

Edinburgh Mathematical Society.

LIST OF MEMBERS.

FOURTEENTH SESSION, 1895-96.

- 1 V. RAMASWAMI AIYAR, M.A., Prob. Dy. Collector, Trichinopoly, India.
JOHN ALISON, M.A., F.R.S.E., George Watson's College, Edinburgh.
R. E. ALLARDICE, M.A., F.R.S.E., Professor of Mathematics, Leland-Stanford Junior University, California.
A. H. ANGLIN, M.A., LL.D., F.R.S.E., M.R.I.A., Professor of Mathematics, Queen's College, Cork.
- 5 JAMES ARCHIBALD, M.A., Castlehill School, Edinburgh.
PAUL AUBERT, Professeur au Collège Stanislas, Paris.
A. J. GUNION BARCLAY, M.A., F.R.S.E., High School, Glasgow.
J. C. BEATTIE, B.Sc., 19 Crichton Place, Edinburgh.
PETER BENNETT, Glasgow and West of Scotland Technical College, Glasgow.
- 10 JAMES BOLAM, Government Navigation School, Leith.
H. H. BROWNING, M.A., B.D., 128 Byres' Road, Glasgow
JAMES BUCHANAN, M.A., Peterhouse, Cambridge.
J. R. BURGESS, M.A., Merchiston Castle, Edinburgh.

- JOHN WATT BUTTERS, M.A., B.Sc., F.R.S.E., George Heriot's Hospital School, Edinburgh.
- 15 CHARLES CHREE, M.A., Kew Observatory, Richmond, Surrey.
 GEORGE CHRYSTAL, M.A., LL.D., F.R.S.E., Professor of Mathematics, University, Edinburgh (*Hon. Member*).
- JOHN B. CLARK, M.A., F.R.S.E., George Heriot's Hospital School, Edinburgh (110 Craiglea Drive) (*Hon. Secretary*).
- G. P. LENOX CONYNGHAM, Lieutenant, R.E., India.
 G. E. CRAWFORD, M.A., Wykeham House, 9 Manilla Street, Clifton, Bristol.
- 20 LAWRENCE CRAWFORD, B.Sc., Mason College, Birmingham.
 Rev. JAMES A. CRICHTON, M.A., D.D., The Manse, Annan.
 R. F. DAVIS, M.A., 11 Cromwell Grove, West Kensington Park, London, W.
 J. D. H. DICKSON, M.A., F.R.S.E., Peterhouse, Cambridge.
 J. MACALISTER DODDS, M.A., Peterhouse, Cambridge.
- 25 J. M. DOGGART, B.A., High School, Kirkcaldy.
 ALEX. B. DON, M.A., High School, Dunfermline.
 W. DUNCAN, B.A., Rector, Academy, Annan.
 GEORGE DUTHIE, M.A., The Academy, Edinburgh.
 ALEX. EDWARD, M.A., Harris Academy, Dundee.
- 30 ARCH. C. ELLIOT, D.Sc., C.E., Professor of Engineering, University College, Cardiff.
 R. M. FERGUSON, Ph.D., LL.D., F.R.S.E., 8 Queen Street, Edinburgh.
 Rev. NORMAN FRASER, M.A., B.D., Saffronhall Manse, Hamilton.
 E. P. FREDERICK, M.A., Routenburn School, Largs, Ayrshire.
 GEORGE A. GIBSON, M.A., F.R.S.E., Professor of Mathematics, Glasgow and West of Scotland Technical College, Glasgow.
- 35 W. J. GREENSTREET, M.A., Headmaster, Marling School, Stroud.
 RODOLPHO GUIMARAES, Observatorio Astronomico, Lisboa, Portugal.
 R. P. HARDIE, M.A., 4 Scotland Street, Edinburgh.
 WILLIAM HARVEY, B.A., LL.B., 53 Castle Street, Edinburgh.
 HENRY HERD, M.A., George Heriot's Hospital School, Edinburgh.
- 40 ALEX. HOLM, M.A., Garnethill School, Glasgow.
 JAMES HOLM, M.A., Professor of Applied Mathematics and Experimental Physics, South African College, Cape Town.
 JOHN JACK, M.A., Professor of Mathematics, Wilson College, Bombay.

- FRANK H. JACKSON, M.A., 5 Salisbury Gardens, Park Avenue, Hull.
- HUGH A. JAMIESON, M.A., Moray House Training College, Edinburgh.
- 45 LORD KELVIN, LL.D., D.C.L., F.R.S., F.R.S.E., etc., Professor of Natural Philosophy, University, Glasgow (*Hon. Member*).
- JOHN G. KERR, M.A., Headmaster, Allan Glen's School, Glasgow.
- JOHN KING, M.A., B.Sc., Headmaster, Bruntsfield Public School, Edinburgh.
- JOHN W. KIPPEN, Blackness Public School, Dundee.
- CARGILL G. KNOTT, D.Sc., F.R.S.E., Lecturer on Applied Mathematics, University, Edinburgh (*Co-Editor of Proceedings*).
- 50 DANIEL LAMONT, M.A., Mathematical Department, University, Glasgow.
- P. R. SCOTT LANG, M.A., B.Sc., F.R.S.E., Professor of Mathematics, University, St Andrews.
- A. P. LAURIE, B.A., B.Sc., Nairne Lodge, Duddingston.
- J. BARRIE LOW, M.A., 7 Park Terrace, Observatory Road, Cape Town, Cape Colony.
- D. F. LOWE, M.A., F.R.S.E., Headmaster, George Heriot's Hospital School, Edinburgh.
- 55 HECTOR M. MACDONALD, M.A., Clare College, Cambridge.
- JOHN MACDONALD, M.A., Ph.D., George Watson's College, Edinburgh.
- J. A. MACDONALD, M.A., 8 Noble Place, Leith.
- W. J. MACDONALD, M.A., F.R.S.E., Daniel Stewart's College, The Dean, Edinburgh (*Co-Editor of Proceedings*).
- JOHN MACK, M.A., Douglas Cottage, Baillieston, Glasgow.
- 60 ALEX. C. MACKAY, M.A., Ladies' College, Queen Street, Edinburgh.
- J. S. MACKAY, M.A., LL.D., F.R.S.E., The Academy, Edinburgh (*Hon. Member*).
- Rev. JOHN MACKENZIE, M.A., Dalhousie Cottage, Brechin.
- P. MACKINLAY, M.A., Rector, Church of Scotland Training College, Edinburgh.
- DONALD MACMILLAN, M.A., Clifton Bank School, St Andrews.
- 65 JOHN MACMILLAN, M.A., B.Sc., M.B., C.M., F.R.S.E., Edinburgh.

- D. B. MAIR, M.A., Examiner in Mathematics, University, Edinburgh.
- WILLIAM MALCOLM, M.A., Organising Secretary to Lanarkshire County Council, Victoria Place, Airdrie.
- ARTEMAS MARTIN, LL.D., U.S. Coast Survey Office, Washington, D.C., U.S.A.
- DONALD C. MCINTOSH, M.A., George Watson's College, Edinburgh.
- 70 JAMES C. M'CUBBIN, B.A., The Academy, Kilsyth.
- JOHN M'COWAN, M.A., D.Sc., University College, Dundee.
- J. F. M'KEAN, M.A., 3 Upper Gilmore Place, Edinburgh.
- ANGUS M'LEAN, B.Sc., C.E., Glasgow and West of Scotland Technical College, Glasgow.
- CHARLES M'LEOD, M.A., Grammar School, Aberdeen.
- 75 W. J. MILLAR, C.E., Secretary, Instit. Engineers and Ship-builders in Scotland, 207 Bath Street, Glasgow.
- T. HUGH MILLER, M.A., Training College, Isleworth, near London.
- A. C. MITCHELL, D.Sc., F.R.S.E., Principal, Maharajah's College, Trevandrum, Travancore, India.
- JAS. MITCHELL, M.A., B.Sc., 62 Dalry Road, Edinburgh.
- JAS. MITCHELL, M.A., Public School, Burntisland.
- 80 ALEXANDER MORGAN, M.A., B.Sc., F.R.S.E., Church of Scotland Training College, Edinburgh.
- J. T. MORRISON, M.A., B.Sc., F.R.S.E., Professor of Physics, Stellenbosch, Cape Colony.
- THOMAS MUIR, M.A., LL.D., F.R.S.E., Director-General of Education, Cape Colony.
- R. FRANKLIN MUIRHEAD, M.A., B.Sc., 61 Warrender Park Road, Edinburgh.
- ASUTOSH MUKHOPADHYAY, M.A., F.R.A.S., F.R.S.E., Professor of Mathematics, Bhowanipore, Calcutta.
- 85 CHARLES NIVEN, M.A., D.Sc., F.R.S., Professor of Natural Philosophy, University, Aberdeen (*Hon. Member*).
- THOS. NISBET, M.A., 4 Nisbet Street, Parkhead, Glasgow.
- F. GRANT OGILVIE, M.A., B.Sc., F.R.S.E., Principal, Heriot-Watt College, Edinburgh.
- R. T. OMOND, F.R.S.E., 43 Charlotte Square, Edinburgh.

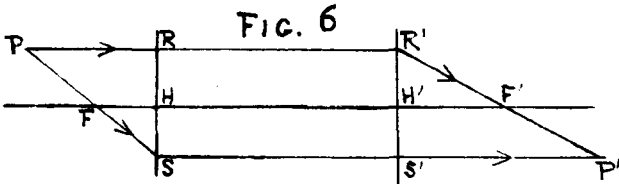
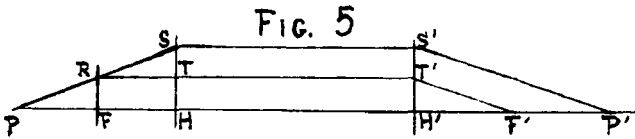
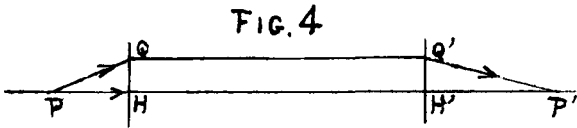
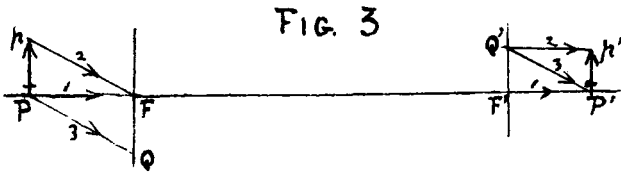
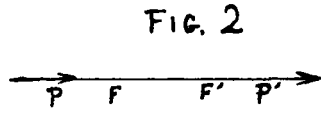
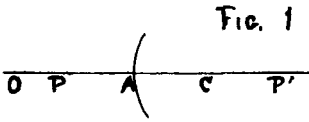
- WILLIAM PEDDIE, D.Sc., F.R.S.E., Assistant to the Professor of Natural Philosophy, University, Edinburgh (*President*).
- 90 DAVID L. PHEASE, M.A., Rector, Miller Institution, Thurso.
 ROBERT PHILP, M.A., Hutcheson's Grammar School, Glasgow.
 PETER PINKERTON, M.A., Allan Glen's School, Glasgow.
 R. H. PINKERTON, M.A., University College, Cardiff.
 GEORGE PIRIE, M.A., LL.D., Professor of Mathematics, University, Aberdeen.
- 95 A. J. PRESSLAND, M.A., F.R.S.E., The Academy, Edinburgh.
 HARRY RAINY, M.A., M.B., C.M., 25 George Square, Edinburgh.
 THOS. T. RANKIN, C.E., B.Sc., Technical School and Mining College, Coatbridge.
 DAVID RENNET, LL.D., 12 Golden Square, Aberdeen.
 WILLIAM RITCHIE, George Watson's College, Edinburgh.
- 100 ALEX. ROBERTSON, M.A., 30 St Andrew Square, Edinburgh.
 ROBT. ROBERTSON, M.A., F.R.S.E., Headmaster, Ladies' College, Queen Street, Edinburgh.
 R. F. SCOTT, M.A., St John's College, Cambridge.
 ALEX. SHAND, Natural Philosophy Laboratory, University, Edinburgh.
 ROBERT T. SKINNER, M.A., George Watson's College, Edinburgh.
- 105 E. J. SMITH, M.A., Royal High School, Edinburgh.
 FRANK SPENCE, M.A., B.Sc., F.R.S.E., Free Church Training College, Edinburgh.
 T. B. SPRAGUE, M.A., LL.D., F.R.S.E., 29 Buckingham Terrace, Edinburgh.
 J. E. A. STEGGALL, M.A., Professor of Mathematics, University College, Dundee.
 WALTER STOTT, 35 Newstead Road, Liverpool.
- 110 JAMES STRACHAN, M.A., Central Higher Grade School, Salford, England.
 P. G. TAIT, M.A., D.Sc., Sec. R.S.E., Professor of Natural Philosophy, University, Edinburgh (*Hon. Member*).
 S. JOAQUIN DE MENDIZABAL-TAMBORREL, Ingeniero Geografo, F.R.A.S., etc., Sociedad Alzate, Palma 13, Mexico.
 JAMES TAYLOR, M.A., The Academy, Edinburgh.
 JAMES TAYLOR, M.A., The Institution, Dollar.
- 115 GEORGE THOM, M.A., LL.D., The Institution, Dollar.

- ANDREW THOMSON, M.A., D.Sc., F.R.S.E., The Academy, Perth.
 JAMES THOMSON, M.A., The Academy, Ayr.
 WM. THOMSON, M.A., B.Sc., F.R.S.E., Registrar to the Cape University, Cape Colony.
 ROBERT TUCKER, M.A., Hon. Sec., London Mathematical Society, 24 Hillmarton Road, London, N.
- 120 JOHN TURNER, M.A., B.Sc., Royal High School, Edinburgh.
 CHARLES TWEEDIE, M.A., B.Sc., Assistant to the Professor of Mathematics, University, Edinburgh.
 DAVID TWEEDIE, M.A., B.Sc., George Watson's College, Edinburgh (*Hon. Treasurer*).
 SAMUEL WALKER, M.A., B.Sc., George Heriot's Hospital School, Edinburgh.
 A. G. WALLACE, M.A., Headmaster, Central Public School, Aberdeen.
- 125 W. WALLACE, M.A., Higher Grade School, Leeds.
 W. G. WALTON, F.F.A., Scottish Provident Office, 6 St Andrew Square, Edinburgh.
 JAMES C. WATT, M.A., Jesus College, Cambridge.
 JAMES MACPHERSON WATTIE, M.A., B.A., E.C. Training College, Aberdeen.
 JOHN WEIR, M.A., Professor of Mathematics, Mysore, India.
- 130 WILLIAM WELSH, M.A., Jesus College, Cambridge.
 Rev. THOMAS WHITE, B.D., The Manse, St John Street, Edinburgh.
 Rev. JOHN WILSON, M.A., F.R.S.E., 23 Buccleuch Place, Edinburgh (*Vice-President*).
 WILLIAM WILSON, M.A., Municipal Technical School, Salford.
 WILLIAM WYPER, C.E., 7 Bowmont Gardens, Hillhead, Glasgow.
- 135 J. DENHOLM YOUNG, West India House, 96 Leadenhall Street, London, E.C.

The following Presents to the Library have been received, for which the Society tenders its grateful thanks.

1. Proceedings of the London Mathematical Society.
Vol. XXVI.—Nos. 509-534.
Vol. XXVII.—Nos. 535-548.
2. Proceedings of the Royal Society of Edinburgh.
Vol. XX.
3. Memoirs and Proceedings of the Manchester Literary and Philosophical Society.
Vol. X.—Nos. 1, 2, 3.
4. General Reports of the Association for the Improvement of Geometrical Teaching, for the years 1882, 1883, 1887-93.
5. Mathematical Gazette.
Nos. 1-8.
6. Reprint of Napier's "Constructio" from Lyons Edition of 1620.
(Presented by the Publisher, M. HERMANN, Paris.)
7. Indian Meteorological Memoirs.
Vol. VII.—Parts 1-5.
Vol. VIII.—Part 1.
(Presented by the Royal Society of Edinburgh.)
8. Bulletin of the American Mathematical Society.
Second Series—Vol. I.—No. 10.
Vol. II.—Nos. 1-10.
9. The Kansas University Quarterly.
Vol. IV.—Nos. 1, 2, 3, 4.
10. Mathematical Magazine.
Vol. II.—No. 10.
11. Bulletin de la Société Mathématique de France.
Vol. XXIII.—Nos. 6-10.
Vol. XXIV.—Nos. 1-4.

12. *Annales de la Faculté des Sciences de Marseille.*
Vol. V.—Parts 1-4.
Vol. VI.—Parts 1-3.
13. *Journal de Mathématiques Élémentaires.*
Publié par M. H. VUIBERT.
Nos. 1-20. 1895-96.
14. *Journal de Mathématiques Élémentaires.*
Publié sous la direction de M. DE LONGCHAMPS.
Nos. 8-12. 1895.
Nos. 1-7. 1896.
15. *Journal de Mathématiques Spéciales.*
Publié sous la direction de M. DE LONGCHAMPS.
Nos. 8-12. 1895.
Nos. 1-7. 1896.
16. *Note sur la machine à résoudre les Équations de M. Torres.*
By M. MAURICE D'OCAGNE.
17. *Jornal de Ciencias Mathematicas e Astronomicas.*
Publicado pelo Dr F. GOMES TEIXEIRA.
Vol. XII.—Nos. 3, 4, 5.
18. *Revue Semestrielle des Publications Mathématiques.*
Published under the auspices of the Mathematical
Society of Amsterdam.
Vol. III.—Part 2.
Vol. IV.—Part 1.
19. *Wiskundige Opgaven Amsterdam.*
Vol. VI.—Part 6.
Vol. VII.—Part 1.
20. *Rendiconti del Circolo Matematico di Palermo.*
Tomo IX.—(Fasc. 5, 6)—1895.
Tomo X.—(Fasc. 1, 2, 3, 4)—1896.
21. *Bulletin de la Société Physico-Mathématique de Kasan.*
Vol. IV.—Nos. 3, 4.
Vol. V.—Nos. 1, 2, 3, 4.



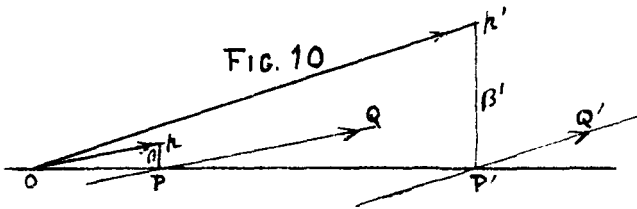
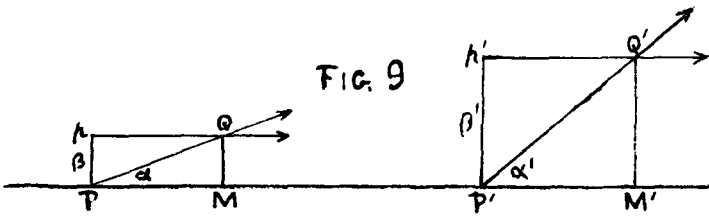
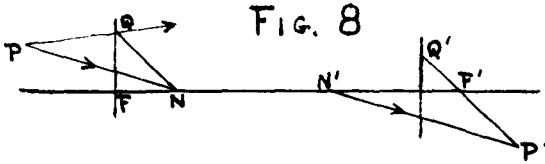
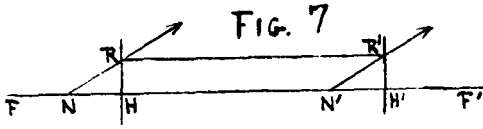
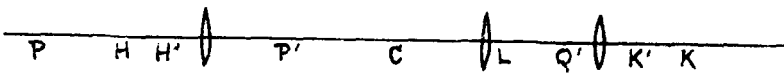
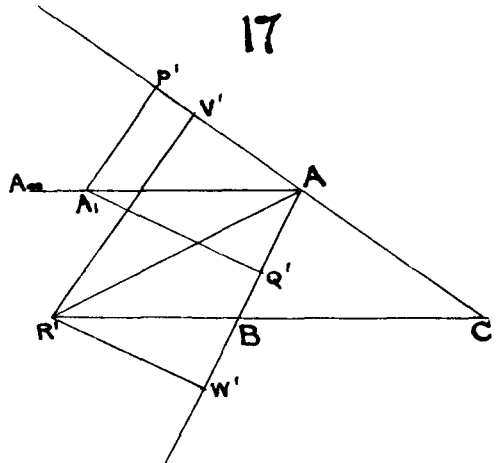
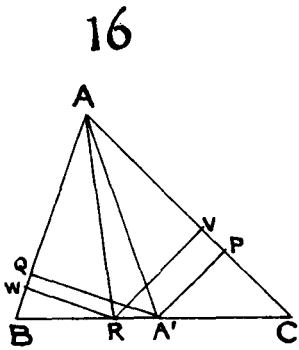
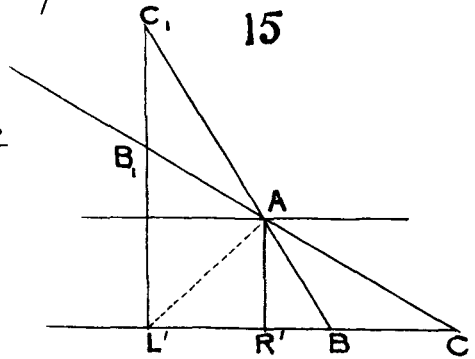
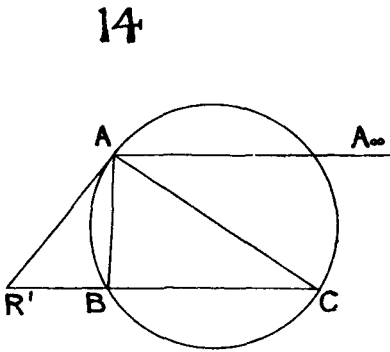
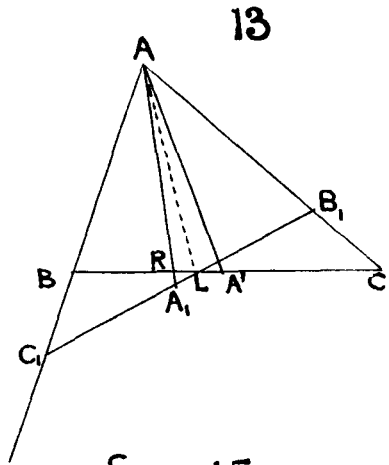
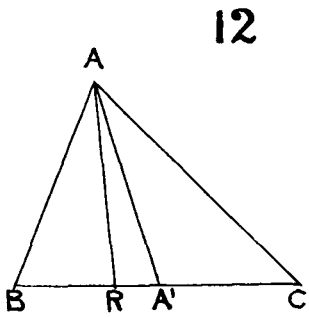
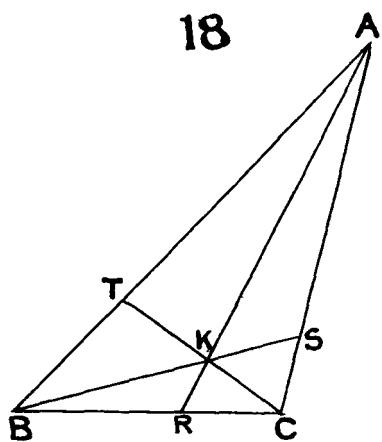


FIG. 11

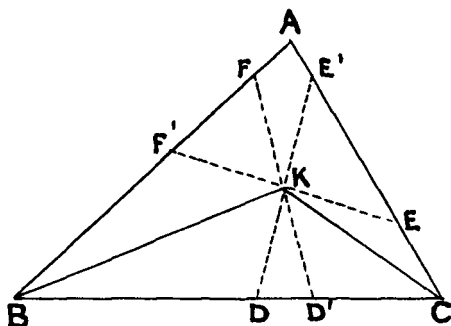




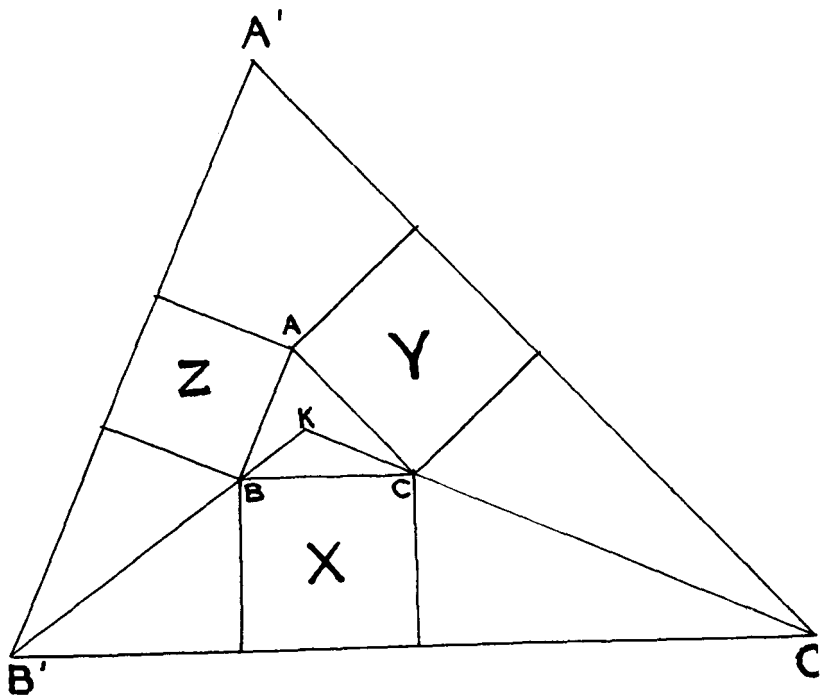
18



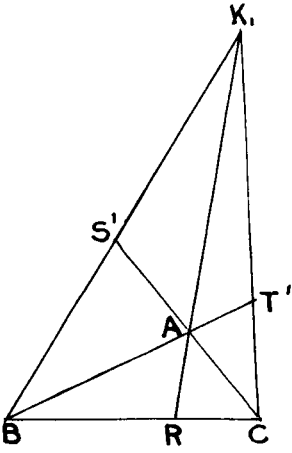
19.



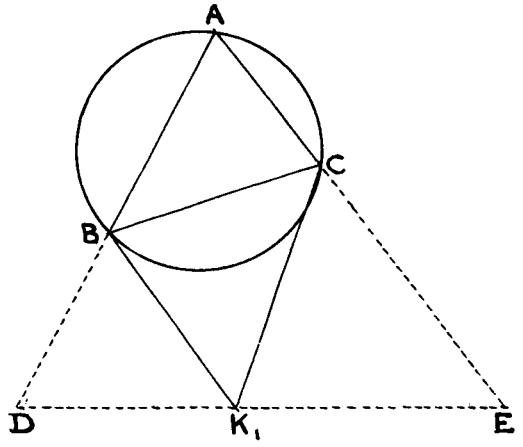
20.



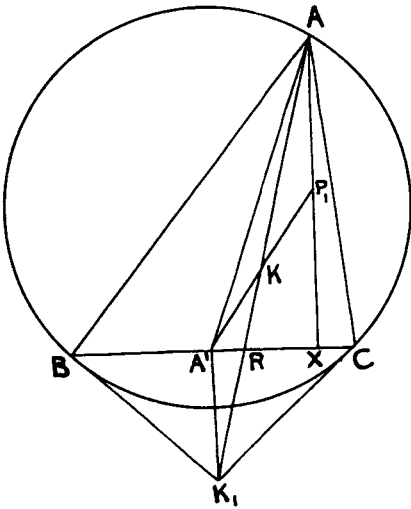
21



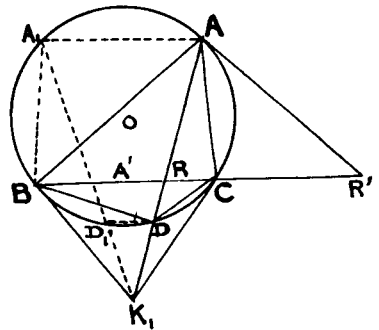
22

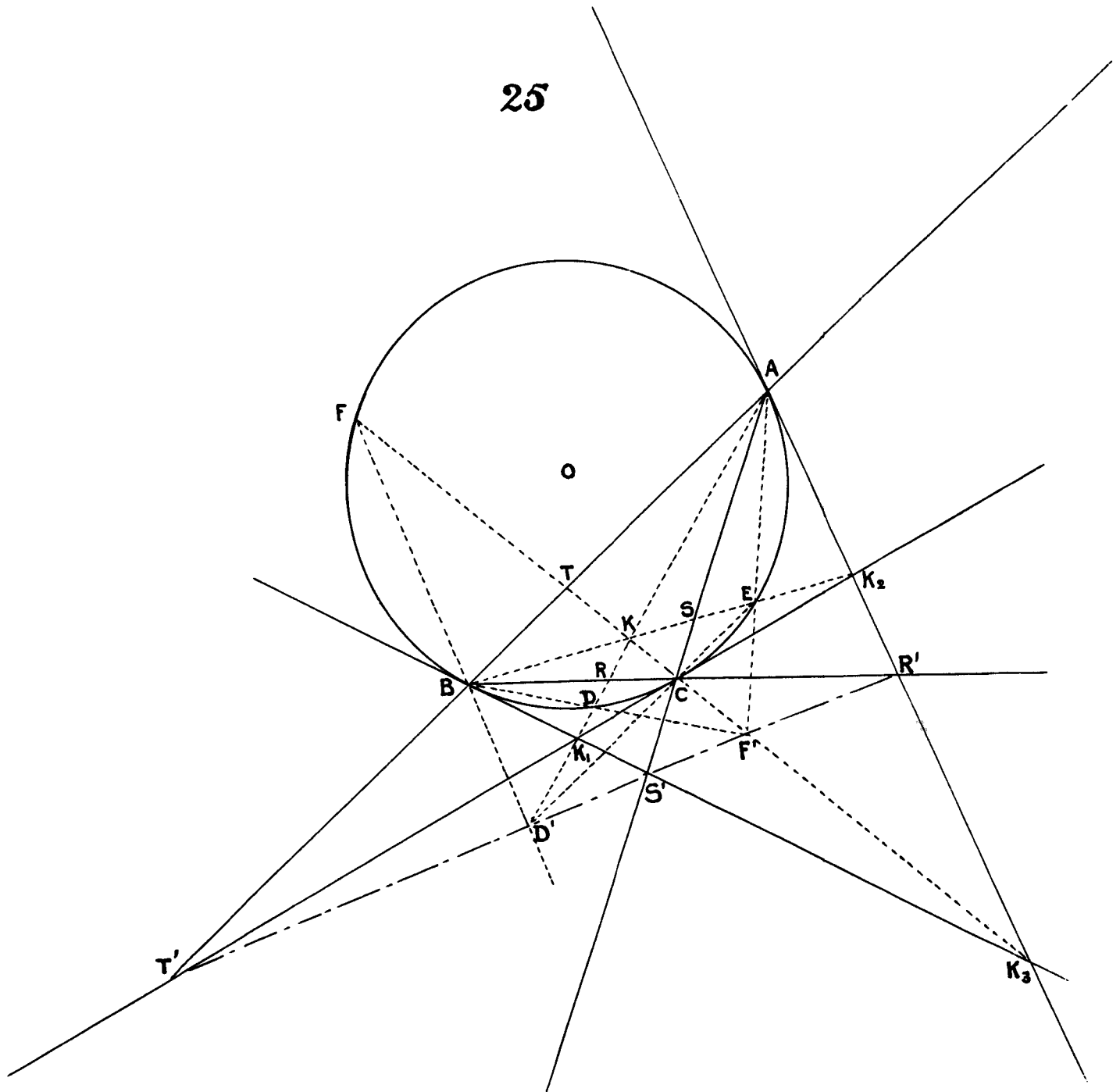


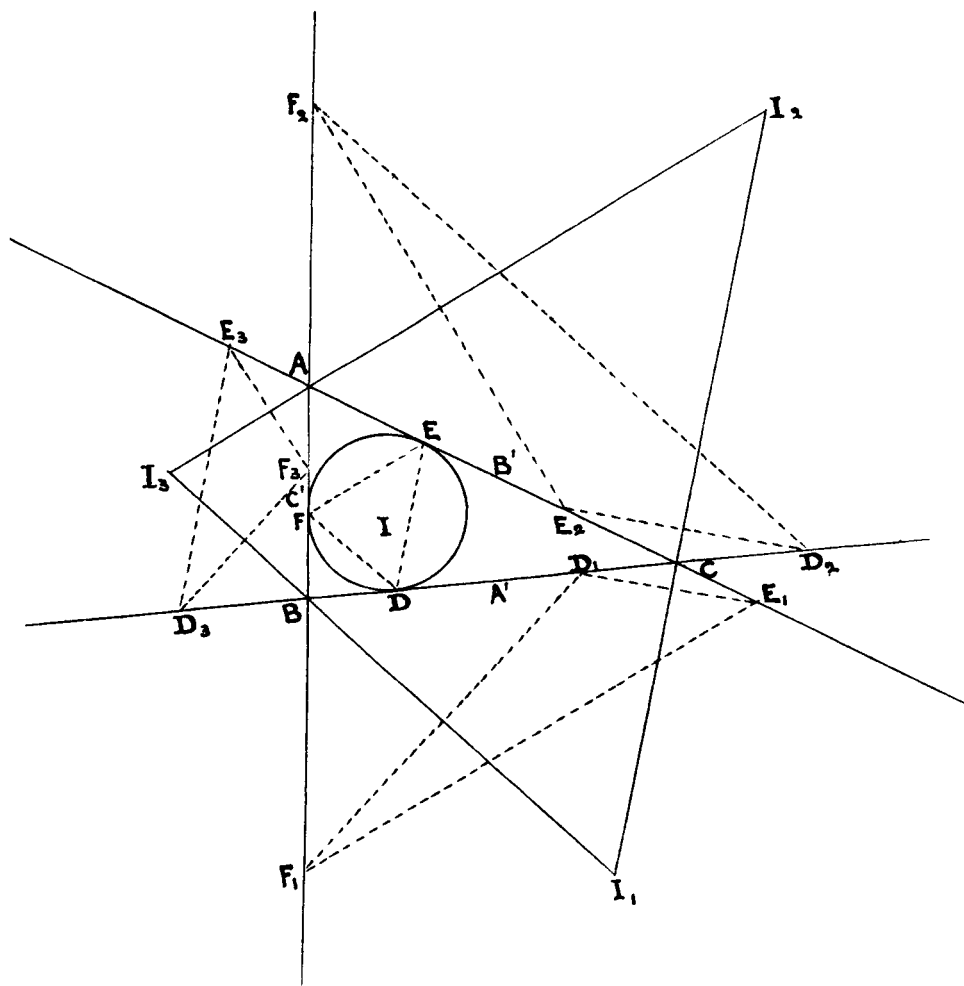
23

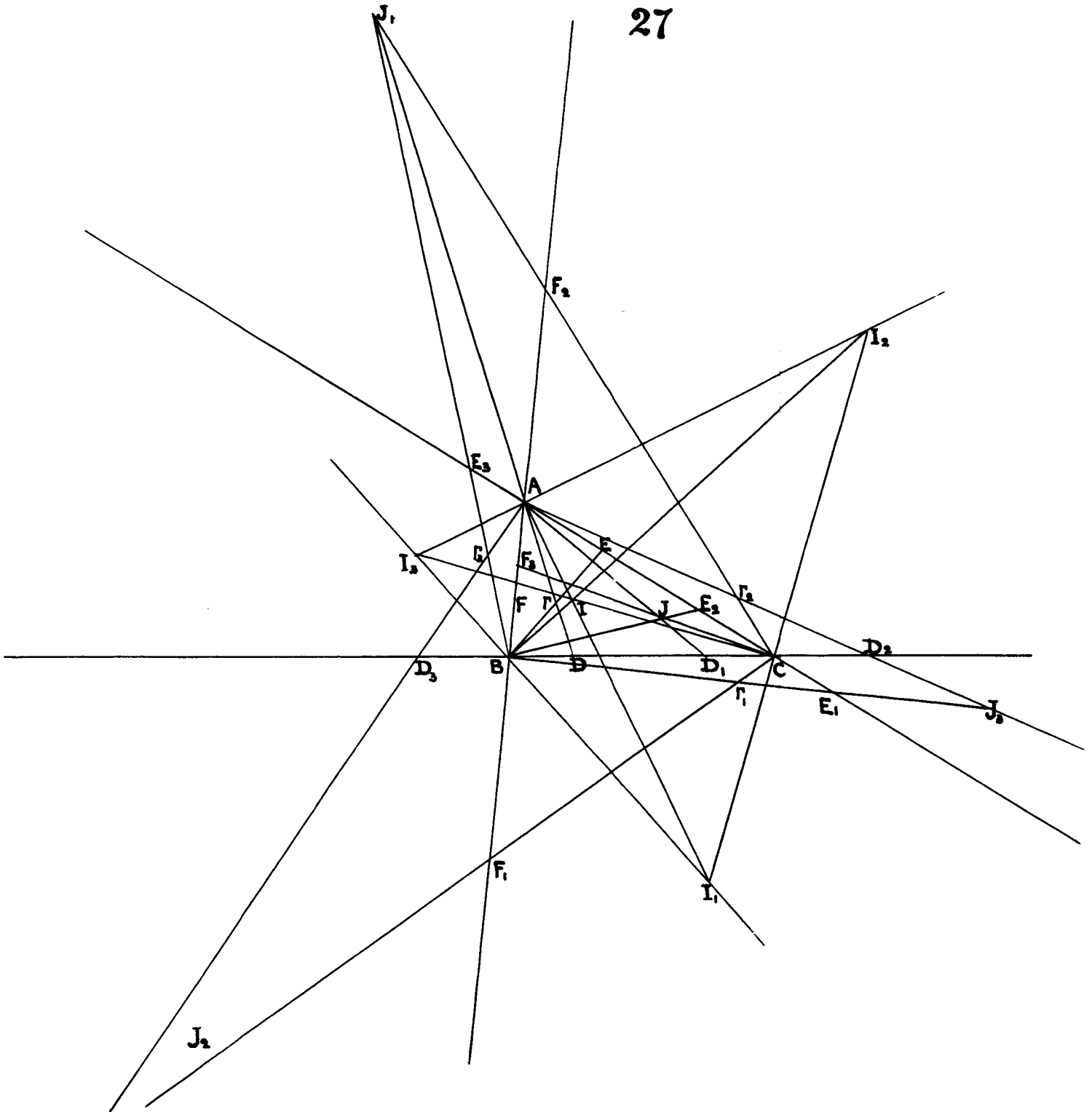


24

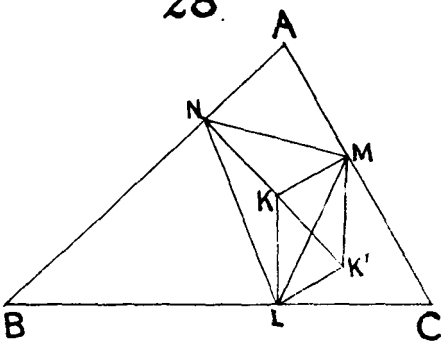




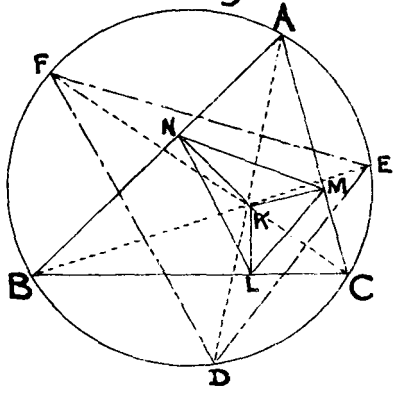




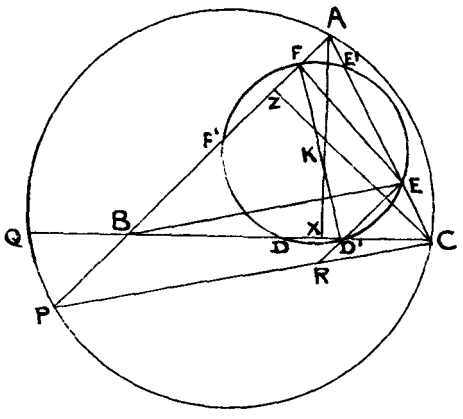
28.



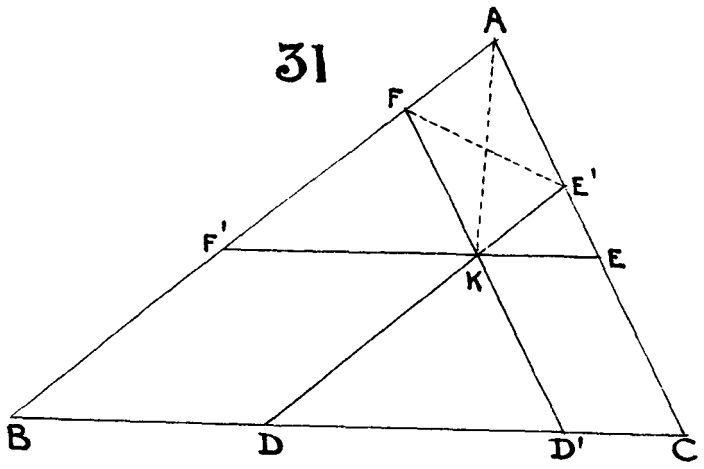
29



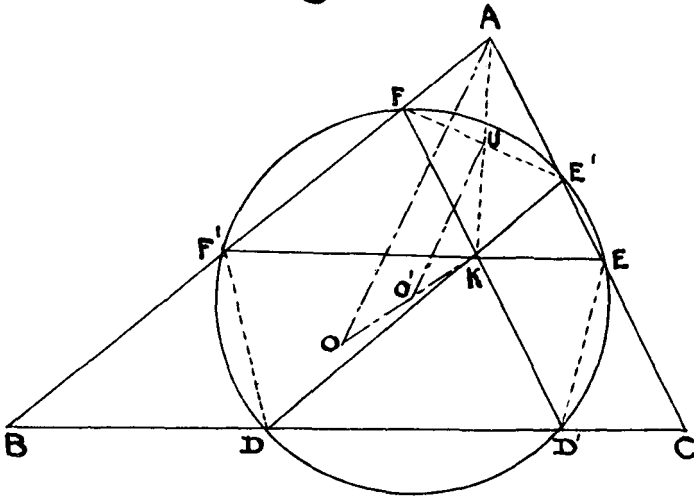
30



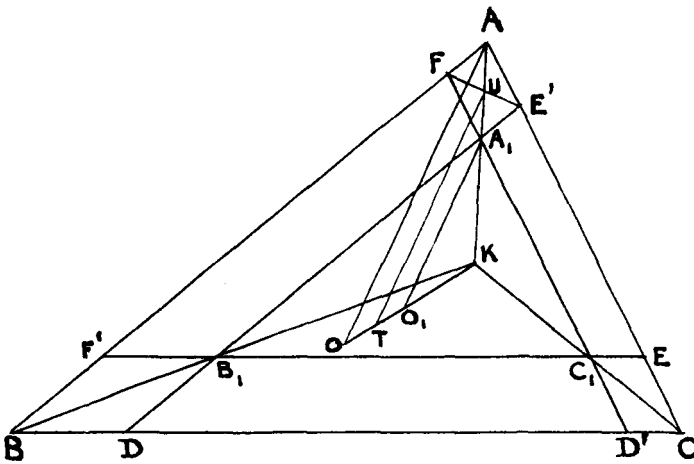
31

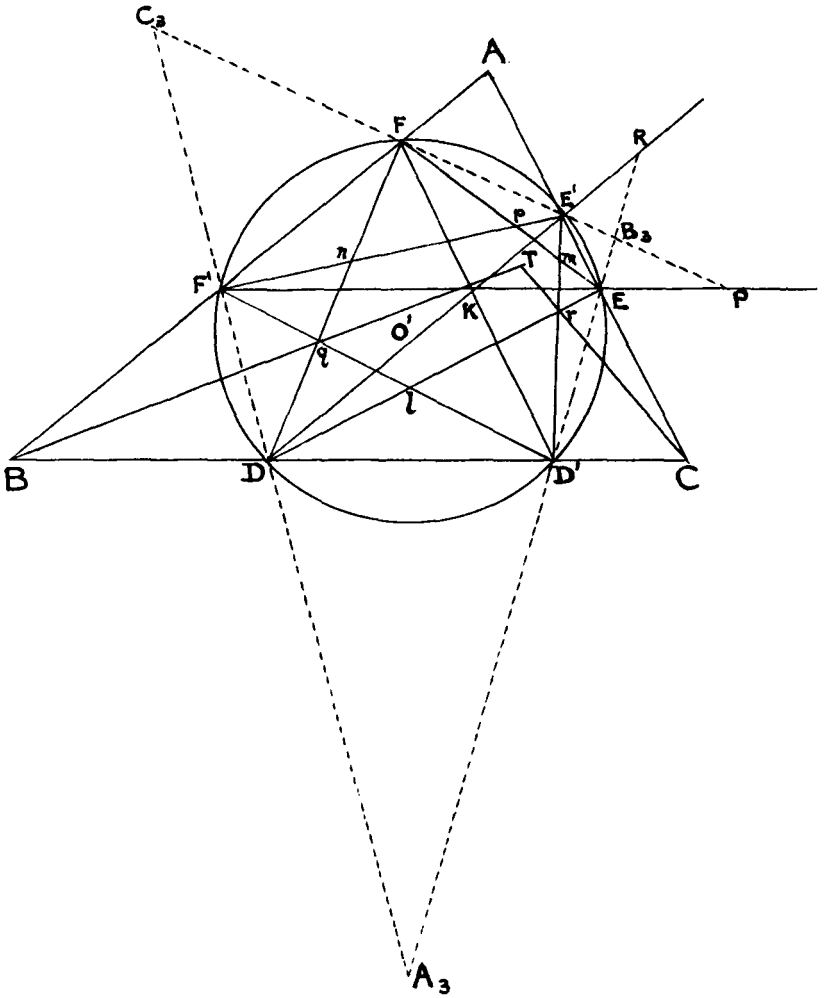


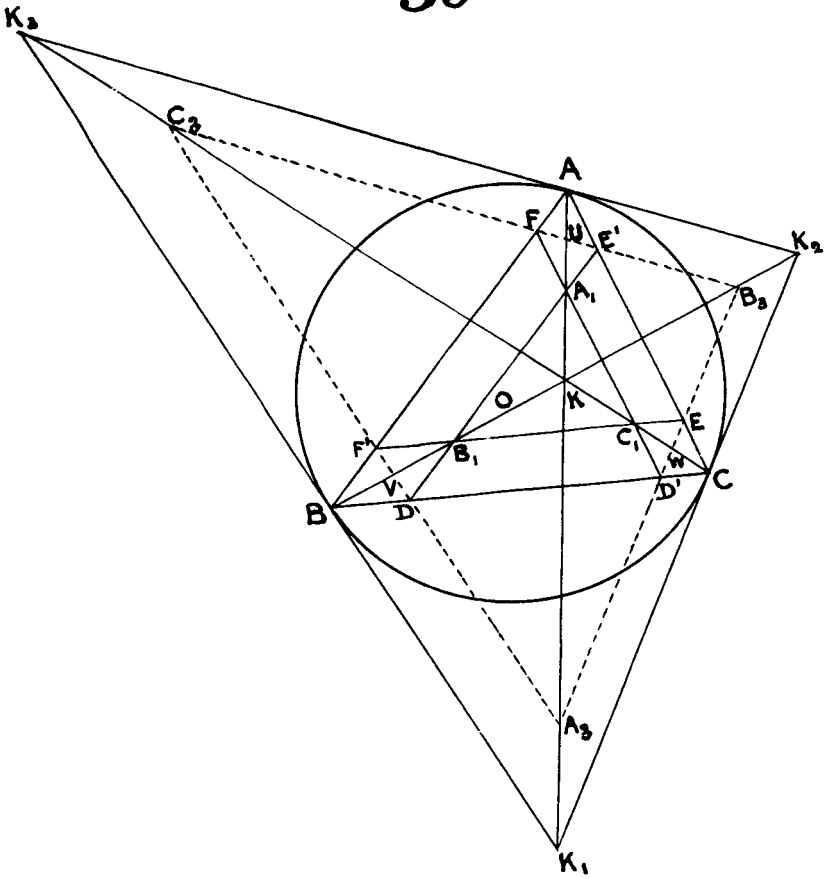
32



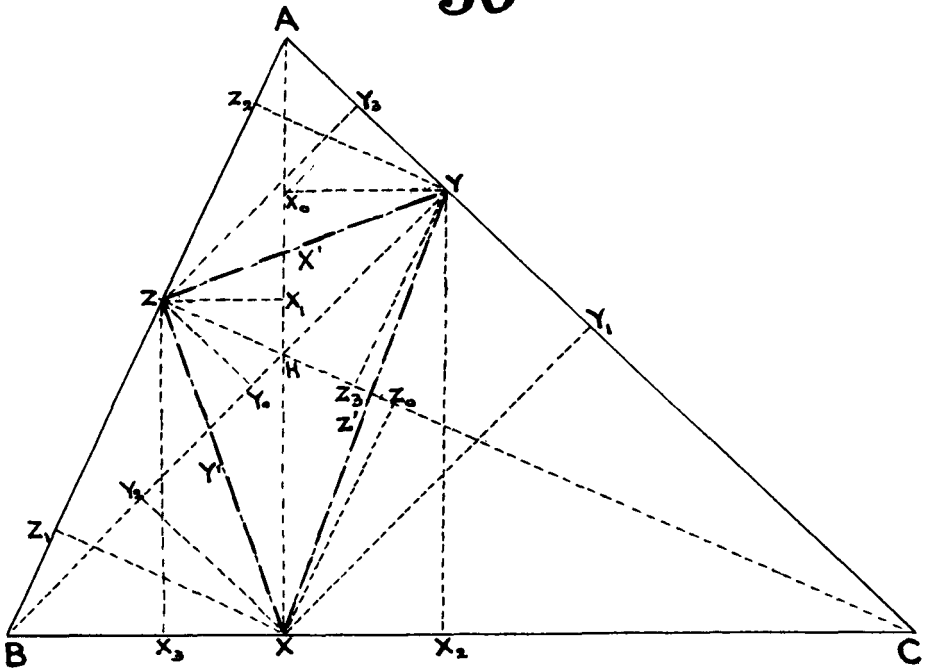
34



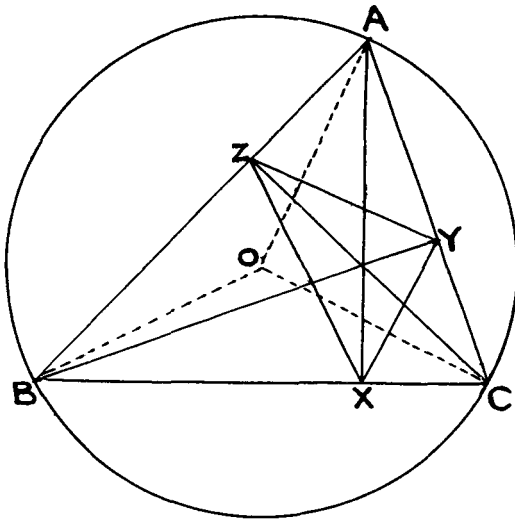


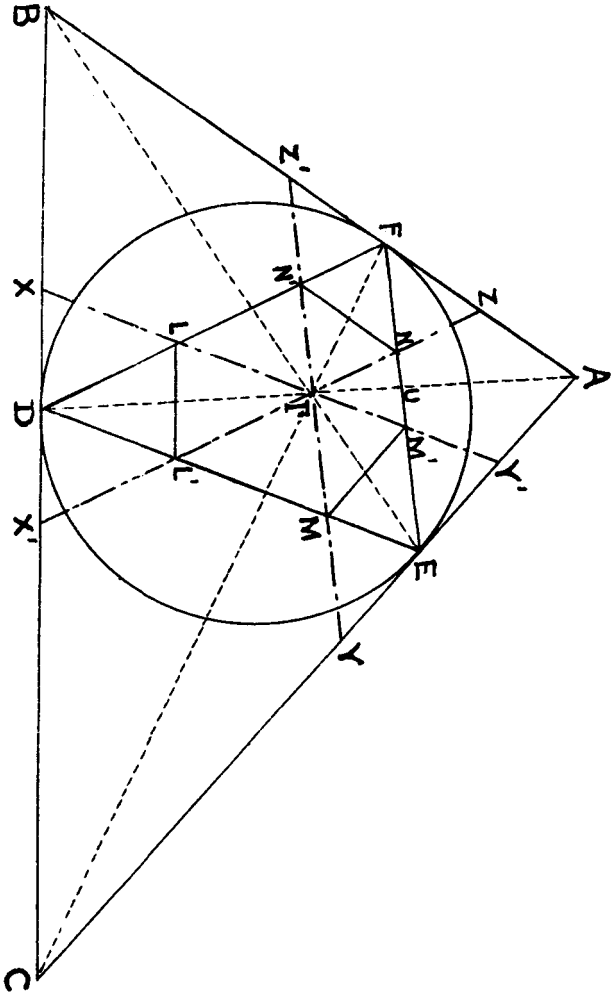


36

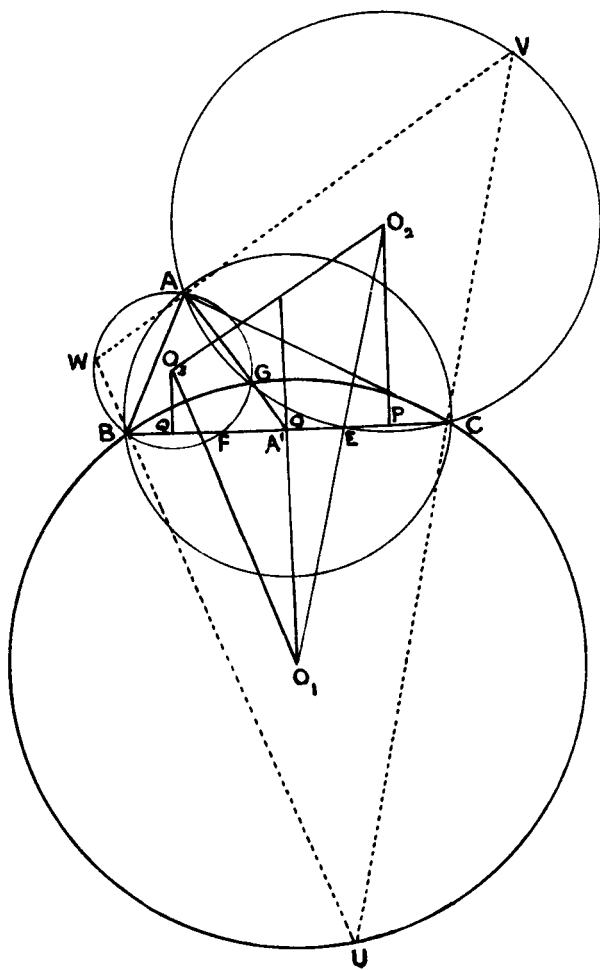


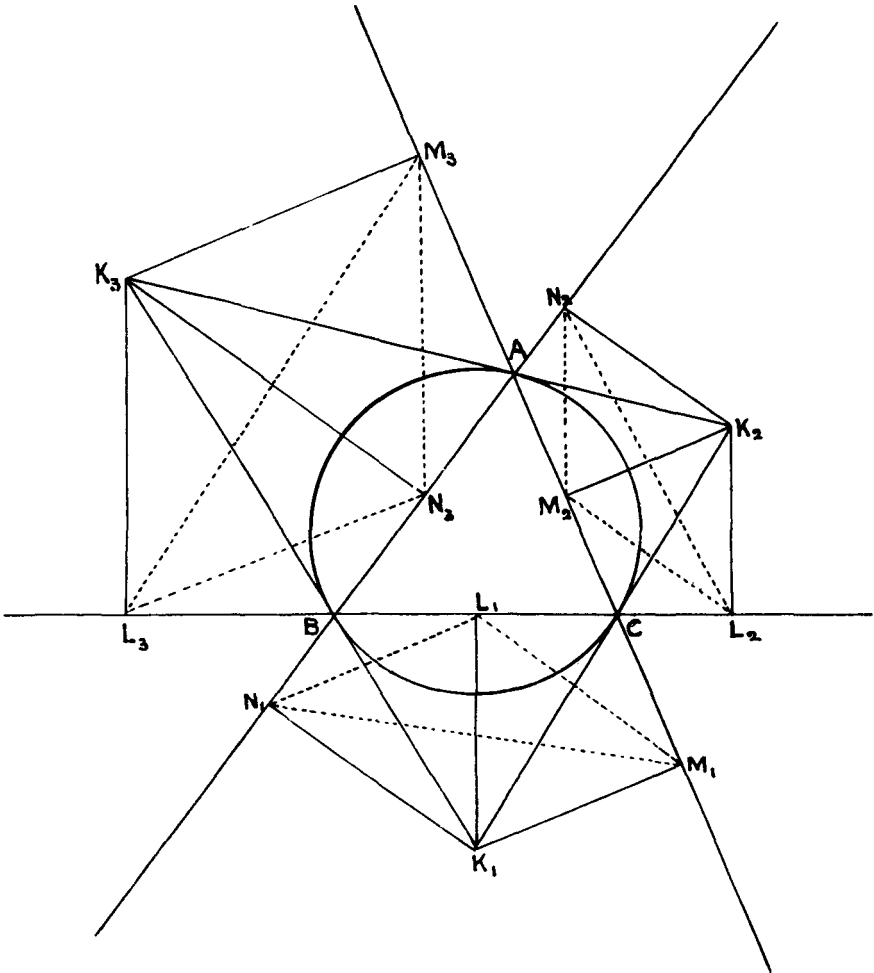
37





39.





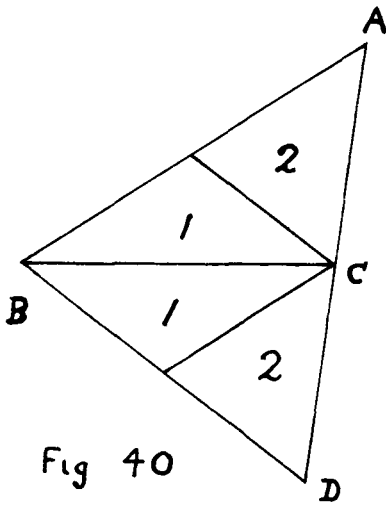


Fig 40

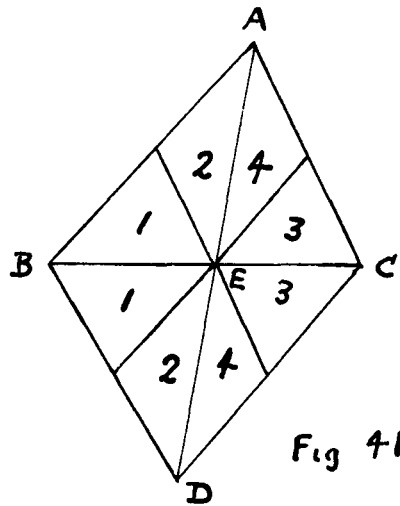


Fig 41

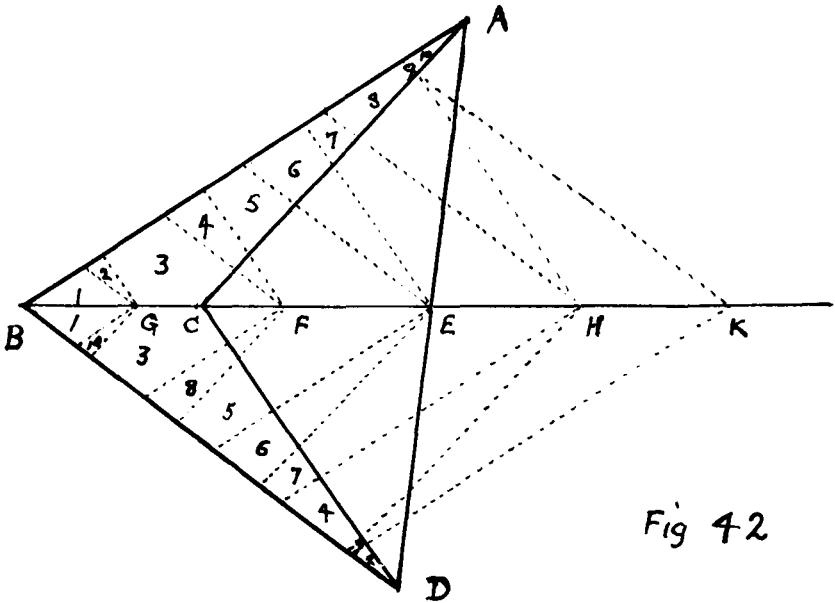


Fig 42

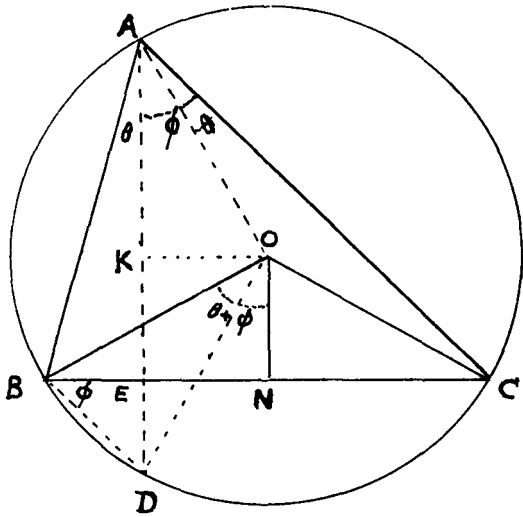
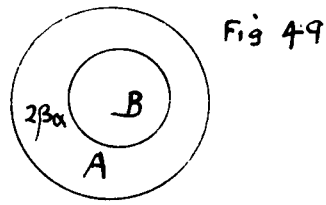
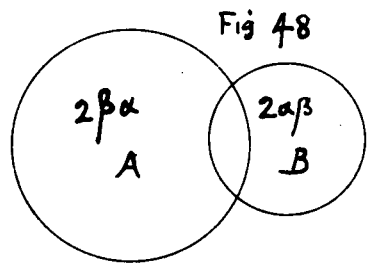
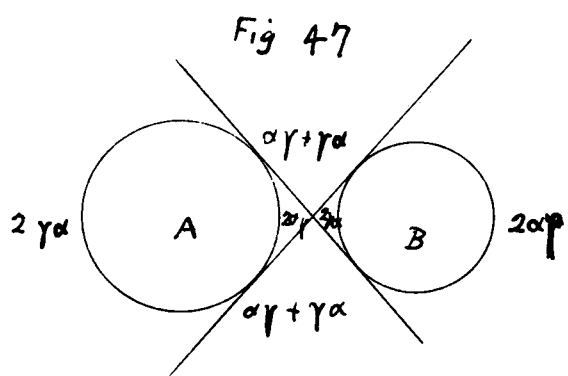
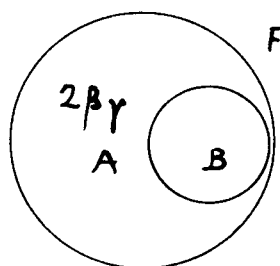
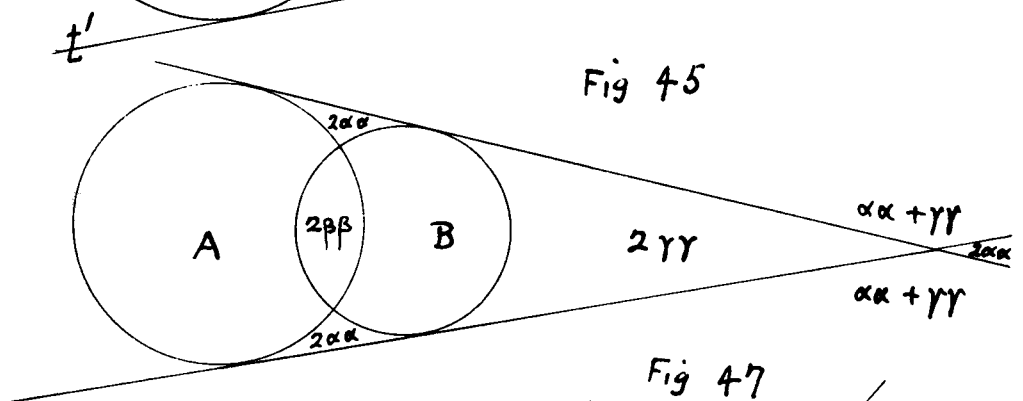
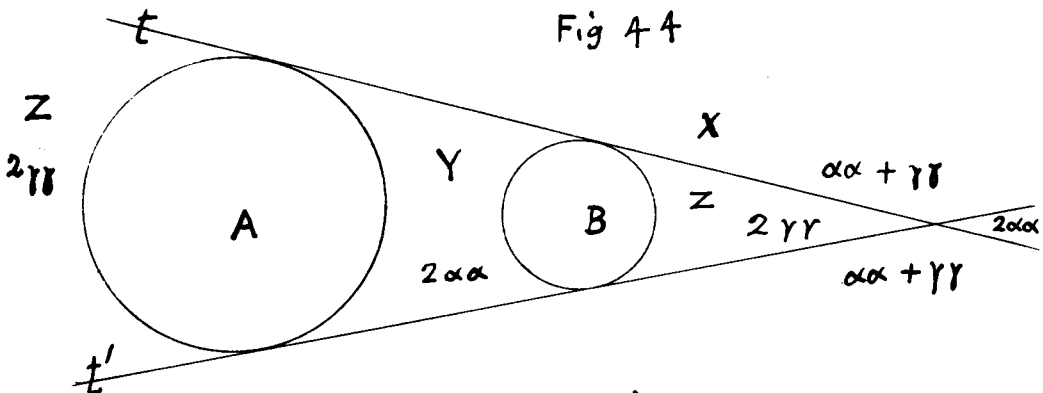


Fig 43



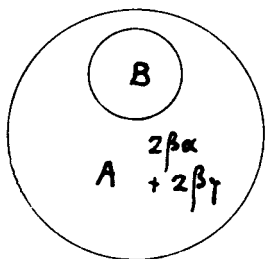
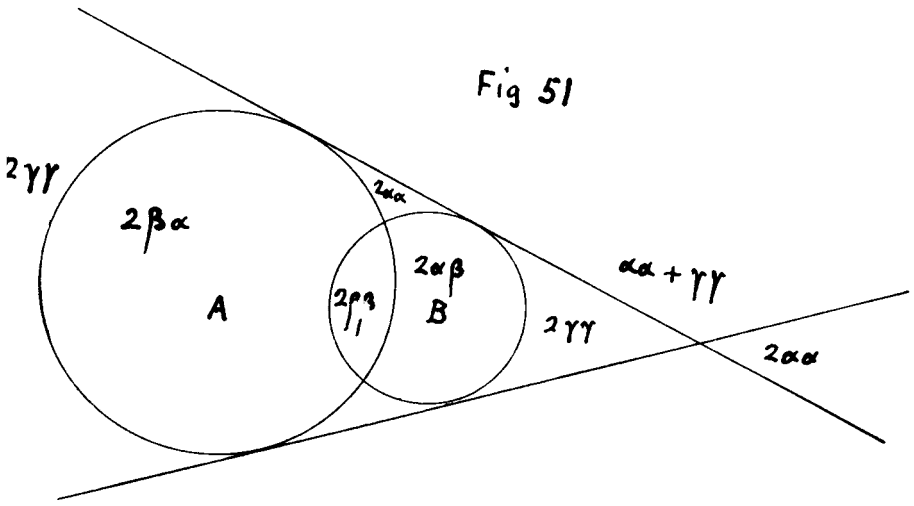
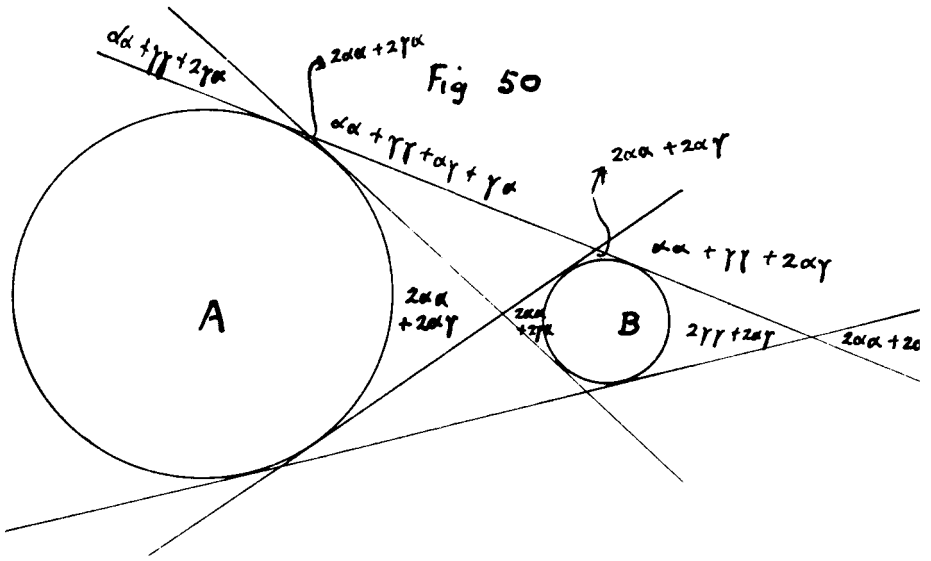
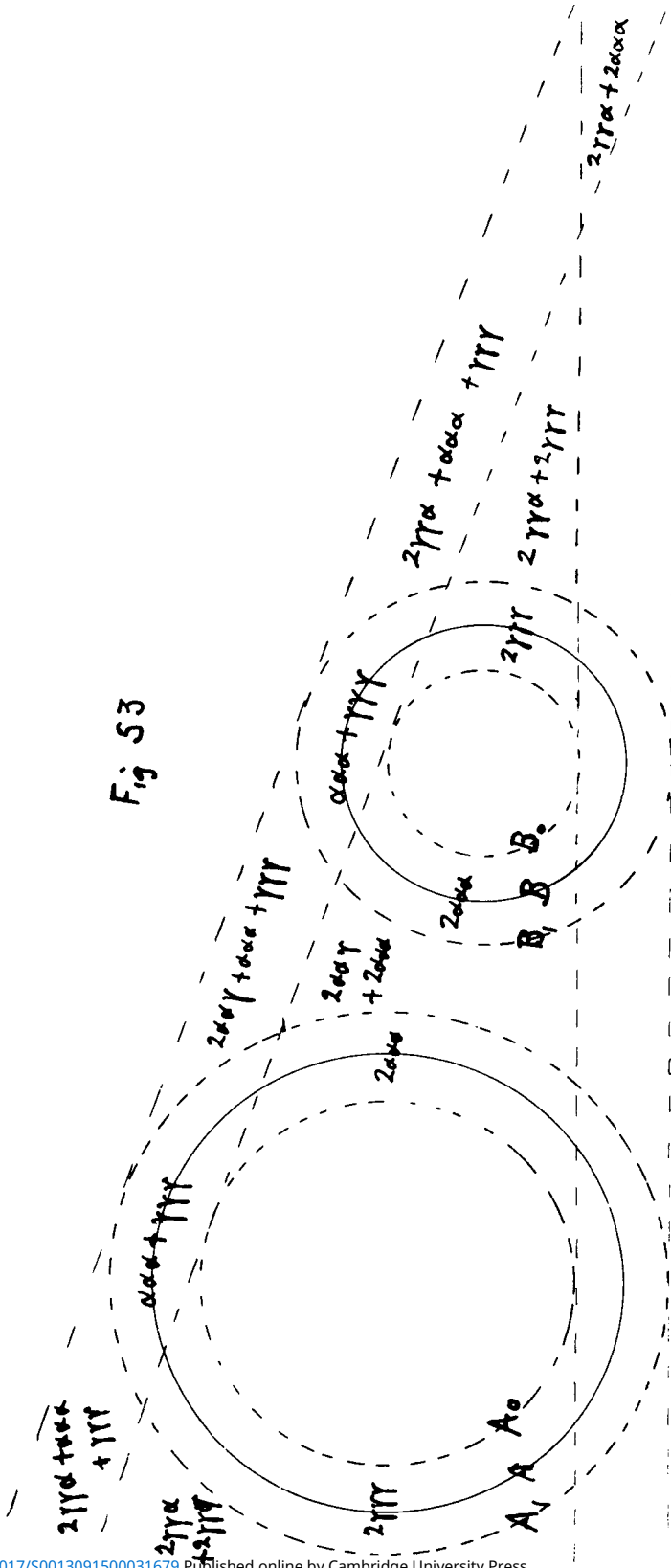


Fig 53



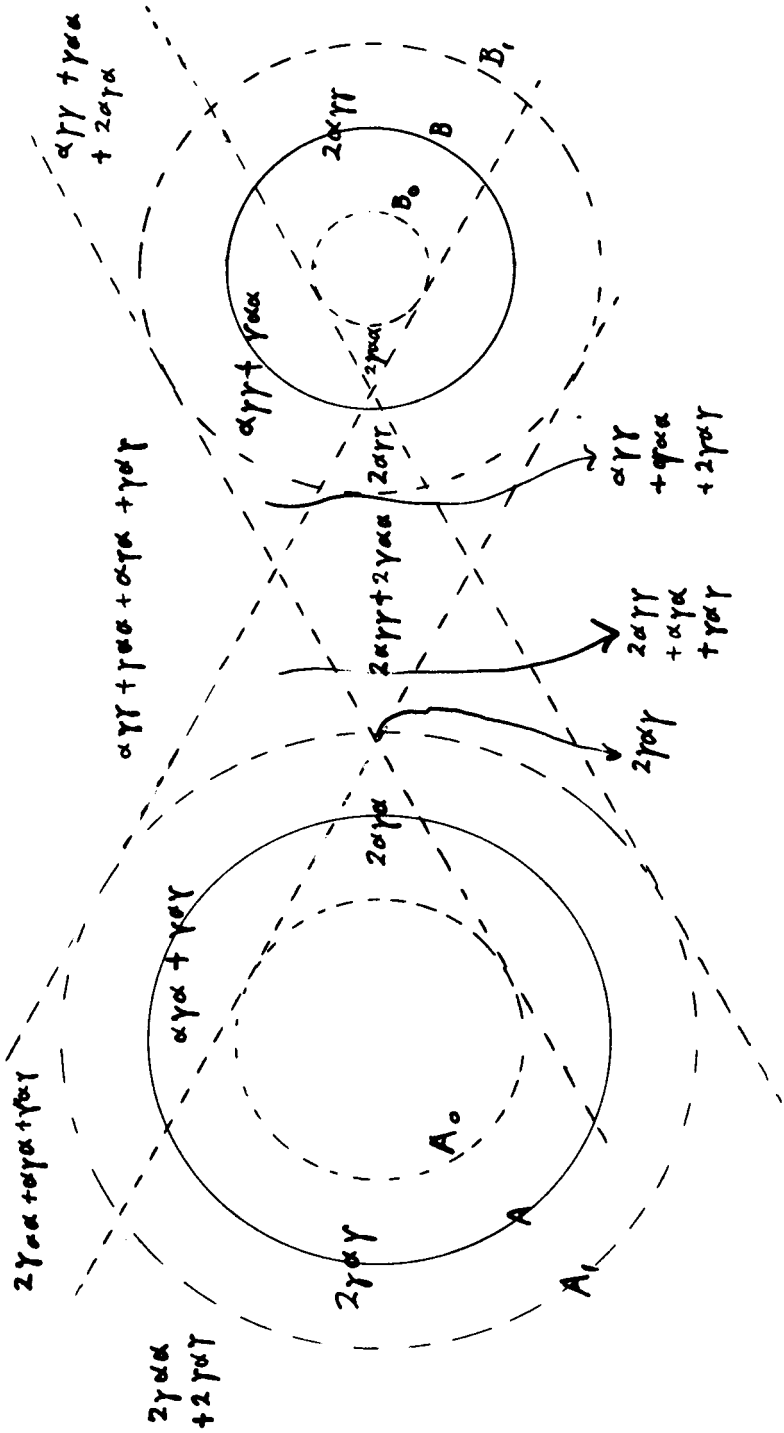
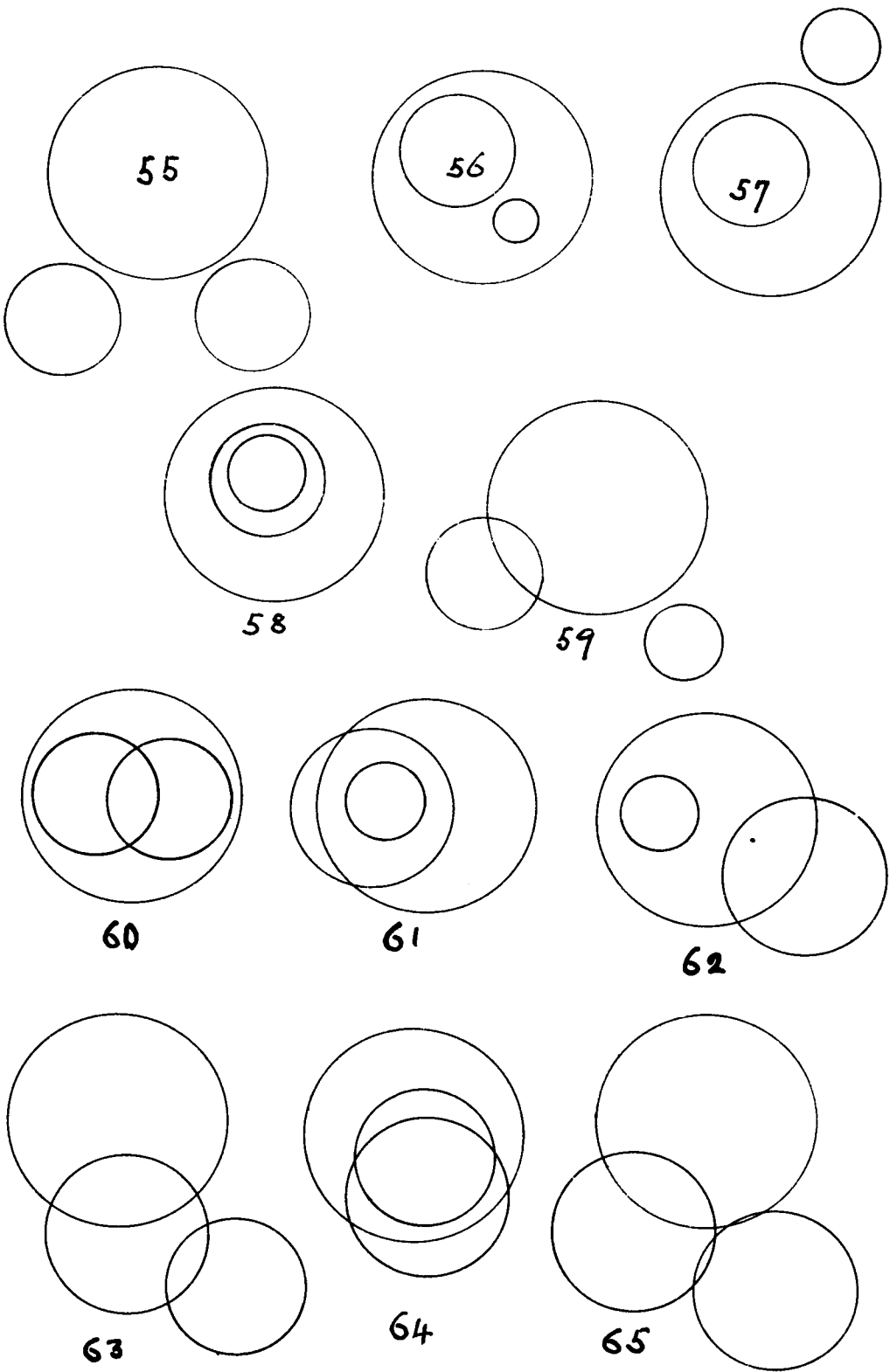
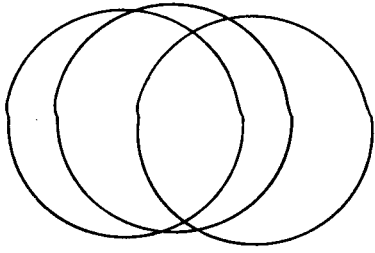
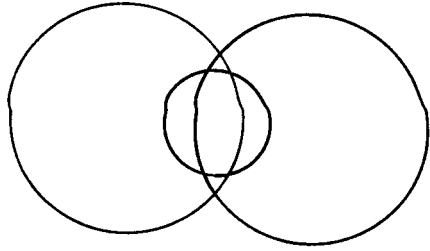


Fig 54.

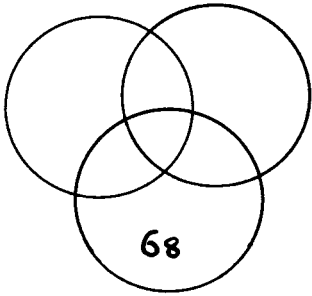




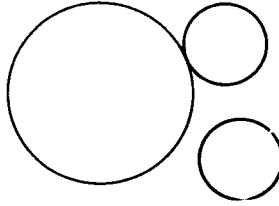
66



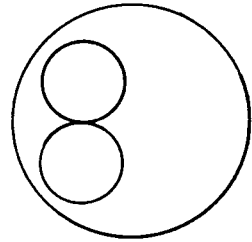
67



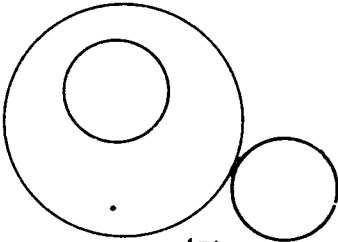
68



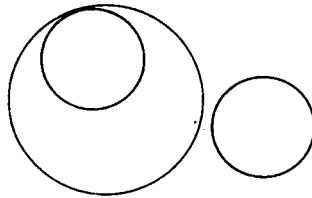
69



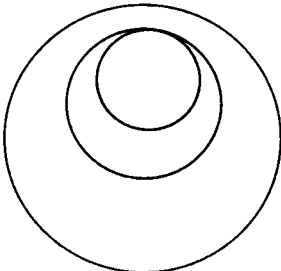
70



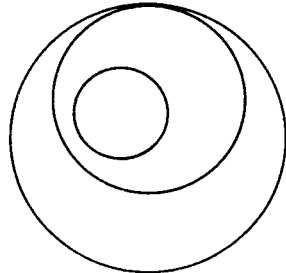
71



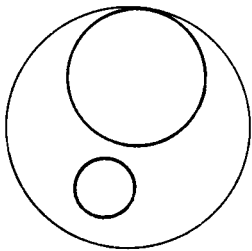
72



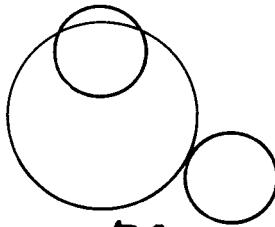
73



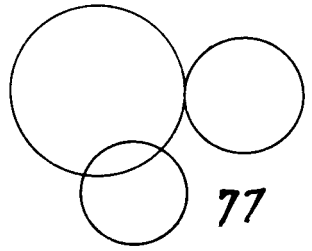
74



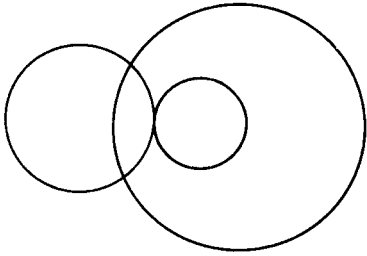
75



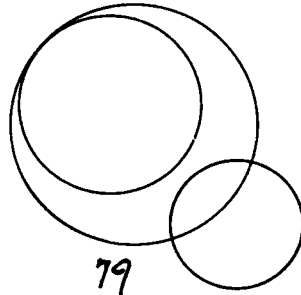
76



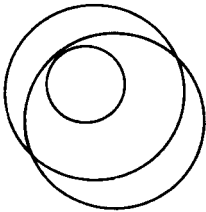
77



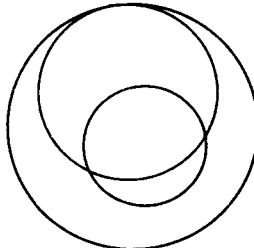
78



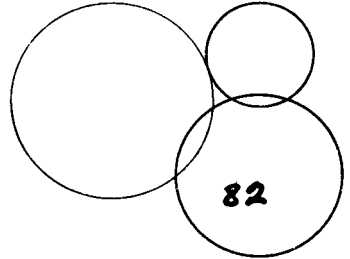
79



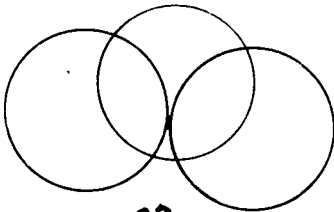
80



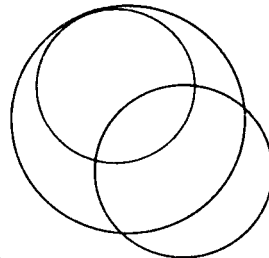
81



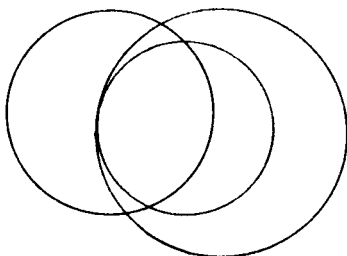
82



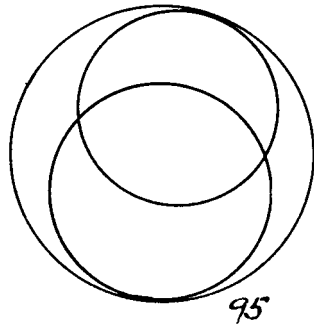
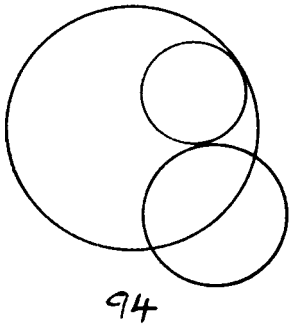
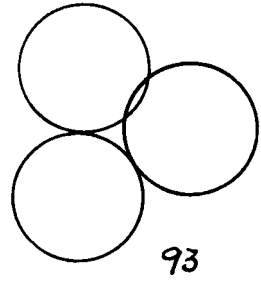
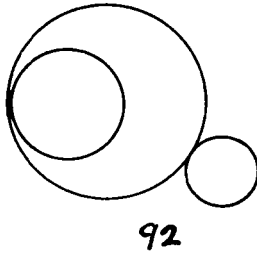
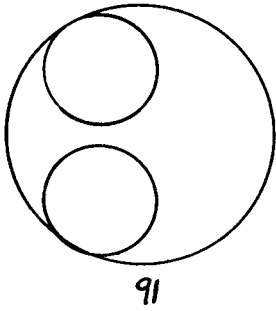
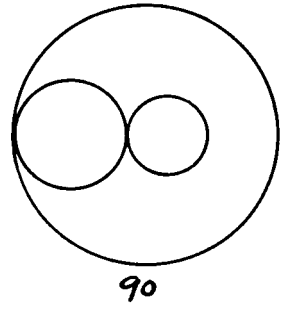
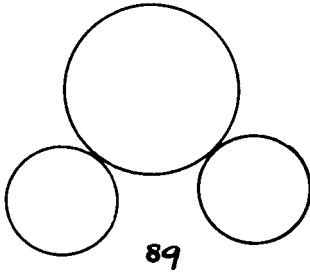
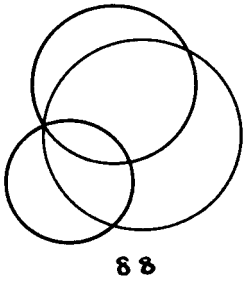
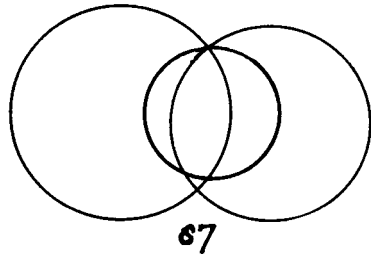
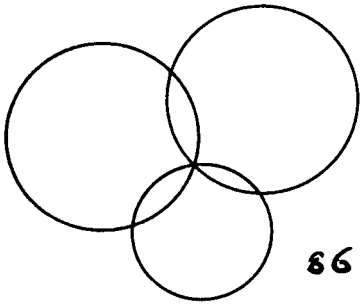
83

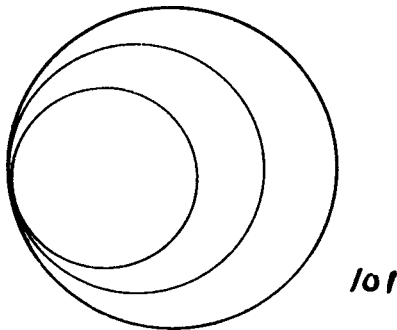
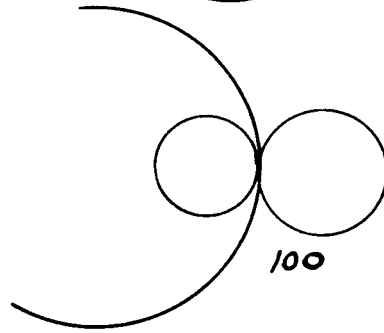
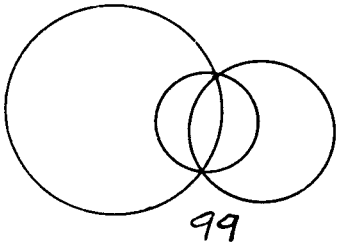
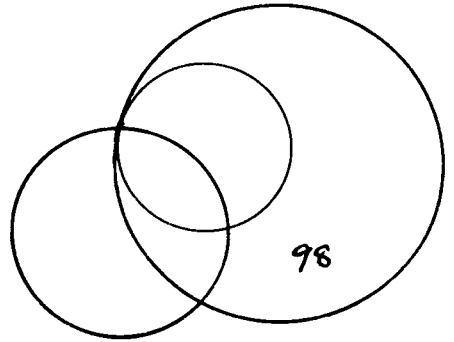
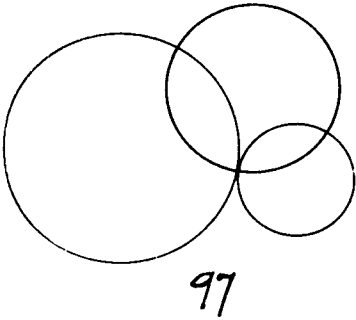
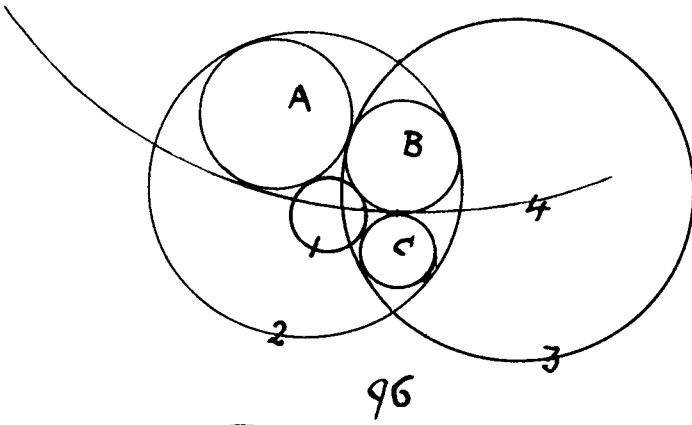


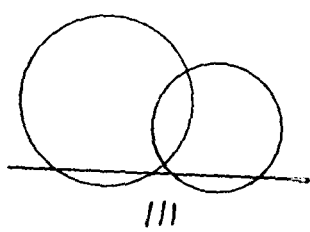
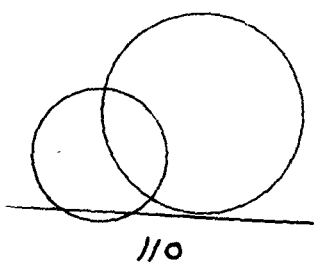
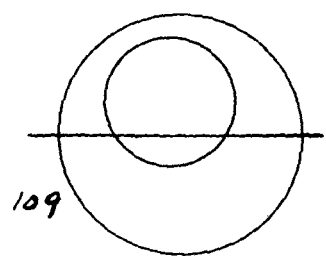
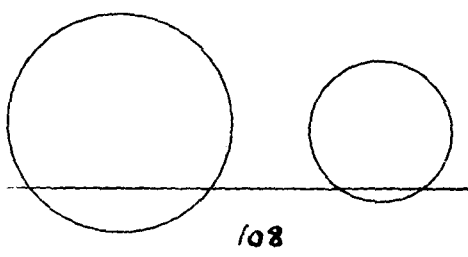
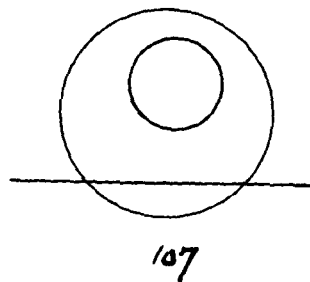
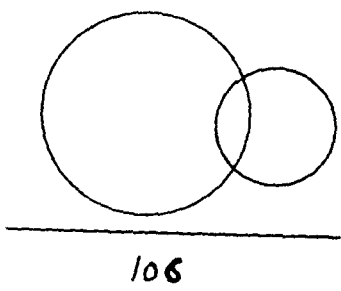
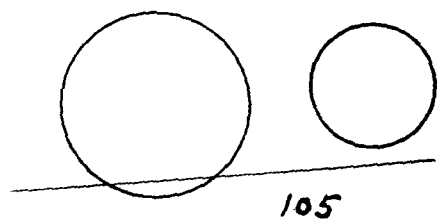
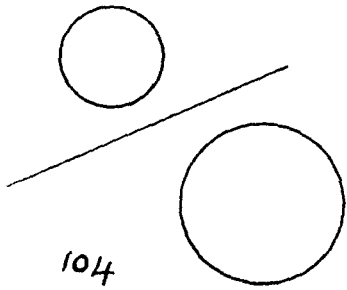
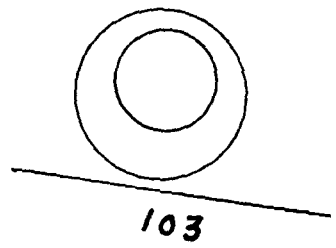
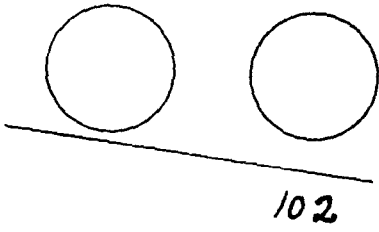
84

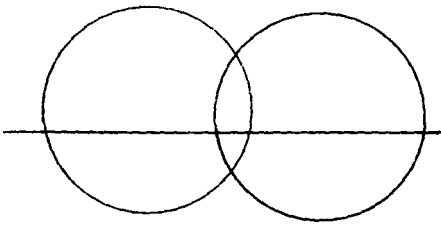


85

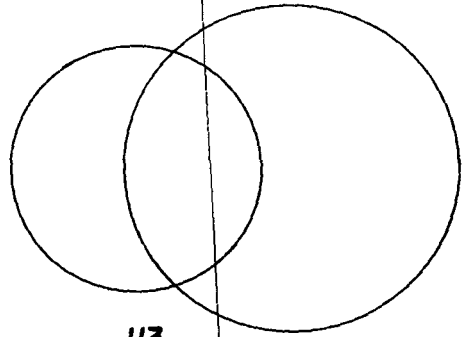




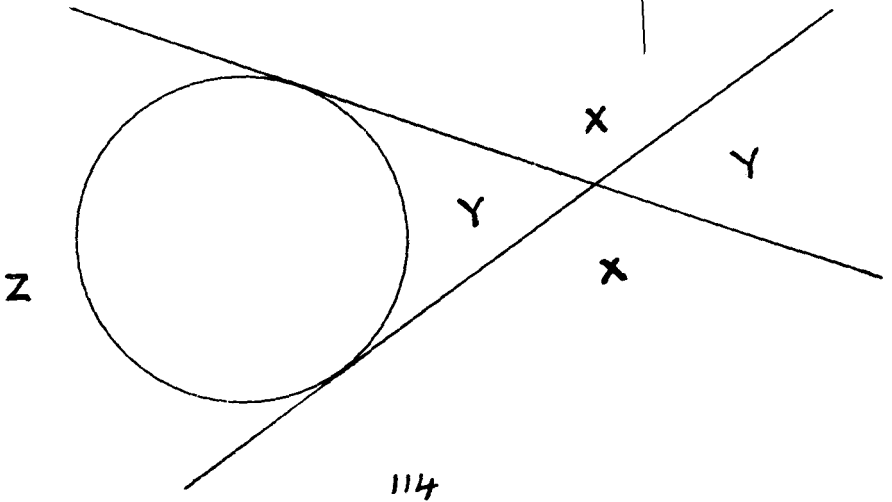




112



113



114