.M. without any other change taking place in her condition. The rectal temperature taken immediately after death was 104·2° F. The number of fits recorded was 774.

The fits, though so numerous, did not appear to be very exhausting. All along they were much more marked on the right side than on the left, except for a short time after the injection of the stovaine. As a rule, they commenced with twitchings of both upper eyelids, especially of the right, followed by conjugate deviation of the eyes to the right, the right arm and right leg were then affected and the left side only very slightly. During the tonic stage the patient did not become so cyanosed as is ordinarily seen in epileptic or eclampsia seizures, and she never gave a cry. The fits lasted from half a minute to two minutes, and the tonic and clonic stages were of much the same duration.

For the first two days no albumen could be detected in the urine, and even later there was never more than a very faint trace. Towards the end some finely granular tube-casts were found on centrifugalising the urine. At no time did the patient vomit, not even after the stomach tube had been passed. There was some retching after a few of the fits, but that was all. There was no jaundice. The knee-jerks were absent. The highest temperature recorded was that taken, per rectum, immediately after death, viz., 104·2° F. The skin acted well during the whole of the last three days, and abundance of urine was excreted. There was no oedema at any time.

The child, a male, was delivered by podalic version. It weighed 7½ lbs. At birth it was asphyxiated, but was easily resuscitated. It remained, however, extremely blue during the whole of the 27th February, and the colour never became quite
satisfactory, especially in the arms and legs. It lived three
days, and during that time its body was more or less in a state of
rigidity, the stiffness becoming much more marked at intervals.
It had many of these fits of rigidity, although there were no
convulsive attacks. At times the body assumed a position of
opisthotonos, and it could be lifted by placing one hand under
the head and another under the heels. When these fits of
rigidity came on, it gave a peculiarly distressing cry and then
became very cyanosed. It was very restless, and cried a great
deal. Its urine contained a considerable amount of albumen.
Chloral hydrate was given to it in grain doses every hour at
first, and finally every half-hour, and it gradually grew quieter,
but whether this was due to the action of the chloral or to the
increasing weakness it was impossible to say.

A post-mortem examination was performed on both bodies
by Dr Carstairs Douglas.

The Mother.—On exposing the dura mater a number of
small hæmorrhages were seen, some punctiform and others
slightly larger, due to rupture of venules within the membrane.
The whole venous system of the membrane was engorged to a
striking degree, the engorgement being very evident in the
vicinity of the superior longitudinal sinus. The engorgement
was much more marked on the left side of the brain. The
meninges stripped off quite easily, and there was no evidence of
any thickening or of inflammatory adhesions. The brain sub-
stance was somewhat firmer than usual. No lesion could be
detected. About an inch of the upper end of the spinal cord
was removed, and it appeared to be quite normal.

Microscopic examination of sections from the motor area
showed that the nerve cells were normal. A small aneurismal
dilatation was observed on one of the minute arteries.

Thorax.—Both lungs were adherent and showed evidence of
old pleurisy. The lung tissue was fairly normal. The heart
was normal except that the tricuspid valve was dilated.
Abdomen.—The liver showed a slight nutmeg condition. The spleen was congested, pulpy, and enlarged. The kidneys were both smaller than normal. The capsules stripped off readily. The substance was pale and firm. The cortical area in both was diminished in size. The uterus, ovaries, and tubes were normal.

Microscopic examination of sections of the kidneys showed evidence of acute nephritis. There were some hæmorrhages and blocking of the tubules with débris.

The Child.—The body was plump and well nourished. The skull was harder than usual. The meninges were healthy. The brain was soft and pulpy, and showed a fair amount of vascularity, but not quite as marked as in the case of the mother. There was no indication of hæmorrhage in any part.

Abdomen.—The liver was of the usual size; a little pale and spotty in parts and engorged along the margin. The spleen was of ordinary size and consistence. The kidneys were lobulated and normal in appearance, but somewhat smaller than usual.

Microscopic examination of the kidneys showed evidence of congestion, but not so marked as in the mother's. There were some hæmorrhages, and some of the tubules showed exudate.

Remarks.—The differential diagnosis between epilepsy and eclampsia is very difficult, and some alienists seem to think the two conditions are identical. If there is a history of previous epileptic seizures, I think one would be justified in looking upon the case as epileptic. The condition of the urine will not be of much assistance unless there is a large quantity of albumen in it. I have never yet seen a case of eclampsia in which there was no albumen in the urine. I am aware that such cases have been recorded, but may not these have been cases of epilepsy? In the case just recorded there was no albumen in the urine at the onset. At first I looked upon the case as an ordinary
eclamptic, but when I found there was no albumen in the urine, and the fits began to recur, I concluded that we were dealing with a case of epilepsy. Towards the end of the case there was a trace of albumen in the urine, but that was what was to be expected.

The status epilepticus is a condition seen frequently enough in asylums. During a seizure the number of fits may be very great. Dr Turner says that in a case of Leroy's there were 488 fits in twenty-four hours and 1000 in three days, and in a case of Parsons' there were 1400 in four weeks. Turner has seen 2080 in eight weeks, 673 in ten days, 820 in five days, and as many as 289 in twenty-four hours. In my case there were 774 fits in the eighty-eight hours from the onset until death, but during fourteen of these hours the patient was free from fits, so that the 774 fits occurred in seventy-four hours, an average of over ten per hour, and in one hour there were thirty-two. In the last twenty-four hours there were 407, and in the last twelve hours no fewer than 261. It seems almost incredible that any constitution could stand such a terrible strain for so long.

In regard to treatment, drugs seem to have no effect. It will be noticed that the fits ceased for eight hours after bleeding, saline infusion, and delivery. After a hot pack they also ceased for one hour, and again for five hours after a cellular transfusion. After the intracellular infusion and the second bleeding and third (intravenous) infusion, they lessened, but did not entirely cease. The final intracellular infusion seemed to have no effect. Eleven pints of saline solution was used, seven of them directly into the vein. In the third infusion I doubled the quantity of sodium acetate. I did this in the hopes of neutralising any lactic acid which might have formed in the blood. Lactic acid has been found to be present in the blood of eclamptics, and it has been suggested that the efficiency of my solution is due to the neutralising effect of the sodium acetate.
The patient's blood must have been well diluted, and as the kidneys and skin were acting so well, one would have expected that if a toxin were present it would have been flushed out.

The removal of the cerebro-spinal fluid did no good. The tension did not seem to be raised except during the fits. I tried the injection of stovaine, but the effect was very alarming, and for a time I thought the heart would be paralysed. The injection of hot milk and brandy into the stomach and $\frac{3}{6}$ of a grain of strychnine hypodermically had a splendid effect upon the heart, and soon brought the pulse back to the wrists. If I should ever have another such case to treat, I shall be inclined to try the effect of an injection of potassium bromide.

[By a curious coincidence at the date on which I read this paper, I had under my care in hospital two cases of epilepsy, and I also admitted a third one about ten days later. I shall give short notes of these three cases.

_Case II._—A., æt. 34, ii.-para, was admitted to hospital on 28th April 1907, under the care of Dr Munro Kerr, and she came under my care on 1st May, when I took up duty.

The patient's first child was born four years ago, and died in November 1906, with cerebral symptoms following a discharge from the ear. Previous to her first pregnancy the patient had never had any convulsions, but when the pregnancy was three or four months advanced, fits had commenced to occur, and at that time as many as fifty had occurred in twenty-four hours. Since this pregnancy she had had attacks of _petit mal_ every few weeks. These attacks had become less frequent of late. On 24th April the patient complained of headache, and on the 25th she had one fit, on the 26th four fits, on the 27th eight fits, and on the 28th nine fits.

On admission, the patient was conscious between the fits, and, though dazed, she was able to answer questions intelli-
gently. She was seven and a half months pregnant. There was no indication of labour. There was a very faint trace of albumen in the urine, but no oedema.

At 5 p.m., 2½ pints of saline solution were infused into the median basilic vein, and 7 grains of calomel followed by magnesia sulphate were given and ¼ gr. of morphia hypodermically. Four fits occurred before midnight.

29th April.—Hypodermic injections of ¼ gr. of morphia were given at 1.30 a.m. and 4.50 a.m., and also 30 gr. chloral and 60 gr. of potassium bromide per rectum at 3 p.m., but the fits continued. Strychnine ¼ gr. was given four-hourly. Twenty-three fits occurred during the day. At 8 p.m., Dr Kerr performed vaginal Cæsarean section and emptied the uterus.

30th April.—The patient had forty-two fits.
1st May.—The patient had nine fits.
2nd May.—The patient had two fits.
3rd May.—The fits had ceased, but the patient was very delirious. The restlessness and delirium continued for three days, and after that recovery was rapid.

It will be noticed that the greatest number of fits occurred on the day after delivery. There were 102 fits in all. The case might be termed one of the status epilepticus. The fits first began during pregnancy, so that according to Turner's classification pregnancy would be given as the original cause.

Case III.—Mrs M. S., æt. 21, iii.-para, was transferred to the Maternity Hospital from the Royal Infirmary, where she had been under treatment for epilepsy for some weeks.

Her mother was eight years ago confined for some time in an asylum. There is no other history of mental disease in the family. The patient's two children are alive and healthy.

The patient states that as a girl she enjoyed good health, but her parents have told her that she had convulsions when
she was 12 years old. She has no recollection of them. She was married four years ago, and her first child was born in June 1904. When six months pregnant she began to take fits, and as pregnancy advanced they became more frequent, two or three a week. Just before labour they become much more frequent. She says she was unconscious during the labour, and for a couple of hours afterwards. She had about two fits a week during the puerperium. She could not nurse her baby.

During the second pregnancy she had about three fits per week. The child was born in December 1905, at full term. The patient was again unconscious during the labour. As on the first occasion, a midwife attended.

The third, present, pregnancy began about seven months ago. Between the second and third pregnancies she had had about three fits a week. About seven weeks before admission to the Maternity Hospital the fits became more frequent, and she fell and injured her face during an attack. She was admitted to the Royal Infirmary, and after four weeks' treatment in the Infirmary the fits ceased. She had four fits on the day of admission. She had never had any treatment for the fits prior to this. She was transferred to the Maternity Hospital, as a slight vaginal discharge of blood had commenced.

There was no indication of labour; the urine contained a trace of albumen; the bromide mixture of 15 gr. doses thrice daily was continued.

Two days after admission labour came on, and a premature female child (3 lbs.) was born alive, but only lived five hours. There were no fits during the labour, and there was only a very slight one in the puerperium, on the first day she was allowed out of bed.

The patient stated that she never had any warning of an attack, and she was usually unconscious for some hours after a seizure.

In this case there is the history of convulsions at the age
of 12, so that there was a predisposition, but pregnancy was the exciting cause. In both of these cases there was a trace of albumen in the urine.


The patient's mother committed suicide, after a former unsuccessful attempt, by eating rat poison. Of her father's brothers one died in an asylum two years ago, and another is in an asylum at present.

At the time of her mother's death she was ten months old, and was being nursed by her mother. Shortly afterwards she is said to have begun to take convulsions, and she can remember having had convulsions as a child. After the age of 13, the attacks were not always of a convulsive nature. She sometimes lost consciousness, but did not struggle. Her friends informed her that in some of the attacks she acted and spoke in an unusual way, but she has no recollection of this.

She was married seven years ago, and since marriage the attacks have never been convulsive, but have consisted of loss of consciousness, with strange actions or remarks. She is now pregnant for the fifth time. One of the previous pregnancies was a twin pregnancy. One of the twins died at the age of three and a half months, but all the other children are alive and in good health, except one which is rickety. Her labours have been slow but natural. During pregnancy the attacks have always been much less frequent than at other times. When she was nursing, the attacks were more frequent—about once a fortnight.

The labour was natural, and the patient had no attacks while in hospital.

In this case pregnancy seems to have had a beneficial effect on the attacks, but it will be noticed that the attacks were most frequent during lactation. In this case there would be a
strong hereditary predisposition. So far, the children show no tendency to neurotic attacks.]

I am indebted to my residents, Drs Nielson and Walker, for the careful notes of these cases, and to Dr Carstairs Douglas for the post-mortem reports.

Dr Ritchie said they owed a deep debt of gratitude to Prof. Jardine for having submitted so very interesting a record of the case. He agreed with Dr Jardine that if one obtained a history of pre-existing fits, one was justified in diagnosing epilepsy in that particular case; and that if there was no previous history of fits, then the case was one of puerperal eclampsia. He had had a good many cases of puerperal eclampsia, but in none of the cases was there afterwards a development of epilepsy. As to treatment, if one diagnosed epilepsy, the treatment was that for epilepsy; one would not expect in such a case to find benefit from the treatment which is necessary for puerperal eclampsia.

Dr Haultain said he could only follow suit to what Dr Ritchie had said. The question of epilepsy was a subject of very great interest to him, as he had had a considerable experience in the subject both in the Maternity Hospital and in consulting practice. He was only sorry the subject had been sprung on them, as it were, when otherwise he might have been able to have gone over some notes of cases he had seen. On a haphazard recollection he would divide epilepsy in pregnancy into two great groups—(1) where previously there had been epilepsy, and (2) where there had not previously been epilepsy. In the first group his experience seemed to show that the effect of pregnancy was most irregular. In several cases pregnancy had absolutely no effect at all upon the disease. In another
set of cases the condition was exaggerated. In two cases before his mind, one was in a condition of status epilepticus. She was from five to six months pregnant. He decided to procure abortion, and did so, but in spite of his efforts the patient died. In the second case the patient was having an exacerbation of fits, and from previous experience he thought the pregnancy should be ended. Abortion was procured; the patient survived, but lapsed into the old condition—having fits occasionally, but in no way exaggerated. There was a third set of cases where undoubtedly epileptic fits seemed to be diminished. He had read of, and thought he had seen cases where the presence of pregnancy seemed to alleviate the tendency instead of exaggerating it. As to cases where epilepsy first commenced during pregnancy, others of course brought out the question of the differential diagnosis between epilepsy and eclampsia. There was no doubt that he was in accord with what Dr Jardine had said regarding the question of epilepsy in pregnancy and labour. He did not believe these were cases of eclampsia at all unless there was albuminuria. He had never seen true eclampsia where there was not highly albuminous urine, much diminished in quantity. He had certainly seen one case where epileptic convulsions developed during pregnancy and returned during a subsequent pregnancy, and in the interval there were no fits at all. Again, in another case where the patient had undoubtedly puerperal eclampsia, highly albuminous urine diminished in amount after the confinement was over; in eight to ten days she again took fits at a time when there was no albumen in the urine. This case temporarily upset his ideas on the subject of puerperal eclampsia and albuminuria, and he thought the case was one of epilepsy; and so it turned out to be, as the patient had taken fits several times since, independently of pregnancy. The origin had been with puerperal eclampsia, and had remained as epilepsy afterwards, showing the difficult problems there were to be considered.
One would expect the condition of epilepsy to be aggravated by pregnancy—a time when there is a toxæmic condition; yet, in spite of this, epilepsy in some cases is not so virulent as before, and it therefore seems that we have nothing to prove either in one thing or another as to the effect of pregnancy upon epilepsy. As to treatment and the question of marriage. People who had epilepsy should never marry under any circumstances, on account of the hereditary transmission of the disease. If fits should become aggravated, the uterus should be emptied to prevent any condition of status epilepticus occurring, or even the undermining of the mental condition from frequent convulsions. As to the treatment by strychnine, it seemed a somewhat radical measure.

Professor Jardine here explained that strychnine was given to keep the patient alive.

Dr Haig Ferguson had very little to add but to convey his thanks to Professor Jardine for his interesting paper. Both Dr Jardine and Dr Haultain had stated that they had never seen cases of eclampsia where there was no albumen in the urine. He had strong and good grounds for believing that eclampsia could exist without any albuminuria. What was more important was the question of the diminution in urea. He had seen cases of typical eclampsia where to begin with there had been no albuminuria, but where the amount of urea was considerably diminished. He had always been of the belief that puerperal convulsions should not be regarded as epileptic if the patient had no previous history of epilepsy, though a patient with a previous history of epilepsy might take puerperal convulsions. One case occurred to his mind, where the woman in her first pregnancy took a large number of convulsions which were supposed to be eclamptic. There was no diminution in the urea and no albuminuria. On making a close inquiry into the previous history, it was discovered that the woman had had attacks of *petit mal* at every menstrual period. In this case
the condition of epilepsy had been aggravated during pregnancy. He had never seen a case where the fits were cured by pregnancy. All the cases he had seen had appeared to have had the condition somewhat aggravated by the pregnant condition. He would say that any woman who had epileptic convulsions during pregnancy had had epilepsy on some previous occasion. They were greatly indebted to Dr Jardine for his paper.

Dr Porter had had one case, eight months ago, a primipara, 19 years of age, who had had regular epileptic seizures, aggravated at every menstrual period. At the seventh month of pregnancy she had developed slight albuminuria. The labour was quite normal. She had two fits about the fifteenth day of the puerperium, which were easily controlled by bromide. The child had been delivered naturally.

The President said his experience was along the lines of these mentioned. He remembered one case at the Dispensary where the patient had epilepsy except during the times of pregnancy, the epilepsy returning again a month after the pregnancy was over. He afterwards came across one or two other cases where this did not apply, and he had had quite a number of interesting cases at the Maternity Hospital. The main result of them had just been that some were better during pregnancy, and some were worse. Some were free during pregnancy, and some were free except at the time of pregnancy. There were not many where there was any special development during pregnancy. With regard to the relationship of eclampsia and epilepsy, they must come to the conclusion that the eclampsia we had in this country differed in some way from that in America and other parts of the world. Americans constantly assured him that they had a number of cases where there was no albumen in the urine, and said that a great number of their cases were nervous, and to be included under epilepsy and hystero-epilepsy rather than eclampsia.

Prof. Jardine, in reply, said there was a fair amount of albumi-
nuria in all cases of eclampsia, and also diminution of urea. He wished some of those accustomed to deal with such cases in asylums had been present at the discussion. It was an extremely difficult thing to decide about the question of epilepsy in connection with pregnancy. They knew that the effect of pregnancy on the nervous system of women varied very much, and they could imagine that the same differences would show themselves in those who were the subject of epilepsy. He had only had one or two cases of epilepsy where the patient had seemed to be better during pregnancy. Last year he had reported a case of recovery after two hundred fits. He had looked on that case as eclampsia, but it might have been epilepsy, although she had never had a fit before.

VI. BILATERAL OVARIAN DERMOID TUMOURS, COMPLICATING PREGNANCY.

By Dr Malcolm Campbell.

While the keen attention which has recently been directed to the identification of endotheliomata has undoubtedly upset the recognised order of relative frequency among ovarian tumours, yet dermoids must always, from their nature, continue to maintain their position as the most interesting form of tumour with which the gynaecologist comes in contact. Though dermoids can no longer be regarded as rare tumours, yet they undoubtedly are still relatively rare. In the seven volumes of Transactions which this Society has issued during the present century, there are records of only fifteen dermoids having been exhibited. A liberal computation of the frequency of dermoids puts them down as from 3 to 4 per cent. of all ovarian tumours.

Of all forms of ovarian tumour, the dermoid is the one most frequently associated with pregnancy. M'Kerron has tabulated 113 cases in which ovarian tumours complicated
pregnancy—of this series no fewer than forty-six were dermoids. Besides being the type of ovarian tumour which most frequently complicates pregnancy, the dermoid is the most dangerous, for in this series of forty-six cases there were eighteen maternal deaths due to injury of the tumour during labour.

While dermoids, both as ovarian tumours and in their relationship to pregnancy and parturition, offer an interesting field of study, the subject of bilateral ovarian dermoids is even more interesting. In regard to the frequency of the condition, the experience of gynaecologists varies within wide limits. Howard Kelly, in a series of eighty-seven cases in which he operated for ovarian dermoids, only found the condition bilateral in one instance. Mundé, in a series of fifteen operations for dermoids, found the condition bilateral in three cases. Gebhard, out of 107 cases, found bilateral dermoids no fewer than sixteen times.

In 1902, Loewy and Paul Guéniot published a paper on the subject of bilateral dermoids, in which they were able to collect ninety-eight cases. In thirty of these cases the patient's reproductive history was given. In five patients there was a history of one pregnancy, while five others had each given birth to two children. The other cases had all had more than three children, and in one case there was a history of seven full-time pregnancies and five abortions; while another patient, prior to operation, had borne twelve living children, and in addition had one abortion.

I have been able to find references to only nine cases in which bilateral ovarian dermoids were removed during pregnancy; and I have also found the notes of a case, published by F. Page, who operated on a patient for peritonitis, two and a half months after labour,—when the abdomen was opened, bilateral ovarian dermoids were found.

Of the nine double ovariotomies for dermoids during pregnancy, I have only been able to see the original communi-
cation in one case, viz., that of Knowsley Thornton, in which, on 4th February 1886, he removed bilateral dermoids from a patient who was delivered of a full-term foetus on 23rd June of the same year.

Though the preceding notes can in no sense be regarded as a review of the literature of the subject, the figures I have quoted seem to me to amply justify my bringing the following case to the notice of the Society:

The patient, Mrs F., æt. 32, was admitted to Dr Brewis's ward on 2nd June 1906. She had been married twelve years, and had five children, the eldest æt. 10, the youngest æt. 2 years and 3 months. Beyond some premenstrual dysmenorrhea before marriage, there was nothing to note in regard to menstruation, which began at 14, was of twenty-eight-day type, and lasted four days. There had been amenorrhea from March 1906.

Before the onset of her present illness, six months prior to admission, patient had enjoyed perfect health.

On admission, the patient complained of pain in the right side, which she stated went round to her back. The onset of the pain in January 1906 was sudden, and the pain so severe that patient had to remain in bed for a week, and was only able to lie on her left side. During this attack there was some vomiting. There was no vaginal discharge. Since the initial attack there had been several returns of the pain at intervals. The pain came on without any discoverable cause, lasted for about an hour, and then passed off. The pain was worst in the right iliac fossa, then from there it radiated to the back. She occasionally had vomited with these attacks.

About three months before admission, patient first noticed a swelling on the right side of the abdomen. The last attack of pain occurred about a week before admission.

*Physical Examination.*—The abdomen was seen to be
slightly distended by a swelling passing from the right lumbar region to midway between the sternum and the umbilicus. This swelling moved freely with the respiratory movements. On palpation, a tumour was found extending from the mid-line to the anterior axillary line on the right side. The tumour, which was flattened antero-posteriorly, seemed to be disc-shaped, and was about 4 inches in diameter. The tumour was not sensitive on palpation. It was not uniform in consistence, and could be moved freely. If pulled upon, a tense band could be felt running down into the pelvis. The uterus could be felt in the hypogastric region. There was no free fluid in the abdomen. On vaginal examination the uterus was found enlarged, and undergoing rhythmic changes in consistence. There was marked pulsation in both lateral fornices. In the left lateral fornix, posteriorly, a hard irregular non-sensitive body about the size of a hen's egg could be felt; this was evidently the displaced left ovary. The right ovary could not be felt.

On 6th June the abdomen was opened, and the tumour above described was found to be an ovarian tumour with a very long pedicle, growing from the right side: it was removed in the usual way. On removal it was about the size of a foetal skull, and on being incised was seen to be a dermoid tumour containing sebaceous matter, hair, and teeth.

The left ovary was examined; an attempt was made to resect this ovary, in order to conserve for the patient some ovarian tissue; as this, however, was found impracticable, the whole ovary was removed. On examination, it was found also to be a dermoid cyst containing sebaceous material and hair.

The patient made a most satisfactory recovery. Before leaving hospital, a month after the operation, patient felt foetal movements, but on auscultation no foetal heart sounds could be heard.

Since leaving hospital on 7th July, patient has been
perfectly well. She was delivered of a living child on 9th December.

The fact that both ovaries were removed at the end of the third month of gestation adds another point of interest to the case, for Heil has shown that abortion is most likely to occur in the cases in which the corpus luteum is removed before the fourth month.

In regard to the endeavour to conserve a portion of ovarian tissue, it is interesting to note that Matthei, Schroeder, and Terrier have all recorded cases in which pregnancy followed the removal of bilateral ovarian dermoids, where it had been found possible to conserve some ovarian tissue.

In conclusion, I should like to express my thanks to Dr Brewis for permission to communicate this case, and to Dr McMaster for some notes on the case.

Dr Haultain was much interested in the case Dr Campbell reported. Personally, he had not had any experience of removing bilateral dermoids, though on several occasions he had removed a dermoid from one side. In this connection there was an interesting case of a person he saw four or five years ago, in whom he had diagnosed ovaritis. The patient suffered a very great deal of pain, and said life was not worth living. He had no room for her in his home at that time, but sent for her to come in three weeks later, and without examining again, proceeded to operate. He thought at the time of operation that the uterus was a little large and purplish in colour, but removed the ovaries. The patient was delivered at full time of a healthy child. This case showed that even at that early date removal of the ovaries seemed to have no effect on the growth of the foetus. At the present time there were a large number of researches on the corpus luteum of pregnancy. So far, they seemed to show the corpus luteum had very little to
do with pregnancy. He thanked Dr Malcolm Campbell for having brought forward the case.

The President had not met with a case of double dermoid, but had had four or five cases of single. As to ovarian secretion, the theory which had always seemed to him to be an extraordinary one, was that the corpus luteum was the secretory gland of the ovary travelling about from different parts of the ovary in different months, simply being functional in one part for one month, and then in another. If one looked at it from the point of view of luteum, what was luteum? It was a perfectly innocuous thing, and going on that line he had always been sceptical about theories brought forward as to the curative value of lutein and the corpus luteum.

Dr Malcolm Campbell, in reply, said he had kept purposely off the corpus luteum. But although, as some maintained, the corpus luteum might do nothing, it should be treated with some respect, and left where possible.

Meeting VII.—June 12, 1907.

Dr J. W. Ballantyne, President, in the Chair.

I. Dr Brewis exhibited—(a) A full-sized crochet-needle, removed from the right iliac region of a patient who had pushed a needle into the vagina and lost it. Five weeks later, on admission, a hard parametric mass was felt anterior to the supravaginal part of the cervix; and to the right, about an inch above the middle of Poupart's ligament, there was a projecting mass which was suspected to contain one end of the lost needle. On cutting down on the mass, this was found to be the case, and the needle was extracted.

(b) A large slough from the interior of the uterus,
produced by the use of chloride of zinc in a case of inoperable carcinoma. On microscopic examination, the specimen was found to consist of vascular fibrous tissue and unstriped muscle. These were both necrotic in parts and infiltrated with leucocytes, while there was also some infiltration of epithelial cells, suggesting the presence of carcinoma. The slough was fully an inch in diameter, showing that destruction of the uterine wall by the zinc had been extensive.

(c) A cystic swelling, somewhat pear-shaped, with a long axis of 8½ inches, and a circumference of 11 inches at the broad end of the pear. It was a monocyst, formed by the junction of cystic right and left Fallopian tubes, and a distended and unrecognisable right ovary. The contents were caseous-like, and consisted of fatty matter and cholesterin crystals, while on certain parts of the walls, internally, were deposits of calcareous matter.

(d) Uterus, containing a large submucous fibroid, attached by a broad pedicle to the fundus. The uterus was removed by supravaginal hysterectomy along with both ovaries, one of which was converted into a monocyst the size of a tennis ball, while the other contained a hæmatoma.

(e) Large soft oedematous fibroid tumour, removed by hysterectomy. The tumour presented physical signs closely resembling a six months' pregnant uterus.

(f) Uterus removed by vaginal hysterectomy for bleeding, and, from the same patient, a hæmatoma of the left broad ligament.

II. Dr Haig Ferguson showed—(a) extra-uterine pregnancy, nearly four months' duration. The tube had ruptured in the country. When seen in town, there was a swelling behind the uterus, and extending well up into the abdomen, and one waited to see if it was growing, and as it was found to be rapidly growing, it was removed by abdominal section. The tube had ruptured into the cavity of the broad ligament.
(b) Specimen from patient, a multipara, æt. 44, suffering from irregular haemorrhages. The uterus was scraped 7th June, and the pathologist's report was as follows:—"Gland tubes of highly irregular shape, lined with columnar cells, irregular in arrangement, forming numerous papillae within the lamina of the tubes. The epithelial formation is disproportionately great in comparison with the connective tissue. A specimen of the early stage of a rapidly developing papillary adeno-carcinoma of the body of the uterus." The uterus was removed by vaginal hysterectomy. This was the fifth case of malignant fundus he had operated upon in the last year by vaginal hysterectomy, with satisfactory results.

III. The President showed a photograph of a native midwife of Nazareth, with a trained midwife from this country standing beside her.

IV. SIX CASES OF VAGINAL CÆSAREAN SECTION.

By N. T. Brewis, M.B., F.R.C.S.E., Gynaecologist, Royal Infirmary, Edinburgh.

When I listened to Dr Munro Kerr's paper delivered before the Society some three years ago, in which he described in a very lucid manner the operation of vaginal Cæsarean section, introduced by Dührssen, it brought to my mind more than one case where, had I been conversant with the procedure, I would have been glad to take advantage of it. One case particularly I recalled of a patient in the country, four months pregnant, brought to the point of death by severe and uncontrollable vomiting, whose cervix was so rigid that Bossi's dilator was unable to effect dilatation of the internal os to any extent, and the foetus and placenta had to be extracted bit by bit through an opening no bigger than a keyhole. When I considered that the time, energy, and force spent in the attempt to overcome the resistance could have been saved by a few cuts with the
scissors, the value of Dührssen's operation came home to me and made me determine to practise the method on the first suitable occasion.

The opportunity soon occurred. The following notes of my first case were kindly furnished me by the patient's medical attendant, Dr Henderson, Kirkcaldy:

**Case I.**—*Vomiting of Pregnancy.*—"Mrs H., æt. 30. Previous and family history good. In January 1903, when two months pregnant and in her first pregnancy, she began to suffer from severe and intractable vomiting. The usual medicinal remedies were of no avail. Rectal feeding had to be adopted. Operative interference was seriously considered, when she spontaneously aborted. She made a rapid recovery.

"On 29th November 1905, when three months pregnant and in her second pregnancy, she was again prostrated by severe vomiting. As before, medicinal remedies were found of no avail. All nourishment given by the mouth was returned. The vomiting and retching was persistent, and independent of the taking of food or medicine. On 6th December 1905, Mr Brewis dilated the cervix under chloroform. The vomiting gradually subsided, till in ten days' time the patient was able to retain and enjoy food, and was up and about.

"On 1st February 1906, vomiting again set in, producing very rapidly great prostration, emaciation, and dusky complexion. The patient presented the appearance of one overwhelmed with a profound toxæmia. On 3rd February her condition was desperate. On that day Mr Brewis performed vaginal Cæsarean section. She had slight vomiting for two or three anxious days, and then absolute recovery."

I operated twice on this patient—first in November, for severe vomiting, when the patient was three months pregnant. Though the vomiting was severe the patient was not seriously ill, and I performed the operation which I had found most
useful in those cases, viz., dilatation of the cervix, followed by the administration of chloral per rectum.

At my second visit, three months later, the patient's life was in danger so imminent that I considered it indicated to empty the uterus as quickly as possible.

A month later I had another opportunity of putting the operation to the test in a case equally serious, but belonging to quite a different category.

Case II.—Eclampsia. Delivery by vaginal Cæsarean section, at seven and a half months, of a living child, followed by complete recovery of mother.—Mrs B., æt. 26, was married in November 1905, and came under my care on 20th March 1906, when she was six months pregnant. The following is the history of the case:—A week before admission she first noticed her feet swollen. The swelling was slight, and not painful. A few days later her face and hands also swelled, and she felt pain low down across her back. About three weeks ago she had a bad cold and cough. This condition lasted a week, and was almost like whooping-cough, and prevented sleep. A week before admission she got cold again, and had a slight cough on admission. Her last period began on 5th November, and lasted three days.

She had suffered from headaches, chiefly occipital in character.

She had scarlet fever when about six years old. There was no history of kidney trouble.

On admission, the face was puffy, especially the eyelids. There was slight oedema of both hands. Both feet and legs were oedematous, the right ankle more so than the left.

She suffered from breathlessness on exertion. The pulse was regular and of high tension.

The thyroid gland was enlarged. The breathing was harsh, but there were no accompaniments.
Albumen was present in the urine in large quantity.

Two days before operation patient had a fit, followed by a semi-conscious condition. On the next day she had two fits. On the morning of the day of operation she had a fit, after which she remained in a semi-unconscious condition all day. No urine was passed that day. The operation was performed in the evening.

The operation is as follows:—

The patient was put in the lithotomy position, and after the customary preparation for major pelvic operations the vaginal portion of the cervix was drawn down to the vulva.

The anterior vaginal wall was divided transversely immediately above the external os, and along with the bladder was pushed upwards. The anterior surface of the cervix was cleared in this manner, and then divided vertically in the middle line with scissors for 3 or 4 inches. The membranes were then ruptured, and forceps applied to the child’s head, which was lying in the most common position. Gentle traction was used, and after a quarter of an hour’s manipulation the child was delivered. The placenta was expressed a short time later.

The cervical incision was sewn together with catgut. Then the anterior wall of the vagina and the bladder were stitched into position. The uterus was irrigated with weak lysol solution, and the patient put to bed.

Although the traction required was considerable, there was no tearing of the wound farther up. Probably the cervical wound might have been made 1 inch longer without injury.

The patient, after a tardy recovery, complicated by a severe attack of broncho-pneumonia, returned home on 11th May. She is now in good health. The child, although premature, was by the aid of an incubator kept alive, and though it had a considerable struggle for existence, was sent home when about a month old. It is now a strong and healthy child.

With regard to the applicability of this operation to cases
of eclampsia, I would say that if it is conceded that in grave cases the uterus should be emptied rapidly, Dührssen's operation, owing to the safe, simple, and rapid manner in which it can be performed, is a most rational and proper procedure, and one which is much to be preferred to the classical Cesarean section. In less urgent cases the slower methods of dilatation may still have a place, though, if good results are to be got, I think the principle of not waiting too long should be adopted. Statistics show better results by this method than by any other. Veit performed the operation thirty-three times for eclampsia with only one death, and Dührssen has collected 112 cases having a mortality of 15 per cent.

Case III.—*Stenosis following Amputation of the Cervix.*—The patient, Mrs B., was operated on by me in March 1905, for a large retroverted uterus and hypertrophied eroded cervix. The vaginal portion of the cervix was amputated. The uterus was curetted and replaced, and the round ligaments shortened.

I next saw the patient in May of the following year, and she was then five months pregnant. She went into labour at end of September 1906, and when I saw her some waters had escaped, the head was presenting; no external os could be felt, but the lower uterine segment was thinned and spread over the presenting part. The patient had suffered from pains at intervals, and was apparently in labour. Rupture of the extremely thin uterine segment was feared. The patient was prepared for operation.

A transverse incision was made through the vaginal wall in front of the presenting part. The bladder was pushed up, and the lower uterine segment divided vertically as high as the internal os. The foetus was delivered with forceps, and the placenta expressed. The patient made a good recovery.

Case IV.—*Heart Disease—Mitral Stenosis and Incompetence,*
with Edema of Lungs.—Operation performed at five and a half months. The following are the notes which were kindly given me by her medical attendant, Dr Fleming:—

"I first attended Mrs D. in June 1906, for cough due to slight oedema of the lungs. Her heart was dilated. The impulse was felt fully 1 inch outside the nipple line, accompanied by a thrill due to mitral obstruction and incompetence. At intervals, chiefly at night, she had attacks of dyspnœa and heart pain. She was able to walk a short distance.

"She told me on the 18th November that she had not menstruated since the middle of August, and that but for slight squeamishness she felt nothing wrong. In fact, she had not felt so well for a long time. I had been called to see her at the time because of slight bleeding, probably induced by being shaken in a motor bus. This was relieved by a few days' rest in bed. During the early weeks of December she had attacks of dyspnœa and cardiac pain, and was put on inf. digitalis—which she had been taking at intervals since 1904—and tabell. trinitrini. Under this treatment the cardiac pain diminished, the pulse got stronger and more regular, and she was able to walk better. About the 24th of December she went on a visit of three weeks duration to Glasgow, and while there had a bad attack of dyspnœa and cardiac pain. The induction of premature labour was considered at this time, but it was finally decided to allow the pregnancy to go on.

"On 17th January 1907, her heart was very irregular in action. She had not had sleep for some weeks on account of the dyspnœa and cardiac pain. There was oedema of the lungs. On the 19th January Dr Brewis came to see her, took a very grave view of the case, and advised operation."

On admission, the uterus was found to be enlarged to the size of a six months' pregnancy. The cervix was firm to the touch.

The vulvar aperture was enlarged by making an incision
about \( \frac{3}{4} \) of an inch long into the anterior part of the perineum. The cervix was pulled down, an incision was then made through the vaginal wall at the junction of the vagina with the cervix in front. The anterior aspect of the cervix was exposed by pushing up the bladder. The cervix was then cut open by scissors through the whole length of the anterior part until the uterine cavity was opened into. An incision about \( \frac{1}{2} \) an inch long was made in front into the lower part of the body of the uterus. The membranes were exposed. These were ruptured, and the liquor amnii allowed to escape. The breech was found to be presenting. The lower limbs and trunk were delivered, and difficulty was experienced with the after-coming head. Forceps were applied, and the head delivered. The child was dead. It was a well-developed five and a half months' foetus. The placenta was then separated and expressed. The incision into the anterior and lower part of the body of the uterus and the incision into the cervix were closed with interrupted stitches of strong catgut. The uterine cavity was washed out with a warm saline douche. The incision in the anterior fornix was closed with sutures of medium catgut, and the perineum was repaired with a sub-cuticular stitch of medium catgut. A small gauze drain was put into the cervical canal. Gauze was also packed into the vagina after it had been douchèd with hot saline.

She was somewhat breathless for two days after the operation. On the third day she was able to lie in the recumbent position. She went home on the 16th February feeling very well. She had no distressing breathless attack after the operation. On her dismissal she was still cyanosed, especially marked on her cheeks, ears, nose, and finger nails, and there were fresh small sub-conjunctional hæorrhages.

It was evident from the extreme distress which this patient's cardiac condition occasioned, that the termination of her pregnancy was urgently indicated, and the only question to
be considered was the method to be adopted. Her cardiac condition appeared critical, and it seemed evident that the more speedily the uterus could be emptied, the less would be the strain on the heart, therefore it was decided to perform vaginal Cæsarean section. The result was very satisfactory.

**Case V.**—**Hæmorrhage due to Premature Separation of part of a Low-Placed Placenta—Placenta Prævia.**—Mrs T., æt. 38, had been married sixteen years, and had six children, the last being born eighteen months before admission. She had a miscarriage at two and a half months, three years before admission. She was admitted on 7th June 1906, complaining of floodings.

At the beginning of March, while still nursing her child, the milk ceased, and patient had a severe bleeding for a day and a night. She got up next day and felt quite well till five weeks later, when she had a second flooding. The bleeding came and went for a day or two, and she was confined to bed for a week. On getting up she felt weak and went for a holiday for a week, and on returning home she again had red discharge. The discharge came on every night for two weeks—not copious, only coming away when she lay down. At the end of two weeks another flooding took place, and for the four weeks previous to admission she had been confined to bed with a more or less constant red discharge.

Before the present illness her menstrual history had shown nothing of a morbid nature. Her labours were natural, and she had no serious illness.

On admission, a tumour was felt in the abdomen, suggesting a six and a half months' pregnancy. At parts the swelling was soft and doughy, and at others hard. There was greater resistance on the right side as a whole, and on this side harder, irregular masses were felt, suggestive of limbs. Fetal heart sounds were audible just below the umbilicus in the middle
line. *Per vaginam,* a sense of doughiness of the lower uterine segment was felt. For a week she continued to pass clots, and on the eighth day after admission she had a profuse hæmorrhage, accompanied by severe abdominal pains, having the character of labour pains. The patient was very weak and exhausted. In the evening of that day it was decided to deliver as rapidly as possible. It was found that the external os had dilated very slightly—only sufficiently to allow the tip of a finger to be introduced. Chloroform was given.

The median basilic vein was exposed, and about a quart of saline given intravenously. The vagina was then well douched out, the cervix grasped by strong volsellæ, and pulled down. An incision was made through the anterior vaginal wall transversely, and the bladder pushed up. A sound being passed into the bladder, an incision was made along the anterior surface of the cervix and continued beyond the internal os. The presenting part was seen as a bluish sac. The membranes were ruptured, and the liquor amnii allowed to escape.

On introducing the fingers the placenta was felt to one side, low down, and the head of the child was presenting. The child was delivered by forceps. The hand was then introduced to remove the placenta, which was partially adherent. After expressing the placenta the interior of the uterus was douched with hot sterile water. The incisions in the uterus and vagina were closed by catgut sutures. She made a good recovery.

This case was one of premature detachment of a portion of a low-placed placenta. Possibly at an earlier stage rupture of the membranes or slow dilatation followed by delivery might have been successful, but at the time that I operated the patient was in a highly critical state, and I felt that it was best for the patient to deliver as speedily as possible. I considered her condition so dangerous that I transfused before the operation, a plan which I always practise in patients exhausted from loss of blood.
The indications for vaginal section submitted by Dührssen eleven years ago, were for conditions dangerous to the life of the mother or child, or both; abnormalities of the cervix and lower uterine segment, which make impossible or difficult a dilatation of the cervix by the uterine contractions; and for dangerous conditions of the mother which may be removed by prompt emptying of the uterus, e.g., affections of the kidneys, heart, lungs.

Whenever the element of time is important, vaginal Caesarean section is a great addition to our resources. An operation which enables the hand to pass with safety into the interior of the pregnant uterus in a couple of minutes' time is one which might have its indications extended to cases of a less serious nature, where the mother's life is not in peril, but where the operation can accomplish the desired end more easily and more conveniently than any other. Anyone who has had experience of this operation cannot do otherwise than commend it. An aseptic field, a clean-cut wound, an easy and rapid technique, the parts restored at the end of the operation to their original condition by a few catgut stitches, go to make an operation which must appeal strongly to anyone with surgical instincts.

The last case in which I followed Dührssen's method was one in which the patient's life was not in danger. Her uterus might have been safely emptied by other means, but I preferred vaginal Caesarean section, because it was as safe as any other, and was more easily performed.

Case VI.—The patient was two and a half months pregnant, and haemorrhage had gone on continuously for five weeks.

All the mothers recovered.
A living seven and a half months' child was delivered in
the eclamptic case, and a full-time child in the case of stenosis of the cervix.

Dr Lamond Lackie said he had no personal experience of the operation, but that during the last quarter at the Maternity Hospital he had had a case in which he had thought of doing vaginal Caesarean section. The case was one of eclampsia, the patient was comatose, and the prognosis was very bad. He had attempted to dilate the os with Hegar's bougies, and with Bossi's dilator, but had failed absolutely. The cervix was so rigid that he felt it would be wrong to persist in the attempt, and he desisted, with the view of performing vaginal Caesarean section later. Fortunately the patient began to improve, and by the following day no further interference was necessary. In three days there was practically no sign of eclampsia, the fits had ceased, the albumen disappeared, and five days after the attempted dilatation of the cervix, the patient aborted; the fact being that during the eclampsia the foetus died. Dr Brewis's paper was most interesting. There seemed to be so many possible conditions for which the operation might be done. He had noticed that Dr Brewis held that the operation was even indicated where the os might possibly be dilated, and the foetus delivered in that way. He supposed the operation was more speedy than dilation of the os, when from twenty to thirty minutes were required, so that there was a distinct gain in that way.

Dr Haig Ferguson thanked Dr Brewis for his paper. He had had only one experience of vaginal Caesarean section, but had found the operation extremely satisfactory—so much so, that if again in similar conditions, he would prefer it to Bossi's dilator, which he considered to be extremely dangerous, and very seldom satisfactory. The patient was a primpara with
SIX CASES OF VAGINAL CAESAREAN SECTION,

eclampsia. She was about seven and a half months, had had twelve seizures, and was comatose; the cervix was very rigid, no sign of dilatation, and the foetus alive. He determined to do vaginal Caesarean section, and followed the ordinary routine as performed by Dührssen, and got the uterus dilated in a few minutes, and delivered the child (which presented by the breech) without any difficulty at all. He sewed up the lower segment and restored the parts to their former condition. Unfortunately the patient did not survive. She recovered consciousness, but again had a succession of eclamptic fits, and in spite of all treatment died the following evening. But he was so impressed with the ease with which the operation could be done, that in a case of eclampsia he should certainly prefer the operation to the use of Bossi's dilator. The only thing he should wish to criticise was in doing it in a woman who was only two and a half months pregnant. The simplicity of Dührssen's operation was when the woman was near full time, and the lower uterine segment more fully developed. He could not see the reason why, in inducing an abortion one should have recourse to vaginal Caesarean section, for, undoubtedly, there were certain risks; the incision might go so far up as to open the peritoneal cavity. He should prefer to induce abortion by dilators rather than risk the opening of the peritoneal cavity. The only other point was in regard to the indication in heart cases. He thought the best treatment was medicinal, and to avoid bringing on labour. He had found general treatment have, as a rule, satisfactory results. Certainly in cases of eclampsia, and possibly in placenta praevia, where one knew the lower uterine segment and the cervix were extremely friable, a clean cut such as Dührssen recommended—one that appealed to one's surgical principles, and one that would terminate pregnancy in a much more rapid and safe manner without setting up laceration, was much better. They were much indebted to Dr Brewis for having stepped into the
breach and given them such an interesting paper. He thought that in the operation one needed to have plenty of skilled assistants, as it would be extremely difficult to do it if inadequately assisted.

_The President_ agreed with the Fellows who had spoken, in thinking the subject a very interesting one. He was very glad Dr Brewis had come forward again with an obstetric paper, or one that was perhaps just on the border-line between obstetrics and gynaecology, for vaginal sections were more especially gynaecological. The indications for the operation had struck him as being extremely interesting from their variety—vomiting, eclampsia, stenosis of os, heart disease, placenta praevia. It seemed to him that one might generalise a little more, and say that cases in which the os was not taken up were specially suitable ones. In eclampsia, where the os was taken up the case might be amenable to other measures, but where it was not taken up there was great risk in using Bossi’s dilator, which gave the risk of severe laceration. Formerly, the only operation consisted in numerous incisions into the cervix, which had seemed to him to tempt danger and possible disaster. But this localised clean cut did seem to meet the indication where the os was not taken up, and thus in cases which were not far on in pregnancy. He thought the reason why the operation was chosen in the heart case was that there was a condition of a systole, and that the case was not like many cases in which it would not matter if one waited for a while. In such a case as that cited, he considered one would be quite justified in doing the operation. He supposed that a knife, scissors, and catgut sutures were about all that was needed for the operation. He was sure he expressed the feelings of the Society in thanking Dr Brewis for coming forward at such short notice, and for giving them such an interesting paper.

_Dr Brewis_ thanked the President and Fellows for the very
kind way in which they had received his paper, though it was somewhat obstetrical. He considered the cases related in the paper belonged to the gynaecology of obstetrics. He could not agree with those who thought the operation only suitable for hospital. The first case narrated was performed in a private house, without any special preparation, and with a few borrowed instruments. A pair of scissors, two volsellæ or forceps, a small curved needle, and catgut are all the instruments that are specially needed. No doubt this, like all other operations, is best performed in hospital, but when the patient is not fit to be removed, there is no reason why she should not have the benefit of the operation in her own house. With regard to the opinion offered by Dr Haig Ferguson on the justifiableness of operation in the case of heart disease, Dr Brewis thought that if Dr Ferguson had seen the case he would not have hesitated to recommend the operation. Dr Brewis considered that the operation saved the patient from a perilous position, and probably saved her life. Dr Brewis did not consider there was more danger in this than in any other obstetric operation, and on that account he would prefer it in some cases of abortion. In none of the cases had he found it necessary to make the posterior incision through the cervix.

V. A CASE OF REPEATED ABORTION DUE TO SYPHILIS; TREATMENT BY POTASSIUM IODIDE; BIRTH OF CHILD WITH CONGENITAL GOITRE.

By B. P. Watson, M.D., F.R.C.S.E., University Gynaecological Tutor, Royal Infirmary, Edinburgh; Gynaecologist to the Cowgate Dispensary, Edinburgh.

Four years ago papers were read before this Society by Dr Angus Macdonald and Dr Fothergill, giving accounts of two cases in which after the administration of potassium chlorate to the mothers during pregnancy, children were born with enlarged
thyroid glands. About the same time a paper appeared in the *British Medical Journal*, by Hewetson, in which he described the appearances of the much enlarged thyroid gland of a child born after the administration of potassium chlorate and potassium iodide to the mother. Cases following the administration of potassium chlorate had previously been recorded by Sir J. Y. Simpson in 1855, and Dr (now Sir) A. R. Simpson in 1866.

Apart from these I know of no other cases in which hypertrophy of the foetal thyroid has followed, or been coincident with the administration of such drugs to the mother during pregnancy, and this is my reason for bringing the present case before the Society.

The case has a further interest, in that it shows in a marked manner the action of potassium iodide in preventing intra-uterine death of the child in a case of maternal syphilis.

The history is as follows:—

Mrs C., age 27, came to me at the Cowgate Dispensary four years ago. Five years previously she had been married, and when pregnant with her first child had been infected with syphilis. The local manifestations of the disease were very pronounced, and a considerable amount of ulceration seems to have occurred. She carried the child to full time, but it died during delivery by forceps. As far as she knew, it presented no sign of disease. Her attendant at the confinement informed her of the nature of her disease, and after the birth of the child she had sore throat, her hair fell out, and a rash appeared on the body.

Following in rapid succession after the birth of her first child she had a series of five miscarriages: the first at the seventh month, second at third month, third at seventh month, fourth at three and a half months, and fifth at seventh month. The seven-months' foetuses were all born in a macerated condition, and had evidently been dead in utero for periods varying from a week to a fortnight. The patient mentioned that after
each miscarriage she was troubled with a sore throat, and that her hair fell out much more that usual. I had not previously heard patients with syphilis complain of this. It looked as if there were a fresh dose of the poison liberated as each ovum was cast off. I may say that the husband who infected her had never been treated.

When I first saw her she was two months advanced in her seventh pregnancy and was extremely anxious to have a living child. She was given a mixture containing potassium iodide, aromatic spirit of ammonia, and infusion of gentian, and instructed to take a dose containing 10 gr. of the iodide three times daily. She carried out the instructions faithfully, and took 30 gr. of iodide every day right up to the onset of labour. The course of the pregnancy was normal in every respect, and her child was born at full time, alive, well nourished, and apparently healthy. The placenta was large and flabby, with a few infarcts, but otherwise normal in appearance. In a week the child developed signs of syphilis, with a characteristic rash over the buttocks, and snuffles, and a week later it died. I had not an opportunity of making a post-mortem examination.

Four months later the patient again became pregnant, and from the second month onward she took 30 gr. of potassium iodide per diem. The pregnancy was going on normally up to the end of July 1905, when she had completed her seventh month: foetal movements were then strong and the heart audible. The Dispensary being closed in August, she was given what was thought to be sufficient medicine to last her over the month. It had, however, been finished about ten days before the end of the month, and during that time she had taken none. She came to see me on 3rd September, and said she had felt no movements for the past three or four days, and that she feared the child was dead. Ten days later she gave birth to a macerated foetus which had evidently been dead for about a
fortnight. The placenta was large, and contained many large infarcts.

In February 1906 she again became pregnant, and the same line of treatment was followed throughout, viz., the administration of 30 gr. of potassium iodide a day from the second month up to the time of labour. She carried her child to full time, had an easy labour, and made a satisfactory recovery.

The child, a male, at birth weighed 6½ lbs., and appeared in every way healthy, except that it had a large swelling in the neck in the region of the thyroid gland. The two lobes were equally enlarged, extending up the neck on each side of the trachea, and there was also considerable thickening of the isthmus. The swelling did not extend below the level of the manubrium sterni. There was very considerable embarrassment of respiration, inspiration being accompanied by loud stridor. The breathing was always more laboured when the child was laid on its back, or if the head became extended; it would then become extremely cyanosed. It was unable to suckle, and had to be fed by spoon. For the first fortnight after birth there was no perceptible change in the goitre, but after that it began to undergo a slow but progressive decrease in size with a corresponding diminution in the respiratory difficulty. From the fourth week the child began to show signs of congenital syphilis. For this, as well as for the obstinate constipation from which it suffered, it was treated with grey powder. When three months old there was well-marked cranio-tabes present. In spite of its obvious syphilitic condition the child throve fairly well up to the age of three and a half months, when it developed epidemic cerebro-spinal meningitis. It was sent to the Royal Hospital for Sick Children, under Dr John Thomson's care, where it died after being ill for ten days. Dr Stuart M'Donald performed the post-mortem, and to him I am indebted for the following notes:

Thorax.—There is a large goitre present, which measures
about 2½ inches across from side to side. It is compressing the trachea laterally, is firm and elastic in feeling, and on section looks like normal thyroid tissue.

**Heart.**—Some dilatation of right side; no endocarditis; myocardium soft and flabby.

**Lungs.**—Both congested and oedematous, with patches of lobular collapse and emphysema; there is extensive broncho-pneumonic consolidation of left lower lobe and of upper lobe on right side. The larger bronchi are congested; bronchial glands not enlarged.

**Abdomen.**—Spleen shows acute congestion, pale; Malpighian bodies present.

**Liver.**—Cloudy and fatty. Marked inter-cellular cirrhosis.

**Bones.**—Marrow of ribs red and lymphoid. Marked cranio-tabes present.

**Brain and Cord.**—Acute leptomeningtis, basal and vertical. Convolutions flattened. Great dilatation of superficial vessels. Exudate most marked in sulci; yellow in appearance, very like a pneumococcal case in appearance.

**Cord.**—External pachymeningitis over lower part of cord; thick fibrinous-looking exudate present; there is diffuse leptomeningtis of cord, exudate resembling that over brain.

The two chief points of interest in the case are:—

1st. The action of potassium iodide in preventing intra-uterine death; and

2nd. The enlargement of the thyroid gland of the last child after the administration of potassium iodide to the mother during pregnancy.

(1) That the potassium iodide did have an influence in enabling the patient to carry her children to full time, and that this was not merely due to the gradual elimination of the syphilitic poison from her system with the lapse of time, is, I think, clearly shown by the history of the second pregnancy, during which she had the drug administered. In the first and
third pregnancies under treatment she took 30 gr. of iodide daily, right up to the onset of labour, and in both cases full-time, living children were born. In the second pregnancy the stoppage of the drug for a fortnight at the eighth month was followed by the death of the child, and I think we are justified in concluding that the one was a direct result of the other.

It is to be noted, however, that while potassium iodide seemed to enable the patient to have living children, it did not prevent the subsequent development of well-marked signs of congenital syphilis in these children. For this reason I shall, in future, in cases of a similar kind, combine mercury with potassium iodide, as is usually recommended.

I gave potassium iodide alone in this case, as in a previous case of repeated miscarriage with no syphilitic history it had been successful, the patient having a full-time, living child, and I thought that it would be doubly efficacious in the present one. Lomer gives a record of twenty cases of habitual abortion due to syphilis, albuminuria, and endometritis, successfully treated by potassium iodide and iron. He supposes that the iodide acts by preventing placental haemorrhages, which so often precede the death of the foetus. Other observers have had good results in similar cases with potassium iodide.

Potassium chlorate is the drug which, on the original recommendation of Sir J. Y. Simpson, is usually employed in non-syphilitic cases. Its mode of action is still in dispute; the hypothesis that it parts with its oxygen to the fetal blood having been disproved. Fothergill believes that it acts by preventing excessive clotting in the intervillous spaces of the placenta.

The apparently equally good results which follow the use of potassium iodide, even in definitely non-syphilitic cases, seem to suggest that it is the potassium which is the essential element, and that the particular salt employed does not so much matter. This possibility was mentioned by Dr Ballantyne in the discus-
sion on Dr Fothergill's paper, and he was led to mention it from a knowledge of the fact that large quantities of potassium, together with lime and iron, pass to the foetus in the last three months of pregnancy. Both potassium iodide and potassium chlorate are readily diffusible salts, and quickly pass to the foetus after introduction into the circulation of the mother. In the present case I had the placenta examined for the presence of the salt, but none was found, owing probably to the comparatively small dose the mother was taking and the rapidity of its excretion.

It would serve no useful purpose to mention the various views that are held as to the mode of action of these salts in preventing intra-uterine death, and I only refer to the possibility of the potassium being the essential element in order to suggest that in similar cases it might be of interest to try the effect of some of its other salts, and note whether they were equally efficacious.

(2) The occurrence of thyroid enlargement in the last child. Congenital goitre is, under any circumstances, of comparatively rare occurrence, so that to find six cases following the administration of potassium salts to the mother during pregnancy, for the prevention of foetal death, seems more than coincidence. At the same time it is difficult to arrive at any adequate explanation of them.

In the cases of Sir J. Y. Simpson, Sir A. R. Simpson, Macdonald and Fothergill, potassium chlorate was the drug used, in Hewetson's case potassium chlorate and potassium iodide, and in my own potassium iodide alone.

In none of these six cases was there any history of goitre in the families, whereas in a large proportion of the other cases of congenital goitre reported one or both of the parents have been goitrous. Four of the six cases died shortly after birth as the result of tracheal compression; and in the two that survived—Sir A. R. Simpson's and my own—the thyroid underwent a
Hypertrophy of Foetal Thyroid.
progressive decrease in size from birth onwards—a phenomenon noted in most cases of true congenital goitre.

In Fothergill's and Hewetson's cases, in which the child died shortly after birth, detailed reports are given of the histological appearances of the glands. In the former there was a large quantity of glandular tissue of an adenomatous type, with many large blood-vessels in the connective tissue septa. In the latter the glandular tissue was not so abundant, being represented by a loose mesh-work of connective tissue, lined by round and flat cells in one or more layers, but the blood-vessels were very large and numerous, and Hewetson classifies it under the vascular or congestive type of goitre, which is the commonest type in congenital cases.

In neither case was there any colloid present in the acini. Although there is no histological report on Macdonald's case, the fact that there were variations in size within short intervals, apparently due to intermittent congestion, probably indicates that it also belonged to the congestive variety, and from the description of Sir J. Y. Simpson's case it may also have been of this type.

In the present case the enlargement of the thyroid is due to a general parenchymatous overgrowth of the gland. There is a large quantity of colloid present, the vesicles being widely distended with it, and a very little inter-vesicular substance is left. The cells lining the vesicles are low and compressed looking. In fact, the appearances are exactly those met with in parenchymatous goitres occurring in the adult (see Plate).

It must be remembered that the present differs from Fothergill's and Hewetson's cases in that the child was nearly four months old at its death, whereas theirs were only a few hours old. In Hewetson's case, moreover, the child was a seven months one. Then, again, the present child died after an acute febrile disease lasting for twelve days. What the exact condition of the gland was at birth can only be a matter
of speculation, but it can hardly have belonged to the vascular variety of goitre described by Hewetson, as the vessels in it are not at all numerous, and those present are not large or dilated. It is more likely that from the first it had been of the parenchymatous variety.

Such are the facts regarding these cases, but when we try to arrive at an explanation of them we are met with many difficulties.

In the first place, it is not possible to say whether the enlarged thyroid glands of these children were functioning or not. The absence of colloid in Fothergill's and Hewetson's cases would lead us to suppose that the glands were functionless, for it is the colloid which contains the active principle. But in my own case the presence of colloid does not necessarily point to functional activity, for colloid may be present and yet contain no thyroidin, which is the active principle, and without which the colloid is said to be inert. J. W. Simpson, in a paper on "The Thyroid Gland in Relation to Marasmus," recently published, points out that though colloid may be present in the thyroid glands of new-born children, and even premature infants, it may, on chemical examination, be found to contain no active principle; and he believes that new-born and young infants have little or no efficient thyroid secretion. In none of these six cases, unfortunately, has any chemical examination of the gland been made, so that we cannot say whether the glands were functionally active or not. That is the first difficulty.

Secondly, granting—which I think we must—that the hypertrophy of the foetal thyroid following drug treatment of the mother for repeated abortion in these cases was not a mere coincidence, two explanations are possible: first, that the hypertrophy is due to the action of the drug given; and second, that it is due to the condition of the mother's blood, which caused the abortions and necessitated the administration of the drugs.
If Hewetson's and my own had been the only cases of the kind recorded, we should have been strongly tempted to have ascribed the thyroid hypertrophy to the administration of potassium iodide, which is known to have some action on the thyroid secretion by virtue of the iodine which it contains. But, in the other four cases, only potassium chlorate was given, and no iodide. This serves to show how careful we must be in jumping to conclusions.

On the whole, I am inclined to think that the hypertrophy is just as likely to be due to the condition of the mother's blood as to the action of the drug given. Simpson points out that adults suffering from tuberculosis, alcoholism, and syphilis almost invariably have sclerosis of the thyroid gland, and that there is constantly a sclerosis in the gland of children of tuberculous mothers. As he puts it, "unhealthy parentage may produce degenerative changes in the thyroid of the offspring."

It is possible that in this is to be found an explanation of such cases as the present one and those previously recorded.

But in the present state of our knowledge of thyroid physiology, not to mention the diversity of opinion held regarding the mode of action of such drugs as potassium iodide and potassium chlorate, we cannot arrive at any definite conclusion as to their true etiology, and must meanwhile be content with placing them on record.

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Dr Ritchie thought they might congratulate themselves on having had a most interesting paper, giving one more case in addition to many already recorded, of the advantage of potassium iodide in cases where death of foetus occurred in utero. Dr Watson suggested they might try whether other potassium salts might not be equally useful. He questioned whether one was quite justified in making such experiments, when one knew the great advantage of iodide of potassium as an almost unfailing certainty. He had listened with great interest to Dr Watson's discussion as to the relation of the enlarged thyroid to the case, and he quite agreed that they could not come to any definite conclusion as to the precise relation. It seemed to be quite clear that debility, alcoholism, unhealthy conditions, were liable, in certain persons, to be followed by some peculiarity of the thyroid gland.

Dr Oliphant Nicholson thought Dr Watson had contributed a very valuable paper to the Society, and yet it seemed that, if possible, he had made an obscure subject still more obscure. The thyroid gland seemed to have a special affinity for iodine, which was evidenced by the fact that there was a large quantity of iodine in the thyroids of animals which were getting potassium iodide given to them along with their ordinary food. Iodine was certainly an essential element in the internal secretion of the gland; therefore the gland had to rely, in the ordinary way, upon the traces of iodine contained in the food. Thus when one gave potassium iodide to a person it might be assumed that the thyroid activity of that person was increased; the gland would pick the additional iodine out of the blood, and elaborate it into iodothyrin. The remarkable therapeutic properties of iodide of potassium in so many widely different pathological conditions were difficult to explain, unless the drug acted, as had been suggested recently, by modifying the thyroid activity in some way. Thus iodide of potassium and thyroid extract were to a certain extent interchangeable.
remedies in certain diseases. Iodide of potassium was often given quite empirically, e.g., in very large doses to arrest the secretion of milk. This was a very precise way of arresting milk, and it seemed quite probable that the result was brought about by the iodide producing some alteration in the thyroid activity. When the thyroid gland became enlarged in a young person—a parenchymatous goitre—such a condition certainly occurred in the first instance as the result of a call by the tissues for an increased supply of thyroid secretion. He thought it allowable to assume that in the foetus the same explanation held good—that for some reason the foetal thyroid was making an attempt to cope with increased work. Whether the extra secretion was called for to help the mother, or to meet some increased strain on its own metabolism, he could not say. The etiology of simple goitre was still very obscure; when occurring in certain districts in endemic form, it was due to the presence of something in suspension in the drinking-water of the district. If the people living in that district drank rain-water, they did not develop goitres. It was not yet proved whether the substance in the water was organic or inorganic, but recently Major M'Carrison had shown that large doses of thymol caused ordinary simple goitres to greatly diminish in size, and sometimes to disappear. He suggested that the condition was of bacterial origin. When that point was ascertained, it might throw further light on the occurrence of goitre in the foetus. Dr Chalmers Watson had carried out some interesting experiments in feeding certain animals on an exclusive meat diet, which might throw some light on these cases of foetal thyroid hypertrophy. Such a dietary induced a very marked hypertrophy of the thyroid gland. If the explanation was that the hypertrophy of the gland resulted because such a diet contained no calcium salts, it was a matter of considerable interest. The enlargement of a foetal thyroid might be connected in some way with a diminished amount of
calcium passing to it from the mother. During pregnancy it was known that the quantity of lime salts in the mother's tissues might vary very greatly from time to time. Dr Blair Bell had shown that the thyroid activity was closely related to the calcium exchange in the tissues. At present there were a great many isolated facts about the thyroid gland in relation to pregnancy and lactation, but it seemed impossible to correlate them and bring them into line—one fact seemed to be absolutely contradictory to another. Much more light was needed. He had always used potassium iodide throughout the course of pregnancy in cases where death of the foetus had occurred, and, in many cases, with very good results. Sometimes under this treatment a woman went to full term; at all events, one was generally able to prolong the pregnancy till the child was of viable age. He had never seen an enlarged foetal thyroid in these cases, because evidently the necessary factors for its production had not been present. Dr Watson had added an important contribution to a very interesting subject.

Dr Keppie Paterson had listened with great interest to the paper, and also to the remarks of the other speakers. Dr Nicholson's statement that he had treated several cases all through pregnancy, but had not found any case of enlarged thyroid, was an important contribution in itself. Referring to his own experience, he had given up the use of iodide of potassium. In practice he had attended many women with syphilitic abortions. They could be placed in two classes. In some there were definite signs of an attack of syphilis, with rash, falling out of the hair, and all the usual signs—these cases were rare; in most cases there was simply a syphilitic dyscrasia, the patient becoming thinner and weaker, with perhaps falling out of the hair. This bad state of general health occurred during a pregnancy and continued after the abortion or pregnancy was over. He had at first treated these cases with iodide of potassium, and perchloride of
mercury, but had very soon given up the use of the iodide, and for many years had only given the perchloride of mercury, and with very great benefit. Patients almost always fattened upon it, and one was then almost certain that they would carry to full time and bear a healthy child. How iodide of potassium or perchloride of mercury acted in the case of syphilis was probably due to some effect on the opsonins. He related an instructive case whom he had attended in a few pregnancies. She had two still-born children, and she came under his care during her third pregnancy, when he treated her with iodide of potassium and mercuric perchloride. This child was also still-born. He advised her to put herself under treatment whenever she again passed a period; this she did, and the treatment was efficacious, as she gave birth to a living child about full time, who has never shown any signs of congenital syphilis. At her next pregnancy she did not begin the medicine until about the fourth month, and this ended in a still-born child. Her next conception was treated very early, at the fifth or sixth week, with perchloride internally, and resulted in a healthy child. She was again careless at her next pregnancy, delaying the commencement of the drug, and it again ended in a still-birth. In most cases he gave $\frac{1}{2}$ gr. of perchloride of mercury thrice daily, beginning early until after the fourth month, and then only twice daily. In many cases a course of mercury during one pregnancy was enough, and subsequent pregnancies ended in healthy children. In other cases where there was a bad dose of parasyphilis, and where probably the husbands had a bad form of syphilis, it was necessary to give treatment during each pregnancy. He had used the perchloride in preference to any other form of mercury, as he had been taught in Vienna that in whatever form mercury was administered, even as inunction, it only did good because it was converted into the perchloride.

Dr Haig Ferguson said that the woman seemed to get a
fresh infection after each pregnancy. Dr Watson had mentioned that the husband had never been treated for syphilis. He had seen women treated for years for syphilis with iodide of potassium and mercury, but he had never seen a case of foetal goitre in such cases, though he had seen occasionally goitrous children without any history of treatment by iodide of potassium.

Dr Keppie Paterson had mentioned the treatment of pregnant women with mercury, and had spoken of the advantage of giving the perchloride. He, too, had found that mercury had a much better effect than giving iodide of potassium alone. The red iodide of mercury $\frac{1}{2}$ gr. was the preparation he used, combined with iodide of potassium 5 gr., for the purpose of dissolving it; this could be continued for long periods, and he had found it more satisfactory than the perchloride. He had had the same experience as Dr Paterson, in finding that patients taking the mercury became fatter and looked more healthy and better nourished than before. He added his thanks to Dr Watson for his suggestive paper.

The President said there were really two points brought out by Dr Watson very interestingly. The first was, the advantage of medicines given to the mother during pregnancy in preventing abortion and premature labour in cases of syphilis. This case had shown the benefit of potassium salts, and although they did not know how potassium chlorate acted, clinical facts warranted its use. The second point, as to the relationship of the enlargement of the foetal thyroid to the condition of the mother and to the medicine given, was quite a separate thing, but exceedingly interesting. Personally he had the growing impression that there was some connection, though it seemed to be extraordinary. The fact that foetal goitre was rare in the children of non-goitrous parents must be kept in mind. Six cases seemed a small number to draw conclusions from; still it was a very extraordinary coincidence, if it were simply a coincidence. There was the argument that iodide of potassium
was often given and yet the child was born without any goitre. That raised the whole question of placental transmission. The problem of antenatal therapeutics was not so simple. Some looked on it as giving the drug to the mother and producing the effect on the child. But in giving the drug to the mother, it might alter in its chemistry in her stomach, it approached the uterus through the circulation, in which again it might be altered; it was almost certain, as demonstrated by modern research, that the placenta altered things that passed through it, and it was not simply a question of transudation. It then reached the foetus, and the foetus itself might have an effect on it. Antenatal therapeutics was by no means simply a question of forcing a drug into a patient's stomach in order to have a definite effect. Another point was, that there was no doubt that the placenta did sometimes allow substances to pass through it, and at another time it would block the same substance, either through some subtle, chemical, or physical change in it or in the syncitium. He therefore did not think it right to exclude the possibility that the drug given to the mother might have some influence in producing enlargement of the thyroid, although not doing so in every case. Certainly every case should be recorded. A suggestion had been made two or three years ago that they should give mercury in these cases in the form of the oleate through the vagina, giving it topically. There were a great many much more favourable results when the drug was absorbed directly through the tissues, reaching the placenta and foetus more directly.

Dr B. P. Watson, in reply, thanked the Society for the kind way it had received the paper. There was really nothing he could add, in reply to the various speakers, to what had already been said in the paper.
MEETING VIII.—JULY 10, 1907.

Dr J. W. BALLANTYNE, President, in the Chair.

I. The following gentleman was elected an Honorary Fellow of the Society:—Dr med. Seichu Kinoshita, Professor of Gynaecology and Obstetrics, of Imperial University, Tokio, Japan.

II. Professor Kynoch showed—(a) CERVICAL FIBROID, weighing 12 lbs. The patient, a nullipara, æt. 48, had complained of pelvic discomfort for four years. Menstruation regular till two years before coming under observation; since then it had been irregular. Her chief complaint was intermittent attacks of retention of urine. On examination, the cervix was found high up and pressed against the symphysis pubis. The posterior fornix was filled with a hard, fixed tumour, the upper border of which reached to about 2 inches below the umbilicus. The fundus of the uterus was felt as a knob-like projection above the pubes and in front of the cervical tumour. On opening the abdomen the main tumour was found to be retroperitoneal. The posterior layer of peritoneum was opened, the tumour brought forward, and along with the slightly enlarged uterus was removed by supravaginal hysterectomy; the peritoneal opening being closed with a continuous suture.

(b) UTERINE FIBROID, complicated with pregnancy at the fourth month, removed by hysterectomy. The patient, æt. 36, complained of pelvic discomfort and frequent micturition when about four months pregnant. On examination, the cervix was found directed to the front, and the fundus reached half-way to the umbilicus. Through the posterior fornix there was felt a hard movable tumour connected with the uterus, but much harder in consistence. Attempts to push the tumour past the sacral promontory and retain it there failed. As it was obvious
that the fibroid tumour would cause absolute obstruction to the passage of a viable child, operation was decided on. As the tumour was fairly movable, and thought therefore to be pedunculated, it was hoped that its removal without interference with the pregnant uterus could be carried out. After its removal, however, the bleeding from the uterine wound was so persistent that it was thought safer to complete the operation by supra-vaginal hysterectomy. Both patients made very satisfactory recoveries.

III. Dr Ballantyne showed a copy of an edition of the Byrth of Mankynde of nearly one hundred years later than a copy he had previously shown to the Society.

IV. A SERIES OF FIVE CASES OF CAESAREAN SECTION FOR CONTRACTED PELVIS.


Since the opening of the Dundee Maternity Hospital seven years ago, there have been admitted forty-six cases of contracted pelvis, which have been treated as follows:—

(1) Extraction (breech presentation) . . . 1
(2) Spontaneous delivery (two premature labours) 10
(3) Forceps . . . . . . 9
(4) Version . . . . . . 4
(5) Craniotomy . . . . . . 2
(6) Induction of premature labour followed by symphseotomy . . . . . . 1
(7) Induction of labour . . . . . . 9
(8) Symphseotomy . . . . . . 3
(9) Cesarean section . . . . . . 7

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In reporting the following five cases of Cæsarean section performed for contracted pelvis, it is interesting to note that three of the patients belonged to Glasgow, where rickets is so prevalent, and consequently where so many cases of pelvic deformity are met with.

The following are the notes of my cases:

Case I.—J. Y., aged 21, was delivered of her first child eighteen months before admission to hospital. She had been thirty hours in labour, when repeated attempts to effect delivery by forceps in Walcher's position failed. Version was then resorted to, and a still-born, slightly premature male child was delivered, there being great difficulty in getting the after-coming head through the pelvis. She presented herself at the Dundee Maternity Hospital on 6th December 1903, supposed to be about eight months pregnant. She was of feeble intelligence, and consequently could give no history relating to her pregnancy. The date of her last menstruation, and of foetal movements, could not be ascertained. She was of healthy appearance; lungs, heart, and kidneys normal. She showed obvious signs of rickety deformity. Her height was 4 ft. 4 in., and there was antero-posterior curvature of both tibiae, less marked in the bones of the fore-arm. The pelvic measurements were as follows:

<table>
<thead>
<tr>
<th>Interspinous</th>
<th>9 ins.</th>
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<tbody>
<tr>
<td>Intercristal</td>
<td>9 ″</td>
</tr>
<tr>
<td>Diagonal conjugate</td>
<td>3 3/8 ″</td>
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True conjugate estimated at about 3 ins. The pelvis was of the small, flat, rickety type. Judging from the height of the fundus, the date of pregnancy corresponded to about the end of the eighth month.

Forceps and version having failed to deliver a living child
in her previous pregnancy, the alternative methods of delivery were—

(1) Induction of premature labour.
(2) Craniotomy (in the event of forceps failing at full time).
(3) Symphyseotomy.
(4) Caesarean section.

Craniotomy was at once excluded, for as Sängar has stated, "the medical practitioner who does craniotomy on the living child in a case in which the patient can be removed to a hospital in order to undergo Caesarean section, with preservation of the child's life, has fallen behind the requirements of the times."

The induction of premature labour would have been almost absolutely favourable for the mother, whilst for the child the chances would have been almost proportionally unfavourable, brought up as it would have been in the most unsanitary surroundings. With regard to symphyseotomy, the degree of pelvic contraction in this case was perfectly suitable for this method of delivery. But its immediate mortality is not any lower than Caesarean section performed under the most favourable conditions. It permits of, but does not deliver the child, and it prevents the patient being sterilised, if this is deemed advisable. With the ever-improving results of the Caesarean operation, the indications for symphyseotomy will probably come to be narrowed down to cases where forceps in Walcher's position fail, instead of being a recognised method of delivery at a pre-arranged date. The conditions being favourable, in the interests of both mother and child, for Caesarean section, and as it was specially desirable in this case to prevent further pregnancies, I decided to let the patient go on to full time, and do the operation at a pre-arranged date. On the 2nd January, the patient having been prepared as for
an ordinary abdominal section, and before the onset of labour, I performed Cesarean section after the method of Cameron. The child's back was directed to the left side, head presented, heart sounds distinct. The abdomen was opened in the usual way, the incision extending from an inch above the umbilicus to 2 inches above the symphysis pubis. The uterus having been fixed in a symmetrical position, it was surrounded by large flat sponges. A flat vulcanite pessary was placed in the middle line below the fundus, and pressed on, in order to permit of the uterus being opened with a minimum loss of blood. The membranes being exposed, the uterine incision was extended downwards, the membranes ruptured, and the child delivered head first, the placenta attached to the posterior uterine wall being easily detached. The uterus was then turned out of the abdomen, the edges of the incision everted, and the upper and lower angles compressed by an assistant. Eight deep and six superficial silk sutures were inserted into the uterine wound, the mucosa not being included. The Fallopian tubes were then tied in two places and divided. The uterus responded well to sponge pressure, and contracting satisfactorily, it was returned into the abdomen, and the abdominal incision closed by through and through silkworm gut sutures. The child, a female, weighing 6 lbs. 12 oz., was slightly asphyxiated, but soon responded to artificial respiration. With the exception of a rise of temperature to 101° on the second day, the after progress of the case was an absolutely satisfactory one. The child was put to the breast at the end of a week, and was nursed throughout the period of convalescence.

Case II.—Mrs G., aged 21, primipara, came under my observation on the 16th February 1906. She stated that labour had been in progress for about twenty-four hours, and that the membranes ruptured soon after labour began. She was a very
small woman, with marked curvature of the bones of the legs. Her general condition was satisfactory, and beyond a slight trace of albumen in the urine, the various systems were normal, pulse 84. Pelvic measurements:

Interspinous . . . . 8½ ins.
Intercristal . . . . 8 "
Diagonal conjugate . . . 3 "
True conjugate under . . . 2½ "

The child's back was directed to the right side, head movable above the brim in the transverse diameter, and the os half fully dilated. Cæsarean section being decided on, the operation was performed as in the previous case. The placenta was attached to the anterior uterine wall. The child—female—mature, weighing 6 lbs., was nursed during convalescence, and both left hospital well, three weeks after operation. It was ascertained later, however, that the child had died when two months old.

Case III.—Mrs C., aged 26, ii.-para, was admitted to the Maternity Hospital on 24th January 1906, at the eighth month of pregnancy. The history given by her doctor was that she was delivered of her first child in September 1904. She had been long in labour before sending for assistance. Attempts to deliver with forceps having failed, craniotomy was resorted to, and with great difficulty the child was pulled through the contracted pelvis. She was sent to hospital as a case suitable for Cæsarean section. She was of healthy appearance, her height was 4 feet 6 inches. She had a wabbling gait, and there was slight curvature of the bones of both legs. The pelvic measurements were as follows:

Interspinous . . . . 7¾ ins.
Intercristal . . . . 8½ "
Diagonal conjugate . . . 3¼ "
True conjugate . . . . 2¾ "
It was decided to keep her in hospital till full time, and to operate at a pre-arranged day and hour.

At 10 A.M., on 21st February, and before the onset of labour, Cæsarean section was performed, the steps of the operation being the same as in the previous cases. After the removal of the placenta and membranes I passed my finger into the cervix from above, in order to be satisfied as to the patency of its canal. This I found to be very considerably stenosed, as a consequence probably of injuries received during the manipulations necessary to effect delivery at the first confinement. I then passed a uterine sound through the cervix and closed the uterine wound. At first there was pretty copious bleeding through the cervical canal, but with the application of continuous sponge-pressure the uterus contracted satisfactorily. Both tubes were ligatured and divided. Ergotin was given hypodermically immediately before and after operation. The child, a male, weighed 6½ lbs., and left the hospital well.

The patient's condition remained satisfactory during the first forty-eight hours after operation. After this she got restless. Pulse became quicker, and she died on the evening of the fourth day with all the signs and symptoms of septic peritonitis. At the post-mortem all the uterine sutures were intact, but the upper two had become infected, as shown by the presence of pus in their track.

Case IV.—Mrs N., primipara, aged 31, was admitted to the Maternity Hospital at midnight on 27th December 1906, having been in labour for seven hours. Except for chronic dyspepsia her previous health had been good, and the examination of the various systems (beyond a trace of albumen in the urine) presented nothing abnormal. Temperature normal, pulse 76, and general condition satisfactory. On pelvic examination, the cervix was found dilated to the size of a five-shilling piece, membranes ruptured, and the head was lying above the pelvic
brim in the transverse diameter. The pelvic measurements were as follows:—

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<th>Measurement</th>
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<tr>
<td>Interspinous</td>
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<tr>
<td>Intercristal</td>
<td>10 &quot;</td>
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<tr>
<td>Diagonal conjugate</td>
<td>3 1/4 &quot;</td>
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<tr>
<td>True conjugate</td>
<td>2 3/4 &quot;</td>
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Cæsarean section was performed as in the previous cases. The child weighed 6 lbs., and measured 20 inches. On 31st January the urine was free from albumen. Both mother and child progressed favourably, and left the hospital on 5th February.

**Case V.—** E. M., primipara, aged 22, was admitted to hospital in labour on 23rd February 1907. She was of healthy appearance, her height was 4 feet 3 inches, and there was well-marked lumbar lordosis and curvature of both tibiae. Examination of the various systems presented nothing abnormal. The os was dilated to the size of a half-crown piece, and the membranes were unruptured. The pelvic measurements were as follows:—

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<th>Measurement</th>
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<tbody>
<tr>
<td>Interspinous</td>
<td>8 ins.</td>
</tr>
<tr>
<td>Intercristal</td>
<td>9 &quot;</td>
</tr>
<tr>
<td>Diagonal conjugate</td>
<td>3 1/2 &quot;</td>
</tr>
<tr>
<td>True conjugate</td>
<td>2 3/4 &quot;</td>
</tr>
</tbody>
</table>

Cæsarean section was performed as in previous cases. The child (male) weighed 6 lbs. 12 oz., and measured 19 inches. Both mother and child made satisfactory recoveries, and left the hospital on 5th April.

There are a few points connected with this operation which the experience of these cases suggests. First, a comparison of the methods of treating the uterus after delivery of the child,
and these are—(a) Hysterectomy (partial or complete); (b) Retention of the uterus, with sterilisation, either by division or resection of the tubes; (c) Leaving the uterus without sterilisation, the true conservative operation. Each method has its advocates. With regard to the ethics of sterilisation there are two conflicting opinions. On the one hand, we have authorities who think that the question is one for the patient to decide; on the other hand, there are those who hold that the operator should restore the patient to as normal a condition as possible, omitting any method of sterilisation, and repeating the operation of Caesarean section if occasion should arise. The first case which I have reported is one where it would have been unwise to leave the decision to the patient, as her intelligence was so feeble as to prevent her being able to look after herself properly, far less a family. The second case, however, where the patient was sterilised at the time of operation and where the child died when two months old, would favour the proposal that sterilisation might with advantage be deferred until a second child had been delivered by Caesarean section. Granted that the patient is intelligent enough to understand the situation, and that she is willing to undertake the risk of a second operation, then sterilisation may be omitted at the first operation. Many cases are now reported where the operation has been repeated successfully two, three, and four times on the same patient. Yet I hold that it is not justifiable to endeavour to break the record of the well-known case of Frau Rittgen, whose pluck in submitting to Caesarean section five times led to a fatal termination at the fifth repetition of the operation. In all the cases I have reported the patients were sterilised by ligature and division of the tubes. This I consider a reliable enough method, and safer to the patient than hysterectomy, which I think should be restricted to cases of atony and suspected infection of the uterus. Another question which suggests itself is, What is the best time to operate? In three of my cases labour had already
commenced, and in two the operation was performed at a pre-
arranged date, and before the onset of labour. Those who
recommend waiting till labour has begun, do so because they
think there is less chance of hæmorrhage from uterine atony,
and that a dilated condition of the cervix ensures freer escape
of the lochial discharge. The first fear is groundless, for the
uterus contracts quite as well before as after the onset of
labour. That a dilated condition of the cervical canal is of the
greatest importance, is shown by my unsuccessful case. Here
the cervical canal was so stenosed as only to admit a uterine
sound, and although this appeared to be sufficient to permit of
escape of the lochial discharge, as shown by the occurrence of
pretty free bleeding after the operation, yet I feel convinced
that if dilatation of the cervix up to the size of a two-shilling
piece had preceded Cæsarean section, the case would have run
as favourable a course as the others. In my first two cases I
incised the uterine wall between the bars of a flat vulcanite
pessary, as recommended by Cameron, to diminish the hæmorr-
hage during the uterine incision; but I discarded it in my other
cases, and did not find any marked difference in the amount of
bleeding as a result. Further, hæmorrhage during the operation
I have found to be best controlled by an assistant grasping the
broad ligaments, and subsequently maintaining uterine con-
traction by sponge-pressure. In all my cases the uterine
incision was a vertical one, and so far as I am aware the trans-
verse incision of Fritsch does not seem to have proved itself in
any way superior. Lastly, with sterilised towels well packed
round the uterus, it is not necessary to adopt Müller's suggestion
of eventrating the uterus before opening it, as this involves a
very large abdominal incision. But after the uterus has been
emptied of its contents, and as a consequence diminished in
bulk, the introduction of the uterine sutures is facilitated by
bringing the uterus outside the abdomen.
Dr Barbour said they were very much indebted to Professor Kynoch for the extremely interesting paper, and congratulated him very heartily on the success of his cases. In Edinburgh they had not so many cases of contracted pelvis, and therefore their experience in the Maternity Hospital here was limited. He quite agreed with Professor Kynoch in all the points he had raised. He thought he was right in saying that the best time for operation was before labour was begun. He thought he was also right as to the sterilisation of the patient. Unless the patient herself was very anxious to undergo the operation a second time, he thought they ought to do the best thing for the mother; and as there was a certain risk in the operation of Cesarean section, and if they secured the one living child, they had done all they were justified in aiming at. With regard to the question of the cause of death in the case that had died. It was an interesting case. He was not quite clear that the infection had started from the uterine cavity—the sutures had not been passed through the mucosa. In all the cases mentioned, the average amount of the contraction seemed to be about 2½ inches. He thought Professor Kynoch was also right in declaring in favour of Cesarean section rather than symphyseotomy. He had not had any experience of symphyseotomy, but in one case of pubotomy the convalescence had been very protracted. Cesarean section was undoubtedly the preferable operation. He was also interested to hear that the patients were able to nurse their children.

Dr Munro Kerr had been specially interested in this report of cases of Cæsarean section, because they had so many of them in the Glasgow Maternity Hospital. It was specially interesting that three of the cases were from Glasgow. Professor Kynoch had raised a number of interesting points. He would be pardoned if he spoke for rather longer than usual on one or two of the points, for he was now speaking from an experience of fifty-four cases of the operation. First, as to the time
of the operation. He had not found it had made much difference whether the operation was performed during or before labour. In primiparæ there had sometimes been difficulty and discomfort from after-pains, which looked as if the patients had been suffering from retention of the lochial discharge. So much had these cases impressed him that in primiparæ now he waited, if possible, till labour had commenced. In multiparæ he always arranged to operate before labour had begun. From his experience he would say that Professor Kynoch was quite right in saying that after emptying the uterus before labour commenced there was seldom any bleeding, and in only one of his cases had there been excessive bleeding that could not be controlled, and which had necessitated the removal of the uterus. This case had been brought from the country, some seventeen miles, and had been in labour some hours before she started her journey. She was considerably exhausted by the journey and by continuous uterine contractions. In all his other cases there had been no post-partum haemorrhage; the uterus had contracted well. With regard to the abdominal incision, Professor Kynoch had described what used to be the custom—making the incision from about an inch above the umbilicus down to within about an inch of the symphysis. He thought this was a mistake, and most modern operators made the incision as high as possible, so as to cut into the upper part of the uterus and avoid any approach to the lower uterine segment. With the old incision, in extracting the child, if the incision was not quite large enough, one might get a nasty tear of the lower uterine segment. Consequently there was great advantage in opening the uterus high. Further, with the high wound there was better union and less chance of hernia. With regard to the delivery of the child, Professor Kynoch had mentioned delivery by the head first, but Dr Munro Kerr had found it much easier to seize the legs and extract by the legs. A rather important point was the turning out of the
uterus before opening it, or opening it as it lay in the abdominal cavity. He thought what Professor Kynoch had said as to packing round with towels prevented the necessity of turning it out at all. If it were turned out, a larger abdominal incision was necessary. The only cases in which he thought it was advisable to turn out the uterus were those cases where the membranes had ruptured some time before. In such cases it was a distinct advantage to turn it out and pack round with sterilised towels, and open. In some of these cases he had actually not removed the placenta through the uterus, but had pushed it out through the vagina, and as far as possible swept everything downwards. In opening the uterus, he had quite given up the pessary. It was really quite unnecessary. It was of no value where the placenta was attached anteriorly. It certainly did slightly control the bleeding when the placenta was attached posteriorly, but was not in the least necessary. All other writers, in recent years, on Cæsarean section, were of the same opinion. As to the question of sterilisation, it was very difficult to express an opinion. The ethical question was a very subtle one, and he was not prepared to take up any position regarding it. In a sense, as medical men they were not concerned with anything but doing the best for the patient. They were not concerned with future pregnancies; that was for her husband and herself to decide. He thought there was a good deal to be said for those who took up the rational position, and said a woman should not be sterilised. Still, on the other hand, as an ordinary human being, he felt sorry for a woman who had to have her abdomen opened several times. There was no doubt that, if she went on having her abdomen opened time after time, she would die from the operation; that is to say, her chances of dying were increasing each time. It was not correct to say that one could open the abdomen repeatedly without opening the peritoneal cavity, because it was shut off by adhesions. In five or six such cases he had had, in only one
case was the peritoneal cavity completely shut off, and he was able to open into the uterus extra-peritoneally. In the other cases it had been quite impossible to open the uterus without opening into the peritoneum. In this connection he would mention two patients who had come to him after being sterilised by having their tubes tied and cut, who had each of them lost their children. In the first case he had said that nothing could be done, that there was no further chance of her becoming pregnant. In the second case he was prepared to resect the ends of the tied tubes, and try to make a permanent passage again between the uterus and the ovary. He had not said this on the off-chance of it being successful, but because he had seen two cases where the abdomen had been opened subsequently to Caesarean section in which the tubes had been tied, and the tubes were found quite patent. The silk had cut through the tubes, and in both of these cases it would have been possible to have joined together the ends of the tubes, with a great probability ofestablishing a permanent passage between the uterus and the ovary again. That was his only reason for sterilising by tying the tubes, and not by removing the uterus. He did not agree with Professor Kynoch that it was a safer operation to leave the uterus behind; he thought that the safest operation and the one that gave the best results was that of removing the uterus. In taking away the uterus, all the dangers of the puerperium were removed, and the operation was not a difficult one, especially if the woman was not in labour, and the cervical canal had not become dilated. If the patient were in labour, and the canal become dilated, there was a large stump to stitch up and close, and the operation was then a little more complicated. As regards the position of Caesarean section and symphyseotomy, he entirely agreed with Dr Kynoch and Dr Barbour that Caesarean section was preferable, and he thought Professor Kynoch had put the position of symphyseotomy in exactly the
right way, namely, that it should be reserved for these cases where one just failed to deliver with forceps. The amount of pelvic contraction should be carefully estimated, and then forceps should be tried, and if one found one wanted a little more room, then symphyseotomy might be done. He had had nine cases of symphyseotomy, and had never seen any trouble afterwards in locomotion, and all the children had been delivered alive; and only one of his patients had had a bad urethral tear (a primipara); the others had made a satisfactory recovery. He believed the reason was that he had chosen these cases with very great care. As to his results from Caesarean section, the maternal mortality in fifty-four cases was 5.9 per cent. The foetal mortality—one child had died, and a second had died in hospital—giving an early and late mortality of 2 out of 54, or 3.7 per cent.

Dr Lamond Lackie said his experience of the operation was limited, for though he had assisted several times at the operation he had had only one case of his own. For that he was indebted to Dr Haultain, who during his last term of duty at the Maternity Hospital allowed Dr Lackie to do the operation. The indication was deformed pelvis, and the conservative operation was performed. On the following day the patient had acute pneumonia, and was dangerously ill for a week. The abdominal wound became septic, and this took months to heal, but now the patient was well. Dr Lackie agreed with what had been said about sterilising the patient; in the majority of cases it was desirable. He had listened with great interest to the record of Professor Kynoch's series of cases.

Dr Ritchie asked what sutures had been used.

Dr Kynoch replied that he had used silk.

Dr Munro Kerr used catgut—size 1 or 2; at first, catgut sterilised by Jellett's method—later, Van Horn's.

The President wished to refer to one or two points. As to closing the incision, long ago they used to have successful cases
with no closure of the uterine incision at all. He remembered, some years ago, that a writer from Italy sent to him for details of the operation as performed here, and one of the questions was as to whether the incision was closed here. He said it had been a common thing not to close the incision with them, and the patients had made a good recovery. He had intended to have dwelt a little on the legal aspect of sterilisation, but as Professor Kynoch had to leave to catch a train, he would not now speak upon it.

Professor Kynoch, in reply, said he was very much obliged to the Fellows who had spoken. He did not read the paper thinking that he had in so few cases anything original to say, but because of the opportunity of raising some questions in connection with the operation. There was one point to which he would refer regarding his unsuccessful case. Dr Barbour had asked if his sutures had included the lining membrane of the uterus. They had not done so, and it was a question whether the retention of the lochial discharge or infection of the suture employed was the cause of the sepsis. That would be a point which would be greatly in favour of sterilisation by means of hysterectomy. At the same time, Dr Kerr, with his large experience, insisted upon a certain amount of dilatation of the cervix, so that this must be a point of great importance in the success of the operation.
V. THE "BYRTH OF MANKYNDE."

(ITS CONTENTS.)

By J. W. Ballantyne, M.D., F.R.C.P. (Edin.), F.R.S. (Edin.), Lecturer on Midwifery and Diseases of Women, Surgeons' Hall and Medical College for Women, Edinburgh; Physician to the Royal Maternity Hospital, Edinburgh; and President of the Edinburgh Obstetrical Society.

I have already ¹ dealt with the author and the editions of the remarkable book known as the Byrth of Mankynde; and I now intend to complete the consideration of the subject by discussing the contents of the work and the light thus thrown upon sixteenth century midwifery. Before I do so, however, let me remind the reader that Raynalde's Byrth of Mankynde is really a composite work, for it contains an English translation (by Richard Jonas) of Rösslin's De Partu Hominis, along with new matter added by Thomas Raynalde. It has, therefore, three component parts: Rösslin's De Partu Hominis as translated by Jonas, his additions thereto, and those which came from the pen of Raynalde. In such a late edition as that of 1654, a fourth element is found in the supplementary matter added by a seventeenth century editor whose name we do not know; but it is small in amount, consisting chiefly of directions for the nursing of children, and no further reference will be made to it.

For purposes of description I might have taken any one of the first four Raynalde editions (those of 1545, 1552, 1560, and 1565), for it is probable that they all appeared during the lifetime of Raynalde; ² but I have chosen that of 1560,

² Raynalde is not likely to have been alive when the 1598 edition appeared.
for it represents what was practically the final recension of the work, and does not differ (save only in spelling and minor details) from so late an edition as that of 1654. The quotations which occur throughout this article are, therefore, to be regarded as taken from the 1560 edition except when it is otherwise stated. At the same time, I shall now and again refer to differences existing between the various editions, which may appear to have an interest other than the merely typographical and orthographical; and I shall draw attention to the very marked differences which are revealed by a collation of Jonas’s edition of 1540 with those edited by Raynalde from 1545 onwards. Further, when I reach, in the description, the part of the book which is a translation of Rösslin’s De Partu Hominis, I shall devote some space to the consideration of this German obstetrician’s life and work.

The contents of Raynalde’s Byrth of Mankynde, it need hardly be said, have a special interest for obstetricians. The book stands, so to say, between the old and the new in obstetrics: empiric midwifery was, in 1540, beginning to give way before the advance of scientific obstetrics, although many years had still to pass before the knowledge of the anatomy and physiology of labour and the principles of anaesthesia and asepsis were to sweep away the practices begotten of ignorance and superstition. The year 1550, in which Paré introduced podalic version into obstetric practice, has usually been regarded as marking the separation between the midwifery of the past and that of the present; if this be so, then Raynalde’s Byrth of Mankynde appeared at the very time when the great transition from the empiric methods of the ancients to the scientific procedures of the moderns was being brought about. It cannot fail to be a matter of the most intense interest to know what were the practices and principles of midwifery in England in the middle of the sixteenth century, and we find them both revealed to us in Raynalde’s book.
THE "BYRTH OF MANKYNDE,"

THE PRELIMINARY MATTER.

The preliminary matter in a typical Raynalde edition of the *Byrth of Mankynde* (such as that of 1560) consists of the title page, the Aristarchus preface, and the table of contents. In the single Jonas edition of 1540 there is the title page, the religious admonition, the dedication to Queen Catherine, the table of contents, and a table of weights and measures.

The *Title Page* differs little, so far as wording is concerned, in the various editions prior to that of 1654. That of the 1560 edition reads as follows:—"The Byrth of || mankynde, otherwise na || med the womans || Booke. || Newly set foorth, corrected and || augmented: whose contentes ye || may reade in the Table of the || Booke, and most playne || ly in the Pro || logue. || By Thomas Raynalde || Physition || 1560." The titles of the 1545 and 1552 editions are similar, and no alteration of note appears until 1598, when the title reads: "The birth of man || kinde, otherwise || named the Wo || mans Booke. || Set foorth in English—by Tho || mas Raynalde Phisition, and || by him corrected, and aug || mented. Whose con || tents yee may reade || in the Table fo || lowyng: || but most playnely in || the prologue." One or two slight differences are to be noted in the editions of 1604, 1613, 1626, and 1634, and then there occurs the radical change of the 1654 edition (see Plate XIV. in my previous article, *loc. cit.*, p. 266).

The wording of the title page of the Jonas edition is, as might be expected, somewhat different: "The Byrth of Mankynde, newly translated out of Laten into Englysshe. In the which is entreated of all suche thynges the which chaunce to women in theyre labor, and all suche infyrmities whiche happen unto the Infantes after they be deluyered. And also at the latter ende or in the thyrde or last boke is entreated of the Conception of mankynde, and howe manye wayes it may be letted or furtheryd, with diuers other fruytefull thynges, as
doth appere in the table before the booke. Cum privilegio Regali, ad imprimendum solum.”

The ornamental border of the title page differs greatly in the different editions which were published before that of 1654, in which it entirely disappears; but with this matter I have already dealt fully in my first article (loc. cit.).

The reverse side of the title page contains (in the 1560 edition) a short Preface, in English, commending the work in modest terms to midwives and matrons. The same preface appears in Latin in the 1545 and 1552 editions, and in English in all the others, but it is not always printed on the reverse side of the title page. I have reproduced it in Plates II. and XIII. of my former article, both in its Latin and in its English form. Since it begins “Albeit some Aristarchus,” I have named it the Aristarchus Preface.

The Aristarchus Preface is absent from the Jonas edition of 1540; but, occupying the corresponding position, there is a religious admonition which reads as follows (in ordinary English): “Unto the Reader. An admonition to the reader. For so much as we have enterprised the interpretation of this present book, offering and dedicating it unto our most gracious and virtuous Queen Katherine only, by it minding and tending the utility and wealth of all women, as touching the great peril and dangers which most commonly oppresseth them in their painful labours, I require all such men in the name of God, which at any time shall chance to have this book, that they use it godly and only to the profit of their neighbours, utterly eschewing all ribald and unseemly communications of any things contained in the same, as they will answer before God, which, as witnesseth Christ, will require a count of all their words, and much more then of all ribald and uncharitable words. Everything, as saith Solomon, hath his time, and truly that is far out of time, yea and far from all good honesty, that some use at the common tables and without any
difference before all companies, rudely and loudly to talk of such things, in the which they ought rather to know much and say little, but only where it may do good, magnifying the mighty God of nature in all his works, compassionating and pitying our even-Christians, the women which sustain and endure for the time so great dolor and pain for the birth of mankind and deliverance of the same into the world. Praise God in all His works."

The rest of the preliminary matter of such an edition as that of 1560 consists of the Table of Contents, as we should now call it, or, as it is here termed, simply the Table. I have collated the Contents of the 1545, 1552, 1560, and 1654 editions, and I find them to be almost identical, except, of course, with regard to the spelling, type, and pagination. There are, however, one or two small divergences; thus, in the editions of 1545 and 1654 there is a heading in the third book ("Remedy for the Cramp, or distention of members") which does not appear in the other two editions referred to, but the presence of the heading does not indicate the addition of new matter in the text; again, in the 1545 and 1552 editions, eleven Anatomical Figures are named, and nine only in the 1560 and 1654 editions. In the 1560 edition (in my copy at least) the "byrthe fygures" (seventeen in number or eighteen, if the "stoole" be counted) follow after the Table of Contents; but in several of the other editions they are inserted at the end of the fourth chapter of the Second Book, their proper place according to the modern rules of binding.

Before we reach the Table of Contents of the Jonas edition of 1540, we find additional preliminary matter consisting of the Dedication. It is so interesting that I reproduce it here in full. Some parts of it, it may be added, reappear in the Prologue to the Women Readers which is peculiar to the Raynalde editions. In ordinary English it reads as follows:—

1 Even-Christen or even-Christian meant fellow-Christian.
"Unto the Queen. Unto the most Gracious, and in all
goodness most excellent virtuous Lady Queen Katherine, wife
and most dearly beloved spouse unto the most mighty sapient
Christian Prince King Henry the VIII. Richard Jonas wisheth
perpetual joy and felicity. Whereas of late (most excellent
and virtuous Queen) many goodly and proper treatises, as well
concerning holy scriptures, wherein is contained the only
comfort and consolation of all godly people: as other profane
arts and sciences right necessary to be known and had in use,
have been by the painful diligence of such clerks which have
embusied them in the same very earnestly and circumspectly
set forth in this our vulgar English tongue, to the great
enriching of our mother language, and also the great utility and
profit of all people using the same, and among all other things,
out of the noble science of Physick, have been divers proper
and profitable matters compiled and translated from the Latin
tongue into English, by the reading of the which right many
have confessed themselves to have received great light and
knowledge of such things, in the which they have found no
small comfort and profit. And in this behalf there is in the
Latin speech a book entitled De Partu Hominis: that is to say,
of the birth of mankind, compiled by a famous doctor in
Physick, called Eucharius, the which he wrote in his own mother
tongue, that is, being a German, in the German speech,
afterward by another honest clerk at the request and desire of
his friend transposed into Latin: the which book for the
singular utility and profit which ensueth unto all such as read
it, and most specially unto all women (for whose only cause it
was written) hath been in the Dutch and French speech set
forth and imprinted in great number, so that there be few
matrons and women in those parts but (if they can read) will
have this book always in readiness: considering then that the
same commodity and profit which they in their regions do obtain
by enjoying of this little book in their maternal language, might
also ensue unto all women in this noble realm of England, I have done my simple endeavour for the love of all womanhood, and chiefly for the most bound service which I owe unto your most gracious highness to translate the same into our tongue. Most humbly desiring first your grace's highness, and then consequently all noble ladies and gentlewomen with other honest matrons to accept my pains and goodwill employed in the same: the which thing as I do not doubt for the wont and incomparable benignity goodness and gentleness inset and planted in your grace's nature, so shall it be no little encouraging unto me hereafter with farther deliberation and pains to revise and oversee the same again, and with much more diligence to set it forth. For considering the manifold daily and imminent dangers and perils, the which all manner of women or what estate or degree they be in their labour do sustain and abide: yea many times with peril of their life, of the which there be so many examples needless here to be rehearsed. I thought it should be a very charitable and laudable deed, yea and thankfully to be accepted of all honourable and honest matrons if this little treatise so fruitful and profitable for the same purpose were made English, so that by that means it might be read and understood of them all, for as touching midwives, as there be many of them right expert, diligent, wise, circumspect, and tender about such business, so there be again many more full undiscrete, unreasonable and far to seek in such things the which should chiefly help and succour the good women in their most painful labour and throngs. Through whose rudeness and rashness only I doubt not, that a great number are cast away and destroyed (the more pity). For this cause and for the honour of Almighty God, and for the most bound service the which I owe unto your grace, most gracious and virtuous queen, I have judged my labour and pains in this behalf right well bestowed, requiring all other women of what estate soever they be, which shall by reading of
the same find light and comfort, to yield and render thanks unto your most gracious highness, wishing greatly that it might please all honest and motherly midwives diligently to read and oversee the same, of the which although there be many which do know much more peradventure than is here expressed, yet am I sure in the reading of it their understanding shall be much cleared and have somewhat farther perseverance in the same. It is no small charge which they take upon them, for if when any strange or perilous case doth chance, the midwife be ignorant or to seek in such things which are to be had in remembrance in that case, then is the party lost and utterly perished, for lack of due knowledge requisite to be had in the midwife. Wherefore I beseech Almighty God that this my simple industry and labour may be through your grace unto the utility, wealth, and profit of all English women, according to my utter and hearty desire and intent, to whom also I daily pray long to preserve and prosper your most gracious highness, both to the continual comfort and consolation of our most redoubted and without comparison most excellent Christian prince, and also the joy and gladness of his loving subjects. Amen.”

Of course, the Table of Contents of the 1540 or Jonas edition differs much from those of the Raynalde editions of 1545, 1552, 1560, etc. There is no reference in it to a Prologue, for no such thing exists in the 1540 issue, unless we regard the Religious Admonition and the Dedication as jointly constituting one. Then, we note the absence of the first thirteen chapters of the first Book of all the Raynalde editions; and the sixth chapter of the fourth Book of the Raynalde editions, containing the cosmetic suggestions or “bellifying receipts,” is not represented in the Table of Contents of the 1540 edition. Roughly speaking, the Jonas or 1540 edition contains the second, third and fourth Books of the Raynalde editions, plus the last chapter of the first Book and minus the last chapter of the fourth Book of these later editions. But I have already, in my former
article, set forth in detail the differences between the Contents of the two issues (loc. cit., p. 248).

In the 1540 edition the preliminary matter closes with two interesting paragraphs dealing with weights and measures and with drugs and apothecaries; they are peculiar to this edition. The former is introduced in these words: "For because that in this book many times be found certain measures and weights of physic, not known peradventure to all such as that chance to read it, therefore here briefly I have set them forth, showing the value and estimation of them so far as they shall be requisite to the better understanding of such things the which ye shall read in the same treatise." Then follows the table of the weights and measures, the pound being stated to contain 5,762 grains. The second paragraph refers to the obtaining of the drugs named in the text of the book, and reads thus: "Ye shall also note here that many times ye shall happen upon strange names of such things the which are occupied about infirmities spoken of in this book, for the which theyr is no English but are used in their own proper names of Greek or Latin: and they are such for the most part which are to be had only at the apothecaries, being of them right well known; wherefore when ye shall need any such thing if ye send the same names in your bill to the apothecaries they will soon speed your purpose: neither do this if ye may without the advice of some expert and learned physitian."

I have now enumerated all the parts of the preliminary matter, both as found in the Raynalde editions of the Byrth of Mankynde and in that first edition with which the name of Richard Jonas is associated. I now pass to the Prologue, which is to English readers perhaps the most attractive part of the work.
To the English obstetrician, as well as to the student of the manners and customs of the sixteenth century, the *Prologue to the Women Readers* will be by far the most interesting part of the book. It is not a translation of anything in Rosslin; it is not indeed a translation of anything at all. We may regard it as a piece of original writing fresh from the mind of Raynalde, giving the history of the work and throwing an important sidelight upon the way in which obstetric matters were looked upon in England in the middle of the sixteenth century. There are, it is true, a few passages in it which are reminiscent of some parts of the *Dedication to Queen Katherine* in the 1540 edition; but the greater part of it must be ascribed to Raynalde.

The intent of the author ("the entent of thatautour") is to recite the sum and chief contents of the book, for it is "a great pricke or allurement, entising and meuinge a man, to reade any boke, when he is somwhat first admonyshed of the matters comprehended and contayned therein." Then, without giving any names, Raynalde tells how the studious and diligent clerk [Jonas, to wit] made the English translation of the Latin work [by Rosslin] entitled *De Partu Hominis*, and called it "the byrth of mankynde"; it is now to be named "the womans boke." That translation is now to be corrected and augmented, revised "from top to to," as the writer quaintly says; and there are to be "set forth and evidently declared al the inward partes of women, and that not onely in wordes, but also in lyvely and expresse figures." Raynalde beseeches the midwives who will read his book to pay special attention to these anatomical matters, for, he adds, "when a person is sycke or dyseased in any part, it is halfe a comfort, yea halfe his helth,

1 There is a "Prologue" in Rosslin's *De Partu Hominis* (edition of 1538, Paris), but it has nothing in common with Raynalde's.
to understand in what part the dysease is, and howe that parte lyeth in the bodye."

The second part of his book ("the seconde booke") is to concern itself with labour, "with the byrth of mankind and al the daungers, perels, and other cases happenyng to the labourynge woman at that season." This portion of the work is to be illustrated with the Byrth Fygures and the picture of the Womans Stoole; the first part had the anatomical figures from Vesalius to elucidate the text.

The third book considers the choice of a wet nurse. "Item medicines encreasyng, deminishinge, attenuatyng, engrossinge, and amendynge the mylke in the nources brestes. Also remedies for manye and sundry diseases, which oft tymes chaunce unto infants after theyr byrth."

In the fourth book the author proposes to discuss the question of conception and the overcoming of sterility. "And farther in this last booke shall be utterd and set forth certayne embelleshinge receptes concerning onely honeste and helthsome decoration and clenlynes." The writer evidently feels that he is on dangerous ground, for he adds that he is to teach "nothinge in that place but that onely whiche may make to the honest, comely, and commendable conservinge and maintaininge of the inset and natural beautie in a woman, utterly abhorrung and defyng all farding, paynting, and counterfeit cast coulers, which of some dampnable and misproude people be dayly used, such as by all meanes possible, seke and search more the abominable and divilish painting and garish setting forth of their mortal carcases (the better therby to commend it unto the eyes of foolish and fond men) than by honest, sober, debonayre and gentil maners, so to demene their life, that they may therby rather obtayne the loue, amitie, and hartie perpetual favour first of god, and then of al honest, discrete, and godly wise men."

After giving this brief summary of the contents of the book,
Raynalde asks his women readers ("for whose sake and only respect it is set forth") to give it their benevolent favour and good acceptation. He is quite sure, however, that to some the work will not be acceptable. Not even an invocation of the gods and goddesses ("great Apollo, wyttye Mercury, and sweet Suada") will suffice to convince them who give so "precipitat and heady judgementes in all maner of matters," that the book is useful and good. Some will allege "that it is a shame, and other somme, that it is not meete ne fyttynge such matters to be entreated of so playnly in our mother and vulgare language, to the dyshonoure (as they say) of womanhed, and the derision of theyr wonte secretes, by the detection and discoverynge whereof, men it readynge or hearing, shalbe moved thereby the more to abhorre and loo the company of women." But it is of no use to attempt to convince such people. Nothing is so good but it may be abused. Fire and water, meat and drink, the Bible, even the blessed Sacrament may be abused; but "to them that be good theimselfe, everye thinge turneth to good, whatever it be is to them a sufficient matter and occasion therein to seke the glory of God, and the onely profyte of their even Christen." "Wherefore," the writer concludes "consydering that there is nothinge in this world so necessary, ne so good, holye, or virtuous, but that it maye by wyckednesse be abused, it shalbe no great wonder though this lyttle booke also, made, written, and set foorth for a good purpose, yet by lyght and leude persons be used contrary to godlynesse, honesty, or thentent of the wryter thereof."

The only possible dangers, so far as the writer can see, are that some of the medicines referred to may be employed for a criminal purpose ("some divelishe and lewde use"), and that the book falling into any "lyght Marchauntes handes" may be used for the derision of women. That men by reading such a book should "conceave a certayne lothsomnes and abhorrynge towards a woman," is answered by the fact that if this were
so then "Physitians and chyrurgians wyves should greatly be abhorred and mysbeloved of theyr husbandes"; and this is not so. "And I my self likewise, which wryteth thys booke, should mervaylouslye above many other abhorre or lothe women." Such "tender reasons" are petty and trifling; "but to be short, there is no such thyng, neither any cause thereto why." In fact, it is rather to be expected that if, by any chance, a husband read the book, he may, if of a gentle and loving nature, do his wife good.

Knowing as he does what the perils of childbirth are, the writer thought "it should be a verye charitable and laudable dede, and right thankefull to be accepted of al honourable and other honest matrones, yf by my paynes this lyttle treatyse were made to speake Englyshe, as it hath been longe syth taught to speake dutch, frenche, spanyshe, and dyvers other languages." The Byrth of Mankyde may, if properly read and consulted, supply the "roume and place of a good mydwife"; as a matter of fact, the writer knows that it has been so used by "many honourable Ladies and other worshipfull Gentle-women," and with much profit. But again it has to be confessed that there are some midwives who would have the book forbidden, "forsomuch as therein was deseried and set forth the secretes and privities of women, and that every boy and knave had of these bookes, reading them as openly as the tales of Robin Hood, etc." "But here nowe let not the good midwives be offended with that, that is spoken of the badde. For verely there is no science, but that it hath his Apes, Owles, Beres, and Asses." The good midwives, however, were glad to get the book. "And thus I conclude and make an ende of this rude Prologue, requyryng the gentle readers thereof, that yf they shall fynde anything therein interpretable to dyuers senses, to accepte onely that which may make to the best, accordynge to my meaning."
Like the Prologue, the First Book of the *Byrth of Mankynde* contains matter which is not to be found in Rhodion’s *De Partu Hominis*. Its contents are mainly anatomical descriptions. The writer is very sure of the “utilitie of the first boke”; it is “as a key, openyng and clearyng the matters to be intreated of in the seconde.” It deals with the “fourme, maner, and situacion of the inwarde partes of a woman,” with “the campe or fielde of mankynde to be engendred therein.”

An interesting paragraph deals with the relative importance of the sexes in the matter of procreation: “And although that man be as principall mouer and cause of the generation: yet (no displeasure to men) the woman doth conferre and contribute much more, what to the encreasement of the child in her womb, and what to the noryshment thereof after the byrth, then doth the man. And doubtlesse yf a man woulde demaunde to whom the chylde oweth most his generation, ye may worthily made aunswere that, to the mother: whether ye regarde the paynes in bearynge, other els the conferrence of most matter in begettyng.”

The organs are then described in detail. First, “the principal coates of the body” are referred to: they consist of the superficial skin or cuticula, of the “fleshye” skin or membrane carnosa, and of the third coat or adeps, which lies between the other two. “Immediately under the fleshye skin be conteyned the Muskles.” Chapter III. of the First Book is specially concerned with the “Muskles,” and particularly with those of the “bellye.” These are the musculi obliqui descendentes or “the Byaswyse descendencyng muskles”; the musculi obliqui ascendentes or the “Byaswyse ascending muskles;” the musculi recti or “the ryght muskles”; and the musculi transversi or the “overthwart muskles.” “All these foure Muskles
be to the entrayles and bowelles within the belly, as foure seuerall coates: by the vertue and helpe of whom, together with the ayde of the midwiffe, all expulsion both upward and downewarde in the guttes, in the stomacke, in the matrix of the woman in the tyme of labour, and also in the bladder in tyme of makyng of water, is wrought: and yet besides this utilitie, they clothe (as I have saide) defende, fortifie, and strength the inwards of the belly."

Chapter IV. of the First Book speaks of the "kell, called Peritoneum," a certain "thin rime": it "yeldeth unto eche entrayle a coate and webbe of the cloth of his owne body: by the whiche his livery, they be the more arctly and straightly affixed or fastened unto hymselfe." Chapter V. gives the declaration of the names and nature of the Matrix. "The Matrix, the Mother, and the wombe, do signifie but one thing, that is to saye: The place wherein the seede of man is conceaved, fetified, conserved, nourished, and augmented, unto the tyme of deliuerance, in Latin named Uterus and Matrix." From the description which follows, it is evident that the writer intends by "Cervix Uteri" the vulva and vagina. Chapter VI. deals with "the wombe and his partes." "Nowe ye shall understande, that the founde or bottome of the matrix is not perfectly round bowlwyse, but rather lyke the forme of a mans heart, as it is paynted, sauinge that the particion or clifte in the matrix betwene both corners, the ryght and the lefte, is not so profoundlye dented inwards as the clyfte in the hearte." From this description it would almost appear as if the uterus of one of the Mammalia were intended, or if the writer had come across a case of minor malformation of the organ (uterus septus) in the human subject. He is quite sure, however, that there is only one "holonesse" in the womb; he does not believe in the seven "selles" said to be therein. "In tymes passed, dyverse Clarkes haue written, and many other haue beleued, that
there shoulde bee seuen selles, or seuen distinct places in the Matrix, in thre of the whiche, on the ryght syde shoulde onely men chyldren be conceuyed, and in the other three on the lefte syde women chyldren, and yf it chaunced that the seede were conceaued in the seuenth sel, whiche was the myddelmoste, then that shoulde become a monster, halfe a man, and halfe a woman. The whiche all is but lyse, dreames, and fonde fantasyes: for the womans Matrix, as I haue saide, is euuen as a stronge bladder, hauinge in it but one uniuersall holones, and the chylde when it lyeth in it, lyeth euer on the one syde more then on the other, the head beynge towards one of the corners or angles, and not upryghte towarde the myddle brydge."

Chapter VI. (VII. correctly) speaks of the "Mother port." This is the Cervix as we nowadays call it. "It is of the forme of a haukes bell, or other lyttle mores belles" (i.e., morris bells). At certain times, "the Matrix beynge apte and dysposed thereto, and other conditions requisite, thys wombe porte do naturally open it selfe, attractinge, drawing and suckinge into the wombe the sede by a vehement and naturall desyre." During pregnancy it remains closed, "untyll the tyme of delyueraunce, at what tyme agayne it delateth and openeth it self, in such amplytude and largenesse, that it is wonderfull to speake of."

Chapter VIII contains a description of the vessels of seede, called the woman's stones, i.e., the ovaries as we now know them, "wherin is engendred the seede and sparme that commeth from the woman, not so strong, ferme, and myghtie in operation as the seede of man, but rather weake, fluy, colde, and moyste, and of no great firmitie." But, the writer tells his readers, the woman's seed is just as proper for its purpose as the man's. "These stones be nothynge so bygge as the stones of man, but lesse, flatter, much fashyoned after the shape of a great and brode almonde."
Chapter IX. has to do with the “sede bringers,” not, let it be borne in mind, the Fallopian tubes, but the “two vaynes and twoo artyres which come to these two stones.” Here we find a description of the blood-vessels of the pelvis along with the views then held as to the origin of what was called the “woman’s seed,” which are set forth at length in Chapter X. These views have now only an historical interest, for the physiological knowledge on which they rested has long since been replaced by more correct information. To the curious, however, the description given of the four “mines” shops or workhouses existing in the body cannot but be attractive. "Of this sort of mines, there be foure principall in the bodye of man. The first is the mine of bloud, which is the lyuer, in whom the iuyce of meate, before of colour whyte, is transmuted into red, made apt and fitte to nourishe all partes of the body, attract and drawn out of the stomacke and guttes, thorow verye small and infinite lyttle vaynes into the lyuer. The seconde mine is the heart, which of the bloud attracte and drawn from the great maister vaine, proceading out of the foresayde lyuer, into his parlers, doth engendre vehement and liuely spirite, commixed with depured and greatly elaborated bloud, within the selles of the heart, from thence sent forth throw the artires, into all partes of the bodye, being in colour yealowyshe, thinne, and hoote bloud. The thyrde mine is the brayne, of whom all the sinewes take thyr originall. In whom the wyttye spirite, the spirites of mouyng, and the spirites of al sensibilitie be engendred, and thorow the sinewes sent to all partes of the bodye. For all suche partes as moue and feele, haue that by reason of sinewes derived unto those places from the head. The fourth mine is the stones, in whom by commix- tion of al the other thre foresaid metalles of the body, that is to say, vayne bloud, arteriall bloud, and liuely spirites engendred in the head, is engendred and produced sede, which bestowed in his due place becommeth like in perfection to the
creature from whence it came; that is to say of mankynde, man." The writer then goes on to explain how "the seede is receaued into the stones," how the colour of the seed is transmuted, and how the seed in woman is not so firm as in man, etc.

Chapter XI. tells how the seed (of the woman) is sent from the stones to the angles or corners of the Matrix by means of a "wormye bodye," evidently the Fallopian tube. The seed in woman is supposed to be for the purpose of moistening the genital passage as "with a dewe." The writer then proceeds to moralize on what he terms the "prickes of nature." "For yf that the God of nature had not instincted, and insette in the body of man and woman, such a vehement and ardent appetite and luste, the one lawfully to company with the other: neither man ne woman woulde neuer haue ben so attentyfe to the workes of generation and encreasement of posteritie, to the utter decaye in shorte tyme of all mankynde. For ye shal heare some women in tyme of theyr trauayle, meued through great payne and intollerable anguyshes, forswere and vowe them selfe, neuer to companye with a man agayne; yet after that the panges be passed, within short whyle, for entyre loue to theyr husbandes, and singular naturall deynte betwene man and woman, they forget both the sorow passed and that that is to come. Suche be the privie works of God, and suche be the prickes of nature, which neuer createth no special pleasure unaccompanied with some sorow: neither is there for the most part any sorow, but that it hath annexed some ioy or comforte, lesse or more, to alleuiate and lyghten the burthen and weyght of displeasure."

Chapter XII. deals with the bladder in women, with stone ("but women be not so prone ne apt to engender the stone in the bladder as men be"), and with the reason why the urine when it has reached the bladder does not revert again.

Chapter XIII. is a very interesting one, for in it are con-
sidered not only the "vaynes which resort to the Matrix," but also "the termes and theyr course with the causes thereof." "Nowe to come to the declaration of the nature of termes, ye shall understand that thei be called in Latine Menstrua, for because that ons in a moneth they happen alwayes to woman-kynd, after XIII. or XV. yeares of age passed (beynge in theyr perfect health): In Englyshe they bee named Termes, because they retoure eftsoones at certayne seasons, tymes and termes." Having described, as best he knew, how the blood was poured into the Matrix, the writer goes on to tell the cause of the terms, that they are really intended to serve as nourishment for the foetus ("feature"); for "prudent Lady nature" has wisely so provided; "yea, although the woman do neuer conceaue . . . yet is there no faute in nature, who hath prepared place, and foode to be at altymes in readynes." It is noted, also, that women that have no terms cannot bear children; that the terms do not follow the waxing and waning of the moon exactly; and that the duration of the flow varies in different women.

In Chapter XIV. are considered at some length the three caul or wrappers "wherein the infant is lapped" in the uterus. The innermost caul is named the Amnios, "in Latine Agnina, for cause it is as dilicate as lambes bee." "The mydwifes commonly call it the coyfe or byggyn of the chylde, and some call it chyldes shert, the which also many times proceadeth alone with the chylde, eyther uppon the chyldes head, or one of the armes or legges. And then the women reserve it as a thynge that shoulde betoken some grat lucke to the chylde in tyme to come." "The seconde wrapper or caule in Greek is called Allantoides, in Latine Farciminosa, in Englyshe these two termes do signifie haggiswyse for because that it is fashioned much after the shape of the outwarde skynne or bagge of an haggisse puddinge." This second caul of Raynalde is our modern chorion apparently, while the third
which he names Chorion or Secundina (or hoop caul) would seem to correspond to the placenta; but the description is vague and shows no evidence of close observation of nature. The description of the vessels of the umbilical cord is more exact. "Thorow these Artires, liuely spirite and freshe ayre is deriued out of the mother into the chylde, wherwith the naturall heate of the chylde is viuified and refreshed. And these two Artires with the foresayde nauyll Vayne, when the childe is borne, begin to wyther and drye; euerie day more and more, and become much like a harpstryng, without any holownesse or caitie." The urachus ("another vessell") is also described, and it is said that by it the urine passes from the bladder to the space between the first and second caul without the child's body. The placenta ("chorion") is compared to the spleen or melt "in a man or beast"; "so that to be short, Chorion is the immediat receptacle and receauer of al the vaynes and artires, to be deduced from the Matrix to the chylde, and the chylde recaueth onely at his hand the two Vaines and Artires, whiche by the way as they passe and perse thorow the other two caules, towards the chylde's Nauyll, they sende into eche of the caules innumerable small eye vaynes and artires, whereby the caules be sustayned and encreased also."

The terms, when there is a foetus in the uterus to be nourished, are no longer superfluous but are used in supplying nourishment to the infant in utero, and that part which is not needed goes to the breasts to become milk. It is not right to regard the terms as a purgation, for the blood of which they are composed is as pure and wholesome "as all the reste of the bloud in anye part of the body els." "Yet much more are to be detested and abhorred, the shameful lyes and slander that Plinie, Albertus magnus de secretes Mulierum, and diuers other mo haue written, of the venimous and daungerous infective nature of the womans Flowres or Termes: the which all be
but dreams and playne dotage. To rehearse theyr fond wordes here, were but losse of inke and paper, wherfore let them passe with theyr auctours." It is not a little amusing to read such denunciations of Pliny and Albertus Magnus following so closely after some of the anatomical descriptions that have gone before; but in his views upon the functions of the placenta as set forth in the following paragraph the writer is far in advance of his time. "For because that she (Nature) woulde that the pure bloud commyng from the Matrix vaynes, should be made yet purer, she suffereth not the same to entre immediately into the infante, but first useth another meane, and sendeth it into Chorion or the hoope call (as I haue sayd before), where truely it hath a certayne circulation, and another digestion, wherby it is desecate, and clensed very exquisitly, by the diligentis of nature attenuated and fined, and so at the laste sent foorth into the infant, leauyng all the grosser part in the spungye bodye of the hoope caule." (It is to be re-membered that the hoop-caul is the placenta.)

The Fifteenth Chapter is concerned with some curious considerations regarding which of the three Matrix veins contain the Terms and how the milk comes to the woman's breasts. The importance of knowing which of the veins contain the menses is, the writer thinks, at once evident when we have to deal with too much or too little monthly flow; to put these anomalies right we have to apply medicines, and if the menses come only from the veins of the neck of the womb there will be no use in applying medicines to those of the fundus. The writer is of opinion (for reasons which it is unnecessary to discuss now) that the terms come from the veins at the fundus only. It is in this connection that the writer relates the history of two cases in his practice, the one in London and the other in Paris, to which reference has already been made (Edin. Obstet. Trans., vol. xxxi., p. 243, 1905-06.)
Fig. 1.

Illustration taken from Vesalius's *De Humani Corporis Fabrica* (Edition of 1543), where it is the Twenty-fifth Figure of the Fifth Book; it appears as the Second Figure in the *Byrth of Mankynde*.

*Between pages 256 and 257.*
Fig. 2.

Illustration taken from Vesalius's *De Humani Corporis Fabrica* (Edition of 1642), showing the Nine Figures which were used by Raynalde to illustrate the Anatomical Part of the *Byrth of Mankynde*. 
Figure from Vesalius’s *De Humani Corporis Fabrica* (Edition of 1543), representing the Dissection of a Man’s Body. It appears as Fig. 1 of the Anatomical Figures of the 1545 and 1552 Editions of Raynalde’s *Byrh of Mankynde*, but is omitted from that of 1560 and from all subsequent ones.
Figure from Vesalius's *De Humani Corporis Fabrica* (Edition of 1543), representing the Dissection of a Man’s Body. It appears as Fig. 2 of the Anatomical Figures of the 1545 and 1552 Editions of Raynalde’s *Byrth of Mankynde*, but is omitted from all the subsequent ones.
Title Page of Rhodion's *De Partu Hominis* (Edition of 1538), showing supposed attitude of the Fœtus in Utero; this Figure is not reproduced in the *Byrth of Mankynde*.

The "Woman's Stoole," taken from Rhodion's *De Partu Hominis* (Edition of 1538), where it appears in folio 18.
Figure showing Fœtus in Utero, from Rhodion's *De Partu Hominis* (Edition of 1538), where it appears on folio 20.

Figure showing Fœtus in Utero, from Rhodion's *De Partu Hominis* (Edition of 1538), where it appears on folio 27.
Fig. 9.

Figure of Twins in Utero, from Rhodion's *De Partu Hominis* (Edition of 1538), where it appears on folio 29.
Fig. 10.

Figure of Double Monster in Utero, from Rhodion's *De Partu Hominis* (Edition of 1538), where it appears on folio 11.
There is much else in this chapter about clots in the terms, about the "white flowers," about retention of the terms, and about the manner in which "the mylke which commeth to the brestes is engendred of the Termes (acordyng to moste mens opinions)." There is not wanting evidence, it is pointed out, of the "great familiaritie betwene the Matrix and the brestes, for so much as the ebbyng of the one is the flowinge of the other."

Such are the matters dealt with in the First Book of the Byrth of Mankynde in the 1560 edition; it remains for me now to examine the differences which exist between this and other editions. The 1545 and 1552 editions call for no special comment, and those that were published later than 1560 also show none other than trifling alterations; but the Jonas or 1540 edition differs widely from the rest.

The First Book of the 1540 edition is really the Second Book of the Raynalde editions (with some exceptions to which reference will be made), and the First Book of the Raynalde editions finds no counterpart, or almost none, in the 1540 edition. Almost none, for the First Chapter of the latter contains an account of "how many caules the birth is compacted and wrapped in," and the fourteenth chapter of the Raynalde editions deals with "the three caules or wrappers wherein the infant is lapped." Chapters I. to XIII., Chapter XV., and part of Chapter XIV. of all the Raynalde editions find no counterpart in the 1540 edition of Jonas; practically the whole of the First Book of the Raynalde editions, therefore, is new material added to what was in the 1540 edition. To trace the source or sources of the new material found in all the Raynalde editions would be an interesting literary investigation, but it is one which I am not now in a position to make. I may, however, state that no part of the added chapters is in the two editions of Rösslin's De Partu Hominis which I have been able to examine (those of 1538 and 1556); and in the
meantime it is only reasonable to ascribe it to Raynalde, and to regard it as part of the "augmentation" mentioned on the title page of the 1545 and subsequent issues of the Byrth of Mankynde.

The Anatomical Figures.

At the end of the First Book is "The declaration by letters of the fygures folowing, wherein be set forth to the eye euery parte in woman mentioned in thys boke before: Which in the former Printinge hath ben corrupted, but nowe truely set forth." These figures are nine in number, and they have all been reproduced in Plates IV., V., VI., and VII. of my former article.

No indication is given in the letterpress as to the source of the illustrations; indeed from the reading of the accompanying descriptions it would seem that they were original, and that the objects depicted in them had been seen by the writer. A little investigation, however, soon shows that this was not the case. None of them is to be found in the 1538 edition of Rösslin's De Partu Hominis, although four of them make their appearance in the 1556 edition; but, then, as we shall see, they had already appeared in the 1545 edition of the Byrth of Mankynde and had been repeated in the 1552 edition. Evidently, therefore, their original source is not Rösslin's work. As a matter of fact, they have been taken, description and all, from Vesalius's book De Humani Corporis Fabrica, in the "first" or 1543 edition of which they are all to be found.

I have carefully compared the plates in the 1560 edition of Raynalde's Byrth of Mankynde with those in the 1543 edition of Vesalius's work, with the following results:—The first figure in Raynalde is the twenty-fourth of the Fifth Book of Vesalius, and is found on p. 377 of that work, with the descriptive letter-
press on pp. 376, 377, and 378; the second figure is the twenty-fifth of Vesalius, and is found on p. 378, with its description on pp. 379 and 380; the third figure is the twenty-sixth of Vesalius on p. 380; the fourth figure (III.) is also to be found in Vesalius's work at the end of his Third Book, on p. 313, with its description; Figures V., VI., VII., and VIII. of Raynalde's work are the first, second, third, and fourth separate figures in the thirtieth plate of Vesalius's Fifth Book, and are to be seen on p. 382, with descriptive notes on p. 383; and the ninth figure of Raynalde's Byrth is the twenty-seventh of the Fifth Book of Vesalius's De Humani Corporis Fabrica, where it is to be found with its description on p. 381.

All these figures, as they appear in the 1560 edition of Raynalde have been reproduced in my former article, where they are numbered Figs. IV., V., VI., and VII., but, in order to prevent confusion, their proper numbers (I., II., III., IIII., V., VI., VII., VIII., and IX.) are also attached to them (although some of them were reversed in the original printing, e.g., IV., VII., and IIII. for VI., VII., and VIII.). In order that the reader may compare the plates as they appeared in Vesalius's work with their reproductions in Raynalde's 1560 edition of the Byrth, I give here Vesalius's twenty-five figure corresponding to Raynalde's Fig. II. (Fig I.): it can be studied alongside of the Raynalde reproduction (Fig. V. of my former article). Further, in a later edition of Vesalius's work (that of 1642) all the nine figures used by Raynalde were grouped together in one plate (on p. 96), and I have thought it worth while to reproduce this also (Fig. II.). It represents in graphic form Raynalde's unacknowledged indebtedness to Vesalius.

The descriptions of the figures are literal translations of the Latin text which accompanied the illustrations in Vesalius's De Humani Corporis Fabrica. I give here in parallel columns
THE "BYRTH OF MANKYNDE,"

the Latin description of Figure II. and the English translation of it:—

A praesentis figurae dextra mamilla cutem abstulimus, ut quàm fieri posset proximè mamil-larum natura hic oculis subjíeceretur. Deinde ventriculum, et cum intestinis mesenterium et lienum ressecimus, recto interim intestino non secus quam in mox praecedente figura relictó. Ad hæc, uterum suo extimo quod peritoneum ipse porrigit involucro quodammodo spoliavimus, omnes membranas quàm licuit accurate passim, ideo amputantes, ut seminis materiam testibus deférrentia et rursus semen ab utero deducentia et seminae ab utero deducientia vasæ in conspicuum venirent. Vesicam vero deorsum in sinistrum latus refleximus, unà meatum à dextro rene ipsi urinam deferentem abrumpentes, ut urinam vesicae depren-tium meatum insertio appareret, ipsaque vesica uteri inspectionem non occuparet. Postremò pubis ossium portionem ab hac figura exsecuimus, quo uteri cervix ac vesicae etiam collum appositiè viderentur.

We have here taken away the skyn from the ryght teate of this present figure, that the nature of the teates mighte as nygh as may be, be set before the eyes, and afterwards we have cut awaye the ventricile with the bowelles, and also Mesenterium and the splene, leaving the straye enrayle in thys place unmedléd with, as well as we dyd in the figyre before. And moreover, we have as it were taken awaye from the uttermooste cote which Peritonium gave unto it, cutting away also al the pan-nicles, that the vessels carryinge forth the substance and matter of sede to the stones, and also the vessels carrying away the sede from thence to the Matrix shoulde appeare and bee seen. Also we have tourned over the bladder downewarde on the lefte syde, lykewyse breaking the way or conduite which beareth forth the urine to it from the ryght kydneye, that the insertion of the wayes of bearyng forth the urine to the bladder myght appeare, and that the bladder shuld not let the inspection or sight of the Matrix or Wombe. Last of all we have cutte away from this fygure a portion of the bones above the privie membres, that the neckes of the matrix and of the bladder might the more commodiously be sene.
The comparison of the Latin description with the English translation leaves no doubt that Raynalde boldly appropriated both the plates and their accompanying text from the work of Vesalius; he was not even at the trouble of altering personal details which referred to Vesalius, such as the allusion to his work at the University of Padua which occurs in the explanation of the ninth figure. In this respect, however, he did not differ from the editor of some of the later editions of Rhodion's *De Partu Hominis* (e.g., that of 1556), who also borrowed some of Vesalius's plates without acknowledgment.

What has been said above refers to the 1560 edition of Raynalde's *Byrth of Mankynde*. When we turn now to the 1545 and 1552 editions we find two other anatomical figures (making eleven in all), named the fyrst and second fygures, along with several differences in the accompanying descriptive letterpress. The wording of the Declaration differs slightly, the reference to corruptions in the printing not appearing. It reads: "The declaration by letters of the fygures folowyng, wherein be set forth to the eye every part in woman mentioned in thys Boke before." The first and second figures, however, represent dissections of a *man's* body, and at the end of the descriptive letterpress the editor somewhat ingenuously says: "Here ye shal be advertysed that although these ii fyrst fygures be made principally for ye man, yet may they serve as wel to expresse the woman: for the man and woman differ in nothyng but in the pryvie partes." These two illustrations also are borrowed from Vesalius's *De Humani Corporis Fabrica*, where they appear on pp. 355 and 356 of the 1543 edition, and are named the first and second figures of the Fifth Book. They are reproduced here as Plates III. and IV. I place, again in parallel columns, the Latin and the English, and it will be noted that the latter is not so strictly a translation of the former as in the descriptions of the 1560 edition:

Praesenti figura tanta humani  In the fyrst fygure is set forth
corporis portio delineatur, quanta ad peritonaei sedes ostendendas sufficit: exprimitur itaque hac figura anterior peritonaei sedes, sectionis serie ab octo abdominis musculis libera, nullaque ex parte dissecta.

A,A,B,C,D. His characteribus peritonaeum insignitur, quodamodoque hac figura terminatur.

E,E. Linea a mucronata pectoris ossis cartilagine ad pubis usque ossium commissuram procedens, cui oblique descendentium et ascendentium, et transversim procedentium abdominis musculorum nervosae tenuitates pertinacissime connas-cuntur.

F. Umbilicus, quem inter dissectum etiam adeptis abdominis musculis, gratia opportuane umbilici vasorum demonstrationis, reservare solemus.

G. Seminaria sinistri lateris vasa suis membranis, quas a peritonaeo mutuantur, adhuc obvoluta.

H. Seminaria dextri lateris vasa.

I. Vena ac arteria quae potissimum inferiori sedi rectorum abdominis musculorum exporriguntur, quorum et hic quoque propendet portio.

K. Vena et arteria, quae sub osse pectoris exporrectae, in anteriorem abdominis sedem prolambuntur, praecipuè rectis abdominis oblatae musculis, ac superiorê abdominis sedem universam quoque implicatos: quemadmodum illae so much of a man's body as may be sufficient to show the forme of thee kell called Peritoneum: spoken of in the iii Chapter, Whose compasse is here noted wyth A,B,C,D.

A.A. Noteth the grystell, nether ende or poyn of the brest plate, in the pyt or pitch of the brest agaynst the stomacke.

E,E. is a lyne descendyng upon Peritoneum from the sayde grystle, downe to the myddle joynt of the share bone.

F. is the navell.

G. sygnifieth the sede vessels of the lefte syde in men descendynge out of the amplytude of the bellye.

H. is the ryght seede vessell: but thys G. and H. hath no place in the women.

I. sygnyfieth the ascendinge vayne and artyre mencyoned in the last chap.

K. the descending brest vaynes and artyres spoken of in the same Chapt. as for other letters that be in this figure I wyl make no further declaration of them, for because they serve nothing to this present purpose.
quas insignivimus, humiliorè et pubis ossibus viciniòre implicat.

L. Venarum soboles in peritonaei latera excurrentium, ac ab illis venis deductarum, quae aut à conjugè carente vena, aut genicularim à cava pronascuntur, qua ipsius caudex lumborum vertebris colugatur, etc.

Other differences between the edition of 1560 and those of 1545 and 1552 remain to be noted. These consist chiefly of verbal differences in the descriptions of the figures. Figures 3, 4, 5, 6, 7, 8, 9, 10, and 11 of the earlier editions correspond to Figures 1, 2, 9, 3, 4, 5, 6, 7, and 8 of the 1560 edition. To show the extent of the verbal changes I place here in parallel columns the description of the fifth figure of the 1552 edition and the ninth figure of the 1560 edition; they represent the same specimen, but, as will be seen, differ considerably:

<table>
<thead>
<tr>
<th>1552 Edition</th>
<th>1560 Edition</th>
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<td>This 5 fygure is pourtrayed after ye quycke, bothe in length and breadth, according to the length and breth of the matrix of a woman which was cut open for the same purpose by phisitions. But ye must understand that here ye founde or body of ye wombe or matrix is devyded in ye myddes: the forepart of the which, is turned up, for because that ye maye the better perceave ye cavite of the matrix signed, the uppermost with A.A.C. The nethermoste halfe wyth B.B.D. Item. C. in the uppermost halfe and D. in the nethermost halfe show the seame or lyne spoken of cap. vi. E.E.</td>
<td>And the nyth figure sheweth the Matrix cut forth of the body, being of that bygnesse as it was sene taken forth of a woman at the laste Anothomye, which I dyd se at the universitie of Padua in Italy. And moreover we haue so devyded and cutte a sunder the bottome of the Matrix by the myddle, that the concavitie and hollowe bought within the same myght be perceaved, and the thicke substaunce also of both the coates of the Matrix in women, when they be not with chylde. A.A.B.B. The concavitie and holowe bought of the bottome of the Matrix.</td>
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both in the upper and also in the nether betoken ye crassenes or thicknesses of ye inner coate, wall or skyn of the matrix in wemen not beinge with chyld, through the contraction thereof as ye shall farther rede in the sayd. vi chapt. F.F. the propendynge or heldynge parte of the seme in the matrix spoken of. cha. vii. G.G. is the porte, orfyce, or gate of the wombe. H.H. is the second and utter coate of the matrix geven to it from Peritoneum. I.I. on both sydes of the necke of the matrix, do sygnifie, part of the kel called Peritoneum, sticking yet to the sydes of the Matrix and the necke thereof. K.K. is the place where the matrix is fastened to the upper part of the privy passage. ca. vii. L. signifieth the stub of ye bladders necke, wher it entreth into ye forepart of ye privy passage.

C.D. A line somewhat after the maner of a seame called in Latin Scortum, which doeth belonge to the place wherein the testycle doo lye, whiche swelleth somewhat foorth into the bought of the bottome of the Matrix.

E.E. The thickness of the inner and proper coate of the bottome of the matrix.

F.F. A portion of the innermore bottome of the Matrix, swelling foorth downward from the hygher seate of the Matrix, into the holownes and bought of the bottome.

G.G. The beginning of the necke or the opening place of the bottome of the Matrix.

H.H. The seconde or uttermore infolder of the bottome of the Matrix, descended from Peritoneum.

I.I. Here we have reserved a portion on bothe the sydes of the thinne coverynge, descended from Peritonium, and conteynynge the Matrix.

K. Here is also sene the substance of the necke of the Matrix, because the cuttyng wherewith we devyded the bottome of the Matrix, was begunne at this place.

L. A part of the necke of the bladder, implanted into the necke of the Matrix, castynge foorth into it the urine. The swellyng partes of Abdomen and whatsoever is els to be considered thereof, they may be sufficiently knowne without derection of Karacters.
On comparing these two descriptions with the original Latin inscription found in Vesalius's work, I find that the first is a free and the second a literal translation thereof. In the first (that of 1552) all mention of Padua is omitted, while in the second (that of 1560) it is referred to, with the addition of the words "University of" and "in Italy," which are not in Vesalius's text. On the whole, we must accept as substantially correct the statement made in the 1560 edition, that "the declaration of the figures . . . in the former Printinges hath ben corrupted, but is nowe truely set forth," if by that is meant a closer adherence to the text of Vesalius's work. The Jonas edition of 1540 is supplied with no anatomical figures.

**The Second Book.**

The contents of the Second Book (of all editions subsequent to that of 1540) are of less interest to English obstetricians, for they are simply a translation, rather free perhaps, of Rhodion's book *De Partu Hominis*. I shall first enumerate the subjects dealt with in this Book, taking again the edition of 1560 as the standard Raynalde one, and I shall then compare the matter as it appears in the various editions, and consider the character of the translations with which Jonas and Raynalde have furnished us.

The first chapter of the Second Book of the 1560 edition (and of all the others, except that of 1540) corresponds to the second chapter of the work of Rhodion (which is not divided into "Books," but simply into twelve chapters).

Chapter I. begins with a short paragraph summarizing the contents of the First Book, and then proceeds to deal with "the tyme of byrth, and which is called naturall or unnaturall." The premonitory signs of labour are named: "first certaine dolours and paines begin to growe about the guttes, the Navyll, and in the raynes of the backe; and lykewyse about the thyghes, and the other places beynge neare to the privie partes, which lyke-
wise then beginneth to swell and to burne, and to expell humours, so that it geveth a plaine and evident token that the labour is nere.” Then comes a definition, which at least does not err by entering too much into detail: “Naturall byrth is when thy chylde is borne both in due season and also in due fashion.” The due season is “most commonly after the ninth moneth, or about fortie wekes after the conception”; and then follows that oft-repeated and widely-believed statement about the poor chances of survival which an eighth month child has as compared with one born at the seventh month (when “the chylde proveth very well”). The writer is somewhat in error when he describes the “due fashion”: “first the heade commeth forwarde, then foloweth the necke and shoulders, the armes with the handes lying close to the body towards the face and forepart of the chylde, beyng towards the face and forepart of the mother, as it appeareth in the first of the byrth figures.” This definition makes, therefore, a face to pubes case the natural one, which is, of course, an error. The author (Rhodion) is on safer ground when he states that “yf the byrth be naturall, the delyveraunce is easy without longe tarying or lokynge for it.” The “byrth not natural is, when the mother is delyvered before her tyme, or out of due season, or after anye other fashion then is here spoken of before: As when both the legges proceade fyrst, or one alone, with both the handes up, or both down, other els the one up and the other downe, and dyvers otherwyse, asshalbe hereafter more clerely declared.” The “other els” as stated in the next chapter is “sidelongs (the which is most perells) or arselongs, or backlonge, other elles (havinge two at a byrth) both proceade with their feet fyrste,” etc.

Chapter II. deals with “easy and uneasy, difficult, or dolourous deliveraunce, and the causes of it: with the signes howe to knowe and foresee the same.” “Verye manye,” says the writer, “bee the perylles, daungers and thronges, which
chaunce to women in their labour, which also ensue and come in divers ways, and for divers causes, such as I shall here declare." Among the causes of delay in labour several are enumerated which are nowadays little accounted of or not considered at all, while others are omitted which are of importance. Few, for instance, will agree with the statement that the "byrth of the man is generally easier then the byrth of the female." Some of the causes are curiously set forth, such as, if the mother be "too spare or leane, or that she never had chylde before, or that she be over timorious and fearefull, divers, waywarde, or such one that wyll not be ruled, removyng her selfe from one place to another." The old belief in the birth of the child by its own efforts appears in such statements as: "yf the childe be so faynt, weake and tender, that it cannot tourne it selfe or doth it very slowly;" "also if the childe be dead in the mothers belly, it is a very perellous thing, for so much as it cannot be easely turned, neither can it welde or helpe it self to come forth, or if the chylde be sicke or weakned so that it cannot for feblenes helpe it self." Then, various signs are enumerated to help the midwife to tell in what cases the unborn infant is weak or sick, such as if the pregnant woman has been "sore lasked," 1 if she have had "dayly and unwontly her flowres," if "strayght after one moneth upon the concepyon her brestes yelde any milke." Causes of delay due to teratological states were not unknown to the writer, for he says that there will be difficulty if that with which the woman laboureth "be a monster, as for example, yf it hath but one bodye and two heads, as appereth in the XVII. of the birth figures such as of late was sene in the dominion of Werdenbergh." 2 Faults in the "secondine or latter birth"

1 Lasked, purged.
2 Werdenbergh, a town in Switzerland on the Rhine, in the Canton of St Gall. The monstrosity referred to appears as fig. x., near the end of this article.
(membranes), such as firmness or slenderness are also named, and the delay due to loss of humidities from early rupture is referred to. "And farther if the woman have used to eate commonly suche meate or fruytes, which do exiccate or drye, and constrayne or bynde, as Medlars, Chestenuts, and al sowre fruites, as Crabbes, Chokeperes, such as firmness or slenderness are also named, and the delay due to loss of humidities from early rupture is referred to. "And farther if the woman have used to eate commonly suche meate or fruytes, which do exiccate or drye, and constrayne or bynde, as Medlars, Chestenuts, and al sowre fruites, as Crabbes, Chokeperes, and suche other, with over muche use of Vergeus, and such lyke sowre sauces, with Rise, Mill, and many other thynges, all thys shall greatly hynder the byrth." "Also," the writer continues, "the use of colde bathes after the fyrst moneth folowing the conception, or to bathe in such water where Alome is, Iron, or Salt, or anye suche thynges whiche do coarcte and constrayne, or yf she have bene often tymes heavye and mourninge, or ill at ease, or yf she have bene kepte over hungry and thursty, or have used over muche use of Vergeus, and such lyke sowre sauces, with Rise, Mill, and many other thynges, all thys shall greatly hynder the byrth." "Also," the writer continues, "the use of colde bathes after the fyrst moneth folowing the conception, or to bathe in such water where Alome is, Iron, or Salt, or anye suche thynges whiche do coarcte and constrayne, or yf she have bene often tymes heavye and mourninge, or ill at ease, or yf she have bene kepte over hungry and thursty, or have used over muche use of Vergeus, and such lyke sowre sauces, with Rise, Mill, and many other thynges, all thys shall greatly hynder the byrth." 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As for example, when the woman hath bene wonte in tymes passed, easely to be delyvered, and that in her labour she feele but little thronge or dolour, or though she have great paynes, yet they remayne not still in the upper partes, but descend alwaies downwardes to the nether partes or bottome of the belly. And to be short, in all paynefull and troublesome labours these signes betoken and signifie good spede and lucke in the labour: unquietnes, much styringe

1 Choke-pear, any "rough, harsh, and unpalatable variety of the pear, used for perry," a sort of crab-pear.
2 Vergeus, or verjuice, a liquor expressed from crab-apple, sour grapes, etc.
3 Mill, millet.
of the chylde in the Mothers bellye, all the thronges and paynes tomblynge in the forepart of the bottome of the belly, the woman stronge and mightie of nature, such as can wel and strongly helpe her self to the deliveraunce of the byrth. And agayn, evyl signes be those, when she sweteth colde sweate, and that her pulces beate and labour over sore, and that she her self in the labouring faint and sowne, these bee unluckie and mortall signes."

The third chapter of this Book is, in some respects, the most important and the most interesting of the whole work, for it deals with "howe a woman with childe shal use her selfe, and what remedies be for them that have harde labour." If there should be any disease, swelling, or apostumation (abscess) about the uterus, vulva, or bladder (such as stone or strangury), then "in these cases it behoveth such thynges to be loked unto and cured before the time of labour commeth, by the advise of some expert Surgion." Her diet ¹ before labour will be different from that during labour. If there be constipation, she must use "suche thinges, the whiche may lenifie, mollifie, dissolve, and lose the belly: as apples fried with suger taken fastynge in the mornynge, and after that a draught of pure wyne alone, or elles tempred with the juyce of swete and very rype apples. Also to eate figges in the mornynge fasting, and at nyght, looseth 'well the bellye. If these profite not, Cassia fistula taken iii. or iv. drams one halfe hour before diner, shal loose the belly without parel." The woman also must refrain from taking constipating things ("hard egges," etc.), and it may be necessary for her to get a clyster, "but it must be very gentle and easye." An easy and temperate purgation (as by mercury) may be needed, "or elles a suppositor tempered with sope, larde, or the yolke of egges." If she be faint or sickly just before her labour, "then must ye comfort her with good

¹ Diet here means course of living and not simply the food or drink taken.
comfortable meate, drinke, holsome and noble electuaries." Various ointments and baths are to be used before labour: "Annointmentes wherewith ye may sople the privie place, be these. Hennes grese, Duckes grese, Goose grese, also oyle Olife, Linsede oyl, or oyl of Fenegreke, or the viscosite of holyoks." She is to bathe in water in which have been seethed "Malowes, Holyoke, Camomel, Mercury, Maidenhaire, Lyneseede, Fenegreke seede, and such other thynges which have vertue to mollifie and sople." If she be not able to take such baths, she must sponge herself with the water and apply ointments locally. Sweet fumes also are useful: "it shalbe also very profitable for her, to suffume the nether places with muske, Ambre, Gallia, Muscata, which put on embres, yelde a goody savoure, by the whiche the neather places open theymselve, and drawe downwarde." She must also "exercyse the bodye in doing some thinge, styrying, moving, goynge, or standinge, more then otherwise she was wont to doe."

Hints are given as to what must be done when labour pains come on. "To withstand, defend, and to put away so neare as mai be the instant and present dolours. And as touchinge this poyn, it shalbe verye profytable for her, for the space of an houre to syt styll, then (rysynge agayne) to goe up and downe a payre of stayres, crying or reaching so loude as she can, so to styre her selfe."

Here follows the oft-quoted passage about the "womens stoole" or "obstetric chair" which is represented in the Birth Figures. "Nowe when the woman perceaveth the Matrix or Mother to ware laxe or loose, and to be dissolved, and that the humours yssue foorth in great plentie, then shall it be mete for her to sit downe leaninge backwarde in maner upright. For the which purpose in some regions (as in Fraunce and Germany) the Midwyfes have stoles for the nonce, whiche beynge but lowe, and not hye from the grounde, be made so compasse wyse and cave or holowe in the middes, that that
mai be receaved from underneth which is looked for, and the backe of the stole leaning backeward, receaveth the, back of the woman, the fashion of the which stole, is set in the beginning of the birth figures hereafter. And when the tyme of laboure is come, in the same stoole ought to be put many clothes or cloutes in the back of it, the which the Midwife may remove from one syde to another accordinge as necessitie shall require. The Midwyfe her selfe shall syt before the labourynge woman, and shall diligentlye observe and wayte, howe much, and after what meanes the chylde styreth it selfe, also shall with her handes fyrste annoynted with the oyle of Almondes, or the oyle of whyte Lyllies, rule and dyrecte every thyng as shall seme beste. Also the mydwife muste enstructe and comfort the partie, not only refreshing her with good meate and drink, but also with swete woordes, gevynge her good hope of a spedefull delyveraunce, encouraginge and enstomakinge her to pacyence and tolleraunce, byddynge her to holde in her breath so much as she may, also strekinge gentilly with her handes her bellye above the Navell, for that helpeth to depresse the birth downewarde.”

If the patient, however, be fat, the writer recommends that she “lye grovelynge,” and if necessity require it “let not the midwife bee afraisyd ne ashamed to handle the places, and to relax and loose the straites (for so mucho as shal lye in her), for that shal helpe wel to the more expidite and quicke laboure.” She is warned, however, against interfering too soon “before the byrth come forwarde,” and she ought not to allow the patient to expend her strength before the proper time. When the bag of membranes appears, “then maye ye knowe that the labour is at hand.” If the bag do not burst of its own accord, “it shalbe the Mydwyfes part and office, with the nayles easely and gentellye to breake and rent it, or yf that may not conveniently be done, then rayse up betwene your fyngers a peece of it, and cut it with a payre of shieres, or a
"BYRTH OF MANKYNDE,"

sharpe knyfe, but so that ye hurt not the byrth with the cut." If the membranes have ruptured or been ruptured too early, a dry labour results requiring the application of "oyle of whyte Lyllyes or some of the greses spoken of before" to the parts; "but chiefly in these difficulties should profite the whyte of an egge together with the yolke powred into that same place: which shoulde cause it to be most slyppery and slydynge, and supplye the roome of the naturall humidities spent before."

The birth of a child with a large head or of twins is to be assisted by the midwife, who is to "helpe all that she maye, with her hande fyrste annoynted with some oyle openying and enlargyng the waye that the issue maye be the freer."

So far the writer has been dealing with the "natural byrth when that first proceadeth the head," as is represented in the first of the Birth Figures. He now describes in turn the various ways in which the infant or infants may present, and in what manner the midwife is to treat them. In the second of the Birth Figures a child is represented coming feet first (the attitude of the foetus is wrongly represented, as it is indeed in most of the figures), and in such circumstances the midwife is apparently directed to perform cephalic version! Here, at any rate, are the directions: "Sometime it chaunced the child to come the legges and both armes and handes downwarde, close to the sydes fyrst foorth, as appeareth in the seconde of the byrth figures. In this case the Mydwyfe must do all her payne with tender handlynge and annoyntyng to receave foorth the chylde, the legges beyng styll close together and the handes lykewyse remaynynge as appeareth in the seconde figure. Howbeit, it were farre better (yf it may be done by anye possible wayes or meanes) that the Mydwyfe shoulde tourne these legges commyng fyrst foorth, upwardes agayne by the bellywarde, so that the head myght descende downnewarde by the backe parte of the wombe: for then naturally agayne and
without peryl might it proceade and come forth as the fyrste."

In the third of the Birth Figures the foetus is represented as coming by the feet with the arms displaced upward alongside of the head. "This is the perylloust maner of byrth"; and the direction is that the midwife must do what she may "to turne the byrth (yf it may be possible) to the first figure," but no directions are given as to the way in which this is to be done. If she cannot do this, she is directed to convert it into the second figure by bringing down the hands; and "if this also wyll not bee, then receave the feete as they come foorth, and bynde them with some fayre linnen cloth, and so tenderly and very softly lose out the byrth tyll all be come foorth, and this is very jeoperdous labour." When one foot only presents (*Birth Figure IV.*) version by the postural method ("the labouring woman’s head to be the lower part of her body") is to be followed; but if it do not succeed, the midwife is to bring down the other foot. The fifth *Birth Figure* represents, rather crudely, a transverse presentation; the sole direction for its management is: "then must the Mydwyfe do so, that it may be returned to his naturall fashion, and so to come foorth." The sixth and seventh cases call for no special comment. The eighth Birth Figure shows descent of one of the arms alongside of the head; under these circumstances the midwife is told to thrust the birth in again, and if this fail she is to try postural treatment; the same procedure is to be adopted in the ninth mode of presentation when both hands come down. The directions for the management of a breech case (*Birth Figure X.*) are surprising: "Then must the Mydwyfe with her handes returne it agayne, untyll such tyme that the birth be turned, the legges and feete forwarde." A shoulder presentation is shown in Birth Figure XII. (described erroneously in the text as XI.), and the direction is, "then must ye fayre and softly thrust it back agayne by the shulders, tyll suche tyme as
the heade come forwarde." Twin cases are shown in the Birth Figures XIV., XV., and XVI.; in the first are two heads, in the second two breeches, and the third is a head and a breech presentation. In the description appended to the last-named mode of labour there is the suggestion that the possibility of head-locking was not unknown to the writer.

On the whole, it must be admitted that the management of labour as set forth in this chapter falls far behind modern practice, not to say theory. The notions regarding the attitude of the foetus in utero were erroneous, the distinctions between the various presentations were incomplete (e.g., face cases are not figured or named), and the management not infrequently consisted in interfering in the cases which we should now leave alone and in using ointments and posture under circumstances in which more radical methods would now be adopted. One cannot help wondering also how the midwives carried out the instructions given to them; certainly they were not burdened with details.

The fourth chapter (wrongly described as the fifth in this edition of 1650) deals with "the remedies and medicines by the which the labour may be made more tollerable, easy, and without great payne." The posture of the patient, the temperature of the lying-in room, the provocation of sneezing ("and that eyther with the powder of Eleborus\(^1\) or els of pepper"), and the use of ointments are all referred to. Of the oils, ointments, perfumes, washes, drinks, pills, and plasters mentioned in this chapter, we need mention two only. Here is a perfume: "Take yelowe brymstone, Myrre, Mader, Galbanum, Oppoponacum, of ech lyke much, and tempre all those together, makynge of them pylles, and with those also ye maye make fume, to be receaved underneath." The chapter closes with the prescription of "a plaster to provoke the birth." Here it is: "Take

\(^1\) Eleborus, Hellebore, White Hellebore (Veratum album), was used as a sternutatory.
wylde Gowarde,\(^1\) and seeth it in water, in the same water temper Myrre, the juyce of Rue, and Barlye meale so much as shalbe sufficient, stampe these thynges together, and make it plasterwyse, then laye it to the womans bellye betwene the Navyll and the nether parte. This plaster shall helpe marvellously."

Chapter V. is concerned with "howe the secondine or seconde byrth shalbe forced to issue foorth, if it come not freely of his owne kynde." Various causes of the non-expulsion of the placenta and membranes are enumerated, such as lack of strength from prolonged labour, "entanglement" of the secondines within the uterus, and swelling of the parts. The dangers of placental retention are also named, and include "suffocation and chokinge of the Matrix" and putrefaction of the after-birth. "The seconde birth retayned and kept within will soone putrifie and rot: whereof wyll ensue yll noysom and pestiferous vapoures ascendinge to the heart, the braynes and the midriffe, through the which meanes the woman shalbe short wynded, faynte harted, often soundinge and lyinge without any maner of movynge or styrringe in the pulces: yea, and many tymes is playnely suffocated, stranglde and dead of it."

The remedies proposed for non-expulsion of the placenta were founded to some extent upon the causal conditions so far as these were understood. If weakness from long labour were the cause, then must the "labourer" be "recomforted and strengthed with good comfortable meates and drinkes, which maye enhart her, as broath made of the yolcke of egges, or with good olde wine, and good fat and tidie fleshe, or Byrdes, Hennes fleshe, Capons, Partrige, Pigins and such like." If the cause were contraction of the passages, then oils and ointments are recommended to "make the waye slypper, sople, and easy for it to proceade." Perfumes, also, and vapours are said to be efficacious. "But if the retencion of the secondine come by

\(^1\) Gowarde, Wild Gourd, Colocynth.
reason that it is entangled or fastened in some place of the Matrix, so that it will not resolve nor loose; then make a fume underneath of Brimstone, Ivie leaves, and Cresses, or elles of Cresses fygges." There are some curious restrictions, of which the following is an instance: "Also of all odoriferous and sweete smellinge thinges, as Ambre, Muske, Frankencense, Gallia Muscata, and confection, near the which savoures and perfumes put on the embers muste be so closely receaved underneth, that no part of the smell do ascend to the nose of the woman. For to the nose should the savoure of nothyng come, but onely of suche thinges, the which stinke or have abhominable smell, as Asafetida, Castorium, mans hayre or womens hayre burnt, Pecockes fethers burnt." "Item let her be provoked to sneese with the powder of Eleborus or Pepper put in the nose, holdinge her mouth and nose so close as maye be."

The following directions for the removal of the after-birth are interesting: "And yf it bee so that any parte of the secondine do appeare, let the Mydwife receave it tenderly, losyng it out fayre and softly, least it breake, and if ye doubt that it wil breake, then let the Mydwife tye that parte of the whiche she hath handfast to the womans legge or fote, not very strayght, least it breake, nether very lax, least it slip in agayne, and then cause her to sneese. Nowe yf the secondine tarye or stycke, so that it come not quickly forewarde, then loose it a lyttle and a lyttle very tenderly, wrethinge it from one syde to another, tyll such time as it be gotten out, but ever beware of violent and hasty movynge of it, leaste that with the seconde byrth ye remove the Matrix also." The danger of inversion of the uterus is doubtless alluded to in this last passage. The chapter closes with directions for a fumigation and a plaster, and with the following somewhat despairing instruction: "If for al this the secondine come not forewarde, then leave it, and use no more medicines ne remedies to that
purpose, but let it alone, for within fewe days it wyll putrifie and corrupt, and dissolve into a watery substaunce, thick like bryne, or other fex myxed with water, and so yssue foorth. Howbeit in the meane whyle it wyll put the woman to great paine in the head, in the heart, and in the stomacke, as we touched before.”

The sixth chapter is a long one, dealing with such important matters as “howe many thinges chaunce to the women after theyr laboure, and how to avoyde, defende, or to remedye the same.” Among the “many thinges” are “the fever or ague, or swelling, or inflation of the bodye, other tumblynge in the belly, or elles commotion or settelinge out of order of the Mother or Matrix,” and the cause of these is sometimes “lacke of due and sufficient purgation and clensynge of the flowres after the byrth, or els contrarywyse over muche flowinge of the same, whiche sore doth weaken the woman, also the great labour and styrrynge of the Matrix in the byrth.”

The “ague” we may shrewdly suspect was septic poisoning, “for that commeth of like cause by retention of the flowres.” The patient is then to “drinke water in the whiche is decocte Barley beaten, or Cicer¹ and Barley together, or water in whiche be sodden Tamarindi, or whaye of mylke, and let her eate Cullis² made of a Cocke, and sweete Pomegarnates, for these thynge do provoke the flowres,” etc. Various remedies, resembling those already referred to, are to be given in such conditions as swelling of the body, “frettinge and knawynge of the guttes,” “paine in the privie partes,” “outragious flux of flowres,” “coming forth of the fundament gut,” and the like. It is unnecessary to describe in detail the curious plans adopted and mixtures administered in these cases, one instance must serve for all: “To stynte and restrayne the outragious fluxe of flowres, it shalbe verye good to binde the armes

¹ Cicer, a chick-pea.
² Cullis, a strong broth, a beef-tea.
strayght and strongly, and not the feete or handes, as some unwyse men doe teache, and then to set a ventose boxe, or cupping glasse with fyre (which is called borying) under the brestes without anye scarification." Here is one of the plasters: "Take of the bloud stone called Emathites, Bole armeniacke of eche halfe an ounce, Sanguis draconis, Licium, of eche twoo drammes, Karabe, otherwyte named Ambre, the cuppes of Acornes, Cipres tree nuttes, flowres of Pomegranade, of eche one dram, of the scales of Iron one dram and a halfe, Turpintine and Pitch lyke quantitie, or so much as shalbe sufficient to make a softe and somewhat liquid plaster."

The next chapter (the seventh) deals with "aborcementes or untymelye byrthes, and the causes of it, and by what remedies it may be defended, holpen, and eased." Many curious causes are enumerated, among which is "a disease called Tenasmus, the which is when hath ever greate desyre and luste to the stool, and yet can do nothynge." Other causes are coughing, bleeding at the nose, "to be let bloud," strong purgation, hunger, cold, heat, etc. "Therefore ought women with chylde to eschewe much bathyng or going to the hotte houses in theyr teming" (teeming). "Item, the intemperancie and mutation of the ayre and weather may be cause of aborcement," and after this statement there follows an interesting paragraph on meteorology in its relation to health, as it was then understood. "Dancing and leaping" are also named as possible causes, and so are "sodayne anger, feare, dread, sorowe, or some sodaine and unloked for joy."

To the modern reader the signs of abortion enumerated by the writer of the Byrth of Mankynde will appear most astonishing and unconvincing; among them he will find "a great ache in the inner part of the eies toward the braynes," redness of the face, "ventositie or wynde runnyngge from one syde of the bodye to the other." At the same time there is a reference, but a very brief one, to the really important sign of "greate
paynes and dolours of the Matrix." The means of diagnosis
given are hardly such as to justify the author's confident
assertion: "thus have I sufficiently declared evident sygnes,
whereby may be provyded and foresene the aborcement before
it come." The methods of treatment are those which we now
have come to look for from our author,—baths, fumigations,
plasters, ointments, odours, and such like; but he gives the
midwife one good piece of advice: "Howbeit, in all thys
matter, let not to make some expert Phisition of youre counsaile,
yf ye may have suche one: for because that manye suche thinges
come, and not all by one way or meane."

The eighth chapter (wrongly named the ninth in the edition
of 1560) is concerned with "dead byrthes, and by what sygnes
or tokens it maye be knowen, and by what means it may also
be expelled." The signs are twelve in number; but they are
not very convincing, as may be gathered when it is noted that
the twelfth sign is, if the mother's "handes put into very warme
water, and then layde on the belly, and the childe steare not."
There is evidence of sound knowledge, however, in the statement
that "of all these sygnes nowe, the more that come togeather of
theym at one tyme and in one person, the surer maye ye be
that the byrth is dead."

The prognosis, grave or favourable, in cases of dead-birth
labours is set forth: "Whether the Mother shalbe in parell
or no, by these things shall ye knowe. If the woman beyng
in the laboure sowne or feare as though she were in a transe:
yf her remembraunce fayle her, and she were feble and scante
able to moue or styre herselfe, yf she (called with a loud voyce)
canne aunswere nothinge at all, or elles verye lyttle, and that
verye softlye, as though her voyce began to fayle her: if she
be invaded or taken among in the labouring with convulsion or
shrinkelynge togethet: if she refuse or cannot brooke meat: yf
her pulees beat every faste, the which signes when ye se in the
woman labouringe, it is an evident token that she shal not lyve
longe after her delyveraunce, wherefore commit the cure of her to the handes of almyghtie God."

The treatment consists in getting ride of the "dead burthen" either by "medicines expulsyve" or else by certain instruments made "for the nonce." Here, again, we find described a long list of fumigations, containing such things as the hoof or dung of an ass, the skin of an adder, "hawkes' dung" or "oxe gall," of suppositories or pessaries, of drinks ("yf the woman drynke the mylke of another woman, it will styre and expell the byrthe"), and of plasters. "But yf all these medicines profyt not, then must be used more severe and harde remeyses, with instrumentes: as hokes, tounges, and suche other thinges made for the nonce." From the wording of the directions it is evidently intended that the midwife herself shall fix the hooks into the eyes, or mouth, or shoulders, or ribs of the dead foetus and 'make traction, other women keeping the patient down. Arms and legs are to be cut off, if need be, and the head is to be opened with a sharp penknife if it be much swollen. Both the head and trunk may have to be broken up into pieces with "such instrumentes as the Chirurgions have readye and neces-
sarye for suche purposes."

The last paragraph of this chapter must be quoted entire: "But contrary to all this, yf it chaunce that the woman in her labour dye, and the chylde having lyfe in it: then shal it be meete to kepe open the womans mouth, and also the nether places; so that the chylde may by that meanes both receave and also expell ayre and breath, which otherwyse myght be stopped, to the destruction of the chylde. And then to turne her on the lefte syde, and there to cut her open, and so to take out the chylde. They that be borne after this fashion are called Cesares, for because they be cutte out of theyr mothers belly: whereupon also the noble Romayne Cesar the fyrste toke his name." Assuredly the directions given here for a post-mortem Caesarean section are not too explicit!
Chapter IX. (by error called Chapter X. in the Raynalde editions) has no representative in the 1540 edition or in Rösslin's *De Partu Hominis*, and we must, therefore, ascribe it to Raynalde. It contains a list of medicines, ointments, and plasters ("suche as hath ben wel experimented and practysed"), to be used to quicken delivery and to expel the after-birth. The reader is, by this time, able to foretell pretty accurately what kind of drugs will be in these medicines, and I need only refer to certain "trockiskes" upon which the writer evidently places much reliance. "Item, of Saffron dried by the fyre tyl it be blackyshe, of *Cassia lignea*, fine Reubarbe, Savine dried, Myrreh, of eche of these seven scruples, of pure muske, xvi. graynes, every of these simples exquisitely by them selves powdred, and then perfectlye myxed in one, with vi. or vii. droppes of Malvesey, temper the whole mase into lyttle roundels or trochiskes, eche waying a dram. And in tyme of neede at the womans labour, geve her hardly the wayght of vi. d. of these trochiskes beaten into fine powder, with foure sponefulles of Isole water, and other foure of good wine seeke."

The chapter closes with a paragraph (to which I have referred in my previous article as the "Bucklersbery paragraph") telling where the "trockiskes" are to be obtained.

Such are the contents of the Second Book as they appear in the 1560 edition. There are slight verbal differences in some of the other editions, and these specially affect the "Bucklersbery paragraph." More distinct variations separate the 1540 or Jonas editions from that of 1560 and from the rest. The whole of the ninth chapter (erroneously called the *tenth*) is absent from the 1540 edition; there is a difference in the wording of the commendation of the "plaster to provoke the birth," Jonas being less certain about its efficacy than Raynalde, and throughout the whole book Jonas is more in the habit of introducing such phrases as "Avicenna saith" or "Hippocrates writeth" than Raynalde (e.g. in Chapter VIII). The differences
are simply due to the fact that Jonas translated Rösslin's book literally, whereas Raynalde gave a more free rendering and supplemented the work here and there. For this reason, also, it comes about that the Second Book of the Raynalde editions is part of the First Book of the Jonas edition, for it really represents Chapters II. to IX. of Rösslin's *De Partu Hominis*. Jonas's First Book corresponds to Chapters I. to XI. of Rösslin.

The "Byrthe Fygures."

The "Byrthe Fygures," including the "Woman's Stoole," belong to the Second Book of the 1560 and of the other Raynalde editions. They are all taken from Rösslin's *De Partu Hominis*, but they are not placed in the same order. Further, there is one in Rösslin's book which does not appear in the 1560 edition (or, so far as I know, in any of the Raynalde editions); this has been reproduced in Fig. V. It will be noted that in some respects it more nearly represents the true attitude of the foetus in utero than any of the others. I have reproduced five of the Rösslin figures (including the "Stoole") which have their representatives in the Raynalde editions (Figs. VI.-X.), so that the reader may compare them with the same pictures as they appear in the English translation (see my previous article, Plates VIII., IX., X., and XI.). I have already (loc. cit.) referred to the great interest which the "Byrth Fygures" of the *Byrth of Mankynde* have excited as being the earliest, or almost the earliest, specimens of English copperplates.

The Third Book.

The Third Book of the 1560 edition of the *Byrth of Mankynde* consists of three chapters, the third being a very long one. It is devoted to the care of the new-born infant, and to its "dyverse diseases and infyrmities": the first chapter speaks
of the umbilical cord and its management, the second of the nurse and her milk, and the third of the maladies of infants and the remedies required for them. "Then after that the Infant is once come to lyght, by and by the Navyll muste be cut three fyngers breadth from the belly, and so knit up, and let be strued on the head of that remayneth, of the powder of Bole armeniacke, and Sanguis draconis, Sarcocolla, Myrrhe, and Cummin, of eche lyke muche beaten to pouder, then upon that bynd a peece of woll, dypped in oyle Olive, that the powder fall not of. Some use fyrst to knyt the Navyl, and after to cut it so much, as is before rehearsed." The writer mentions the belief that the length of the stump of the cord will determine the length of the "chyldes tonge," if it be a man-child. He also refers to Avicenna's statement that the wrinkles on the cord betoken the number of future pregnancies the patient is to have and the intervals of time (long or short) between them; "but these sayinges be nether in the Gospell of the day, ne of the night."

The child's body is to be rubbed with oil of acorns. "After this annoyntyng, washe the Infante with warme water, and with your fynger (the nayle beyng pared) open the chyldes nosethrilles, and purge them of the fylthiness." After the fall of the cord ("whiche commonlye chaunceth after the thyrde or fourth daye") the cicatrix is to be dusted with "ashes of a Calfes hove burnte, or of Snayle shelles, or of the powder of lead, called red lead, tempered with wyne." The proper swaddling of the child is then described, so that its limbs may grow straight ("as it is in yonge and tender impes, plantes, and twygges"); the eyes should be frequently washed, and it should sleep in its cradle in such a place that neither the beames of the Sunne by day, neither of the Moone by nyght come on the Infant." It is to be washed two or three times a day; and, after that, to put a drop or two of water into its nostrils is "very good for the eye syght."
"It shalbe beste that the mother give her chylde sucke her selfe, for the mothers mylke is more convenient and agreeable to the infant, than any other womans, and more doth it nouryshe it, for because that in the mothers belly it was wont to the same, and fed with it, and therefore also it doth more desyrouslye covet the same, as that with the which it is best acquainted." Apparently the nursings are not to be frequent: "As Avicenna writeth it shalbe sufficient to give sucke twyse or thryse in a daye." If the mother be unable to suckle her child, then a "holsome Nourse" is to be sought out; five or six essential qualities are enumerated which she must possess, and a method of testing the milk upon the thumb nail is described. There is a long list of remedies which are said to increase the quantity of the milk. Two instances must serve: "Item, to eate shepes brestes, and the mylke of them is good"; "Item, take two drams of Crystall beaten into fyne powder, and devyde that in foure equal partes: one of these partes geve unto the Nourse, the space of foure dayes to drynke, with broth made eyther of Cicer,1 or elles of peason."2 The child is not to be put to the mother's breast for a day or two after birth, "because that the creme (as they cal it) straight after the byrth, the first day in al women doeth thicken and congile." This, it need hardly be said, is not the rule of procedure at the present time. Weaning should take place at the end of the year, and it is not to be carried out suddenly but gradually; the infant is not to be given "lyttle pylles of bread and sugar to eate" until it be able to "eate all maner of meate."

The third chapter of this book is taken up, as has been said, with the diseases of infants and their treatment. It is of interest rather to the pediatric physician than to the obstetrician; but I may enumerate some of the subjects dealt with: "loosenesse of the bellye, cough and distillation,3 short winde, wheales on

1 Cicer, chick-pea.  
2 Peason, pease.  
3 Distillation, a catarrh or defluxion of rheum.
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the tounge, apostumation and runninge of the eares, bolnynge\(^1\) of the eyes, often sneesinge, whelkes in the body, swelling of the coddes,\(^2\) unslepinesse, yeringe or the hyckate,\(^3\) terrible dreames, wormes in the belly, the fallynge syckenes, the palsey, and gogle eyes\(^4\) or lookinge squint." It is unnecessary to quote the means recommended for the treatment of these various maladies, but the following prescription for the falling sickness (epilepsy) may be given by way of sample: "Item, to hange \textit{Viscum quersinum},\(^5\) which is gathered in Marche the moone decreasynge, about the Chyldes necke, is very good."

The Third Book as it appears in the 1560 edition differs little from what it is in the other Raynalde issues, earlier or later. I have found a few verbal differences between it and the 1552 edition (\textit{e.g.}, in the paragraph on "Unsleppynesse"), and in the 1654 edition there is a new chapter (placed quite at the end of the work) amplifying what has been said about the nursing of children and "how to choose a good nurse." The 1540 edition differs more markedly: the chapter on "unsleepiness" is shorter, that on swelling of the coddes is not the same; there are two additional short paragraphs (the one "against the mother," and the other of short breath, hoarseness, or whistling in the throat), and there is an additional sentence on infantile constipation.

The Third Book of the Raynalde editions corresponds to Chapters X. and XI. of the First Book and to the whole of the Second Book of the 1540 or Jonas edition. It forms, also, the tenth, eleventh, and twelfth chapters of \textit{De Partu Hominis}, from p. 61 to the end (in the edition of 1538).

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1 Bolnynge, swelling or a tumour.
2 Coddes, testicles.
3 Hyckate or yexing, the hiccup.
4 Gogle eyes, staring eyes or squint eyes.
5 \textit{Viscum quersinum}, mistletoe of the oak.
The Fourth Book.

The Fourth Book of the 1560 as well as of the other Raynalde editions consists of six chapters; these are not found in Rösslin's *De Partu Hominis*, but five of them are present in the 1540 or Jonas edition of the *Byrth of Mankynde*, so that only one (the sixth) chapter is peculiar to the Raynalde editions. The Fourth Book of the 1545 and of all later editions corresponds to the Third Book of the 1540 or first impression.

An idea of the subjects dealt with in the Fourth Book can best be obtained from the short summary contained in the first chapter. I quote (in this instance) from the 1552 edition: "Here in this fourth Boke (by ye leave of God) shal brefely be declared soch things which may farther or hinder the conception of man, whych as it may be by dyvers meanes letted and hyndered, so also by many other wayes it may be farthered and amended. Also to knowe by certayne sygnes and tokens whether the woman be conceaved or no, and whether the conception be male or female, and finally certayne remedies and medicines to farther and help conception: and there after we wyll (accordynge to our promyse in the prologue) set forth certayne bellyfying receptes, and so make an ende of this hole treatyse."

The second chapter gives the author's views as to the necessary conditions for the growing of corn between which and human generation he draws a parallel: "Ther be in al maner of generation thre principal partes concurrent to the same: ye sower, the sede sowen, and the receptacle or place receaving and contayninge the seede." The third chapter applies this principle to the consideration of the causes of sterility, and enumerates faults in the mother receiving the seed, faults in the sower, and faults in the seed itself. The mother's womb
is fancifully compared to the ground; it may be too hot, too cold, too moist, or too dense. The following paragraph may be quoted to show how the author persuades himself that coldness of the matrix is a cause of sterility: “For yf corne be sowen in over cold places, soch as be in the partes of a countrey, called Sithia, and in certayne places of Almayne, or in soch places where is contynual snow or frost, or wher the sunne doth not shyne: in these places the sede or grayn sowen, wyl never come to profe, nor fructfy, but through the vehement coldnesse of the place in the which it is conceaved, the lyfe and quickenes of the grayne is utterlye destroyed and adnihilat.”

The man’s seed also may be defective as to heat, cold, thickness, etc. Even more fanciful is the fourth chapter, which pretends to give ways of finding out whether sterility is due to defect in the woman or the man. “Let eche of theim take of wheate and barleye cornes, and of beanes of ech vii., the which they shal suffre to be steped in theyre severall uryne: the space of xxiii. hourses: then take ii. pottes, soch as they set gylyflowres in: fyl them wyth good earth: and in the one let be set the wheat, barlye, and beanes, styped (steeped) in the mans water, and in the other the wheat, barly, and beanes styped in the womans water: and everye morninge the space of viii. or x. dayes, let eche of them with theyr proper urine water the sayd sedes sowen in the foresayd pottes and mark whose pot doth prove, and the sedes therein contayned doth grow, in ye partye is not the lack of conception, and se yf ther come no other water or rayne on the pottes.” This marvellous test ends with the wise remark, “but trust not mocch this farfet1 experiment.”

Other tokens are given, taken from the works of Hippocrates (which are often quoted in this Book), but the writer warns the reader that “these tokens, although they have a certain reason and apparence, yet be they not always unfallyble, but onely lycklye.” The signs of pregnancy are described (menstrual

1 Farfet, far-fetched.
suppression, changes in the breasts, "longings," and thickness of the urine), and directions are given to enable the midwife to tell whether the unborn child is male or female.

The fifth chapter contains various prescriptions supposed to be efficacious in curing sterility, but they call for little comment and no commendation, being founded upon the etiological theory of lack of heat or cold or moisture in the woman or in her uterus.

The sixth and last chapter of the Fourth Book may be called the "cosmetic" one, for it deals with what the writer (Raynalde) calls "dyvers bellyfying" medicines and remedies. It is proposed to show how certain blemishes ("as it were weeds of the body") are to be removed, such as "dandrabfe" of the head, "hayre in places where it is unsemelye," "frekens or other spottes in the face," warts, and "pymple." There are also instructions how to keep and preserve the teeth clean, and how to prevent "stynckynge breath" and "ranke savour of the armeholes." I need only quote the last paragraph: "Item, auctors do wryte the ye rootes of artichauts (ye pithe pyked oute) soden in whyte wyne and so dronke, doth clense the stenche of the arme holes and other partes of the body by the wyne: for (as Gallen also doeth testyfye) he provoketh copy and plenty of stinkynge and unsavery uryne, from all partes of the body, the whych propertye it hath by speyall gyft and not only by his hote qualifye. And thus here I make an ende of thys fourth and last boke."

The sixth chapter is wanting in the Jonas edition of 1540, but is to be found in all the Raynalde editions from that of 1545 onwards.

No part of the Fourth Book is to be found in either of the editions of Rösslin's De Partu Hominis, and we must conclude that Chapters I. to V. were written by Jonas, Raynalde adding the sixth. Both Raynalde and Jonas seem to have gone to Hippocrates for their facts (if facts they can be called), or to
some work which quotes Hippocrates. The latter is the more probable explanation of the source of the Fourth Book.

**Rhodion's "De Partu Hominis."**

As we have seen, Jonas translated Rösslin's or Rhodion's *De Partu Hominis* into English, adding a few chapters thereto, and Raynalde revised the translation and added new material. But who was Rösslin and what was the history of his work?

Eucharius Rösslin, Röslin, or Rhodian was a medical man practising first in Worms and then in Frankfort-on-Main. The date of his birth is unknown, and for his death year two dates have been given—1526 and 1553. The earlier of the two is most probably the correct one, the later date being that of the death of his son. He published his work entitled *Der Swangern Frawen und Hebammen Rosegarten* (by Imperial Privilege) in 1513, and so gave to the world the first separate work on midwifery. It was dedicated to Catherine, Princess of Saxony and Duchess of Brunswick and Lüneburg; and it was a compilation from the works of Hippocrates, Galen, Avicenna, Albertus Magnus, Aëtius, Gordon, and Savonarola. The earliest edition (that of 1513) had the same Birth Figures as were found in Jonas and Raynalde; they were printed from woodblocks. The work was divided into twelve chapters corresponding to the First and Second Books of the Jonas edition of the *Byrth of Mankynde*, and (speaking generally) to the Second and Third Books of the Raynalde editions of the same work. Several German editions of the *Rosegarten* appeared (in 1522, 1529, 1571); then it was translated into Latin, and, as *De Partu Hominis*, editions were brought out in 1532, 1535, 1536, 1537, 1538, 1551, 1554, 1556, and 1563; Dutch translations, under the title of *Den Rosegaert van den bevruchten Vrouwen*, came out in 1540, 1555, 1670, 1685, 1701, and 1730; and there were French versions in 1536, 1540,
1563, and 1577. The English translations we have already described.

In order that the reader may judge of the accuracy of the Jonas and Raynalde rendering of Rhodion’s work, I place here in parallel columns the Latin and the English of two passages, one referring to the “Woman’s Stoole” and the other to Cæsarean section:—

From Rhodion’s “De Partu Hominis.”

“Ad quem quidem rem, in quibusdam regionibus ut in Gallia et Germania superiori, obstetrices peculiaria sedilia habent, quae et ab humo non non alte distant, et excavata ita sunt, ut facile, quae debent, transmittant, et reclinantem tergo accipiant: quarum forma fere est talis, qualem hic adpinximus.”

From Raynalde’s “Byrth of Mankynde.”

“For the which purpose in some regions (as in Fraunce and Germany) the Midwyfes have stoles for the nonce, whiche beynge but lowe, and not bye·from the grounde, be made so compasse wyse and cave or holowe in the middes, that that mai be receaved from underneth which is looked for, and the backe of the stole leaning backeward, receaveth the back of the woman, the fashion of the which stole, is set in the beginning of the birth figures hereafter.”

“But contrary to all this, yf it chance that the woman in her labour dye, and the chylde havyng lyfe in it: then shal it be meete to kepe open the womans mouth, and also the nether places; so that the chylde may by that means both receave and also expell ayre and breath, which otherwyse myght be stopped, to the destruction of the chylde. And then to turne her on the lefte syde, and there to cut her open, and so to take out the chylde. They that
aperiri (nam dexterrnum latus non ita liberum, propter hepar quod in eo situm habet, ingressum incidenti praebebt) et inde partusinserta manu per vulnus eximiatque educi debent. Quo pacto qui
nascuntur, cesares dici solent, ut etiam Romae ille a quo primo
cesarum familia nomen adepta fuit, primusque caesar, eo quod
cia est matre natus, appellatus, est.”

It will be seen that the translation is not strictly literal, neither is it exact: for instance, the reason why the abdomen (in Cæsarean section) is to be opened on the left side rather than on the right is given in the Latin version but does not appear in the English. Possibly some divergences may be explained on the supposition that Jonas and Raynalde used editions of De Partu Hominis which I have not been able to see.

I have now concluded my survey of this remarkable book—The Byrth of Mankynde—both as regards its contents and in respect to its authors and editions. Although its precepts may bring a smile to the face of the obstetrician of the present day and merit his contempt, yet it was the most potent factor in establishing the popular customs which cluster round the practice of midwifery in these Islands, customs which can be traced and recognised even now.

Addenda et Corrigenda.

Since I wrote my article on the Author and Editions of the Byrth of Mankynde I have been informed of several other copies of some of the editions, and have been led to alter some of the statements made. For instance, I am doubtful of the existence of an edition of 1676. Dr C. Napean Longridge, to whom I am
greatly indebted for a series of researches made for me in the British Museum, finds that the so-called copy of 1676 named in the catalogue of the Museum is really that of 1626. I have, therefore, removed this edition from the list.

I have now had an opportunity of examining a copy of the 1604 edition. It belongs to Prof. H. R. Spencer, to whose kindness I am indebted for the privilege of inspecting it. It is very similar in all respects to the edition of 1598. The ornamental title page is exactly the same, with the exception of a few differences in the typography of the title. At the foot of the inscription is, "Imprinted at London for Thomas Adams," instead of, "Imprinted at London by Richarde Watkins," which appears in the 1598 edition. The colophon reads, "Imprinted at London for Thomas Adams, 1604." There are 204 pages in this edition, and three preliminary leaves; the plates are the same, although two plates of the "Byrth Fygroes" happen to be missing in the copy which I am describing; and the type is black letter mostly. It would seem, therefore, as if Watkins, the printer of the 1598 edition, had assigned the blocks as well as the license for printing the Byrth of Mankynde to Thomas Adams.

I must correct the statement made by me on p. 243 of my former article (loc. cit.) about the ninth figure of the Anatomical Plates. It does not make its first appearance in the edition of 1560; it was present (as Figure 5) in the 1545 and 1552 editions. The altering of the order of description of the figures in the 1560 issue had misled me.

Here follows the revised list of the editions. I may take this opportunity of thanking Dr R. Wilson Gibson, of Orton, Tebay, Westmorland, for kindly giving me a perfect copy of the 1654 edition.
Summary of the Editions of the "Byrth of Mankynde."


Edition of 1552. Raynalde's Translation. Royal College of Physicians, Edinburgh; London Obstetrical Society; Dr W. Blair Bell, Liverpool.


Edition of 1598. Raynalde's Translation. British Museum; Royal Medico-Chirurgical Society of London; Dr C. E. Underhill; Washington Library; Hunterian Library, University, Glasgow; Medical Institution, Liverpool.


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