THE PUBLISHED SCIENTIFIC PAPERS AND BOOKS OF JAMES CLERK MAXWELL (1831-79)

Most of Maxwell's Papers, but not all, are in his Scientific Papers. The ones that are not are mostly to be found in the Reports of the British Association for the Advancement of Science or the Journal of the London Mathematical Society. The number of pages occupied by the papers in the Scientific Papers is shown. The longer papers are shown in bold.

Colour

On the theory of colours in relation to colour blindness. *Edinb. Trans. Scot. Soc. Arts. IV. 1856, pp. 394-400. Scientific Papers Vol.I pp.119-125 7 pages.*

On the theory of compound colours with reference to mixtures of blue and yellow light. *Brit. Assoc. Rep. 1856 (pt. 2) pp.12-13. Scientific Papers Vol. II pp. 243-245 3 pages.*

On the unequal sensibility of the Foramen Centrale to light of different colours. *Brit. Assoc.Rep. 1856 (pt. 2) p.12. Scientific Papers Vol. I pp. 242 1 page.*

On the perception of colour. *Phil. Mag. XIV. 1857, pp. 40-47 8 pages.*

Account of experiments on the perception of colour. *Scientific Papers Vol. 1 pp.263-270 8 pages.*

Experiments on colour as perceived by the eye with remarks on colour blindness. *Edinb. Roy. Soc. Trans. XXI. 1857, pp. 275-298.[1855]. Scientific Papers Vol. 1 pp. 126-154 29 pages.*

On the theory of compound colours and the relations of the colours of the spectrum. *Roy. Soc. Proc. X. 1859-1860, pp. 404-409; Phil. Trans. 1860, pp. 57-84. Scientific Papers Vol. 1 pp. 410-444 35 pages*

Postscript to a paper, 'On compound colour and the relations of the colours of the spectrum'. *Roy. Soc. Proc. X. 1859-60, pp. 484-486.*

On the theory of three primary colours. *Scientific Papers, Vol. I. pp. 445-450 6 pages..*

On the best arrangement for producing a pure spectrum on a screen. *Edinb. Roy. Soc. Proc. VI. 1869. pp. 238-242. [1868] Scientific Papers Vol. II pp 96-100 5 pages.*

On colour vision at different points of the retina. *Brit. Assoc. Rep. 1870 (Sect), pp. 40-41. Scientific Papers Vol. I pp. 230- 232 2 pages.*

On colour vision. *Roy. Instit. Proc. VI. 1872, pp. 260-271. Scientific Papers Vol. 1 267-279 13 pages.*

Invention of colour top.

Invention of colour box.

Confirmation of the tri-chromatic theory of light of Young (showed green to be the third colour, apart from red and blue and not yellow).

Investigation of colour vision.

Calculated relative position of colours in an isoluminant representational colour space.

Showed the positions of the colours on an equiluminant colour surface.

Understanding of colour blindness and functioning physiologically of the eye (three colour receptors).

Application of tri-chromatic theory to show how to project a photograph of an object (tartan ribbon) in colour (modern telescopes photograph in three colours and reassemble for greater clarity)
Fore-runner of modern colour photography.

Optics

On the focal lines of a refracted pencil. *London. Math. Soc. Proc. IV. 1871-1873, pp. 337- 341.[1873]. Scientific Papers Vol. II pp. 332-337 6 pages.*
On double refraction in a viscous fluid in motion. *Roy. Soc. Proc. XXII. 1873-74, pp. 46-47 ;Annal. Phys. Chem. CLI. 1874, pp. 151- 154.[1873]. Scientific Papers Vol. II 379-380 2 pages.*
On Hamilton's characteristic function for a narrow beam of light. *London. Math. Soc. Proc. 6. 1874-1875, pp. 182-190.[1874] Scientific Papers Vol. II pp. 381-390 10 pages.*
On the relation of geometrical optics to other parts of mathematics and physics. *Cambridge Phil. Soc. Proc. 2. 1876, pp. 338-340.[1874]. Scientific Papers Vol. II pp. 391-392 2 pages.*
On the centre of motion of the eye. *Cambridge. Phil. Soc. Proc. 2. 1876, pp. 365-366. [1875]. Scientific Papers Vol. II pp. 416-417 2 pages.*
Addition to a memoir of Francis Deas: 'On spectra formed by the passage of polarised light through double refracting crystals.' *Edinb. Roy. Soc. Trans. XXVI. 1872, pp. 185-188.*
On double refraction in a viscous fluid in motion. *Roy. Soc. Proc. XXII. 1873-74, pp. 46-47 ;Annal. Phys. Chem. CLI. 1874, pp. 151- 154.[1873]. Scientific Papers Vol. II 379-380 2 pages.*
On Hamilton's characteristic function for a narrow beam of light. *London. Math. Soc. Proc. 6. 1874-1875, pp. 182-190.[1874]. Scientific Papers Vol. II pp. 381-390 10 pages.*
On the application of Hamilton's characteristic function to the theory of an optical instrument symmetrical about its axis. *London. Math. Soc. Proc. 6, 1874-75. pp. 117-122.[1875] Scientific Papers Vol. II pp. 439-444 6 pages.*
On the relation of geometrical optics to other parts of mathematics and physics. *Cambridge Phil. Soc. Proc. 2. 1876, pp. 338-340.[1874]. Scientific Papers Vol. II 391-392 2 pages.*
On the centre of motion of the eye. *Cambridge. Phil. Soc. Proc. 2. 1876, pp. 365-366. [1875]. Scientific Papers Vol. II 416-417 2 pages.*

Invention of the fish-eye lens for cameras.
Developed the photoelastic method whereby polarised light is passed through bi-refringent material (isinglass) to show the pattern of strain. The pattern of strain appears as coloured ‘fringes’
(see Jessop H L and Harris F C (1949) *Photoelastic Fringes and Methods*, Aberdeen University Press).

Saturn's Rings

On the stability of the motion of Saturn's rings. *Astron. Soc. Month. Not. XIX. 1859, pp. 297-304.*

On the stability of the motion of Saturn's rings. *Scientific Papers. Vol. I. pp. 288-376 89 pages.*

On theories of the constitution of Saturn's rings. *Edinb. Roy. Soc. Proc. IV. 1862, pp. 99- 101. Scientific Papers Vol. I 286-287 2 pages.*

Stability of planetary systems.
Saturn's rings could only be collection of discrete particles.

Dynamics

On a dynamical top for illustrating the phenomena of the motion of a system of invariable form about a fixed point with some suggestions as to the Earth's motion. *Edinb. Roy. Soc. Trans. XXI. 1857, pp. 559-570. Scientific Papers Vol. I 248-262 15 pages.*

On the proof of the equations of motion of a connected system. *Cambridge Phil. Soc. Proc. II. 1876, pp. 292-294. [1873]. Scientific Papers Vol. II 308-309 2 pages.*

Illustrations of the many possible motions of a rotating rigid body

Gases

On the dynamical theory of gases. *Brit. Assoc. Rep. 1859 (pt. 2) p.9.*

Illustrations of the dynamical theory of gases. Part 1. On the motions and collisions of perfectly elastic spheres. *Phil. Mag. XIX. 1860, pp. 19-32. Scientific Papers Vol. I 377-409 33 pages.*

Illustrations of the dynamical theory of gases. Part 2. On the process of diffusion of two or more kinds of moving particles among one another. *Phil. Mag. XX. 1860, pp. 21-37. Scientific Papers Vol. I see above.*

On the viscosity or internal friction of air and other gases. [Bakerian Lecture] *Phil. Trans. CLVI. 1866, pp. 249- 268; Roy. Soc. Proc. XV. 1867, pp. 14- 17. Scientific Papers Vol. II 1-25 25 pages.*

On the dynamical theory of gases. *Phil. Mag. XXXII. 1866, pp. 390-393; Phil. Trans. CLVII. 1867, pp. 49-88; Roy. Soc. Proc. XV. 1867, pp. 146-149; Phil. Mag. XXXV. 1868, pp. 129-145, 185-217. Scientific Papers Vol. II 26-78 53 pages.*

On Loschmidt's experiments on diffusion in relation to the kinetic theory of gases. *Nature, VIII.1873, pp. 298-300; Les Mondes. XXXII. 1873, pp. 164-171. Scientific Papers Vol. II 343-350 8 pages.*

On the final state of a system of molecules in motion subject to forces of any kind. *Brit. Assoc. Rep. XLIII. 1873 (Sect), pp. 29-32; Nature, VIII. 1873. pp. 537-538. Scientific Papers Vol. II pp. 351-354 4 pages.*

Van der Waals on the continuity of the gaseous and liquid states. *Scientific Papers. Vol II. pp. 407-416. Scientific Papers Vol. II 407-415 9 pages.*

On the equilibrium of heterogenous substances. *Cambridge Phil. Soc. Proc. 2. 1876, pp. 427- 430. Scientific Papers Vol. II 498-500 3 pages.*

Diffusion of gases through absorbing substances. *Scientific Papers. Vol. II. pp. 501-505 4 pages*

On stresses in rarefied gases arising from inequalities of temperature. *Roy. Soc. Proc. 27. 1878, pp. 304-308; Phil. Trans. 170. 1880, pp. 231-256 .Scientific Papers Vol. II pp. 681-712 32 pages.*

On Boltzmann's theorem on the average distribution of energy in a system of material points, *Cambridge Phil. Soc. Trans. 12. 1879, pp. 547-570; Annal. Phys. Chem., Beibl. 5. 1882, pp. 403- 417; Phil. Mag. 14. 1882, pp. 299-312; Cambridge Phil. Soc. Trans. 12. 1879, pp. 547-570; Phil. Mag. 14. 1882, pp. 299-312.[1878]. Scientific Papers Vol. II pp. 713-741 29 pages.*

Introduced probability and statistics into physics.
Developed the Kinetic Theory of Gases.
Maxwell Distribution of molecular velocities (see Edinburgh Review of July 1850 being a Review by Sir John Herschel of *Quetelet on Probabilities* also in the Collected Volume of Sir John Herschel's Essays published by Longmans in 1857).
Prediction of properties of gases (independence of viscosity on pressure etc , etc.)
Maxwell's 4 partial differential equations of thermodynamics.
Maxwell's Demon(introduced in M's *Theory of Heat*) leading onto Information Theory and deep connections with Second Law of Thermodynamics.
Stresses in rarified gases and explanation of Crookes' radiometer (or was it Tait who first explained this properly?).
Relaxation time and relaxation processes of substances leading to rheology.
Viscoelasticity and Maxwell Strain Rate Model (not sure what that is)
M's work used as model for rarefied gases and plasmas.

Molecules and Atoms

A discourse on molecules. *Phil. Mag. XLVI. 1873, pp. 453-469; Nature, VIII. 1873, pp. 437-441; Les Mondes, XXXII. 1873, pp. 311-316, 409-420; Pharmaceut. Jour. 4. 1874. pp. 404-405, 492-494, 511-513.*

Molecules; a Lecture. *Scientific Papers. Vol II. pp 361-379 18 pages.*

On the dynamical evidence of the molecular constitution of bodies. *Nature, 11. 1875, pp. 357-359, 374-377; Gazz. Chim. Ital. 5. 1875, pp. 190-208; Chem. Soc. Journ. 13. 1875, pp. 493-508. Scientific Papers Vol. II pp. 418-438 11 pages.*

Atom. *Scientific Papers. Vol II. pp. 445-485 40 pages.*

Electricity and Magnetism

On Faraday's lines of force. *Camb. Phil. Soc. Trans. 1864, pp. 27-83. [1855-56]. Scientific Papers Vol. I pp. 155-229 75 pages.*

On a method of drawing the theoretical forms of Faraday's Lines of force without calculation. *Brit. Assoc. Rep. 1856 (pt. 2) p.12 Scientific Papers Vol. I p. 241 1 page.*

On physical lines of force. Part 1. The theory of molecular vortices applied to magnetic phenomena. *Phil. Mag. XXI. 1861, pp. 161-175. Scientific Papers Vol. I pp. 451-513 63 pages.*

On physical lines of force. Part 2. The theory of electrical vortices applied to electric currents. *Phil. Mag. XXI. 1861, pp. 281-291, 338-348. Scientific Papers Vol. I as above.*

On physical lines of force. Part 3. The theory of electrical vortices applied to statical electricity. *Phil. Mag. XXIII. 1862, pp. 12-24. Scientific Papers Vol. I as above.*

On physical lines of force. Part 4 The theory of electrical vortices applied to the the action of magnetism on polarized light *Phil. Mag. XXIII. 1862, pp. 85-95. Scientific Papers Vol. I as above.*

A dynamical theory of the electromagnetic field. *Roy. Soc. Proc. XIII. 1864, pp. 531-536; Plil. Trans. CLV. 1865, pp. 459-512; Phil. Mag. XXIX. 1865., pp152-157. Scientific Papers Vol. I 526-597 72 pages.*

Description of a further experimental measurement of electrical resistance made at King's College. (with Jenkin F.) *Brit. Assoc. Rep. XXXIV. 1864, pp. 350-351.*

Description of a further experimental measurement of electrical resistance made at King's College. (with Jenkin F.) *Phil. Mag. XXIX. 1865, pp. 436-460, 507-525.*

On the theory of maintenance of electrical currents by mechanical work without the use of permanent magnets. *Roy. Soc. Proc. XV. 1867. pp. 397-402; Phil. Mag. XXXIII. 1867. pp. 474-478. Scientific Papers Vol. II 79-85 7 pages.*

On Mr Grove's 'Experiment in electro-magnetic induction.' *Phil. Mag. XXXV. 1868, pp. 360- 363. Scientific Papers Vol.* ***II 121-124 4 pages.***

On a method of making a direct comparison of electrostatic with electromagnetic force; with a note on the electromagnetic theory of light. *Phil. Trans. CLVIII. 1868. pp. 643-658; Roy.* ***Soc. Proc. XVI. 1868, pp. 449-450; Phil. Mag. XXXVI. 1868. pp. 316-317; Brit. Assoc. Rep. XXXIX.*** *1869, pp. 436-438. Scientific Papers Vol. II pp. 125-143 19 pages.*

Experiments on the value of V, the ratio of the electromagnetic to the electrostatic unit of electricity. *Brit. Assoc. Rep. XXXIX. 1869, pp.436-438 3 pages.*

On the theory of a system of electrical conductors, and other physical theories involving homogeneous quadratic functions. *London. Math. Soc. Proc. IV. 1871-73, pp. 334-336.* SP II 329-331 3 pages.

Can the potential of a uniform circular disk at any point be expressed by means of elliptic integrals? *London. Math. Soc. Proc. III. 1869-71, p. 8 1 page.*

On the induction of electric currents in an infinite plane sheet of uniform conductivity. *Roy. Soc. Proc. XX. 1872, pp. 160-168; Phil. Mag. XLIII. 1872, pp. 529-538. Scientific Papers Vol. II 286-296 11 pages.*

On action at distance. *Roy. Instit. Proc. VII. 1873. pp. 44-54. Scientific Papers Vol. II pp. 311-323 13 pages.*

On the application of Kirchhoff's rules for electric circuits to the solution of a geometrical problem. *Brit. Assoc. Rep. 1874 (Sect.), pp. 18-19. Scientific Papers Vol. II p. 406 1 page.*

On the solution of electrical problems by the transformation of conjugate functions. *Cambridge Phil. Soc.Proc. II. 1876, pp. 242-243. Scientific Papers Vol. II p. 256 1 page.*

On Ohm's law. *Scientific Papers. Vol II, pp. 533-537 5 pages.*

Report of the Committee for testing experimentally Ohm's law (with Everett J. D. and Schuster, A.) *Brit. Assoc. Rep. 1876, pp. 36-63.*

Theory of electrical induction. *Nature, 14. 1876, pp. 27-28*

Note on Mr George Forbes paper, 'On diamagnetic rotation'. *Edinb. Roy. Soc. Proc. 9. 1878, pp. 91-92.[1876]*

On the electrical capacity of a long narrow cylinder, and of a disk of sensible thickness. *London Math. Soc. Proc. 9. 1877-78, pp. 94-101. [1878]. Scientific Papers Vol. II 672-680 9 pages.*

On a possible mode of detecting a motion of the solar system through the luminiferous ether. (*Posthumously*) *Roy. Soc. Proc. 30. 1880, pp. 108-110 3 pages.*

Created a field theory of light unifying electricity and magnetism (first unified field theory).
Got rid of mechanical models and changed our perception of physical reality.
Light an electromagnetic wave.
Light carries momentum and exerts pressure.
Predicted other types of radiation other than light and radiant heat i.e. postulated the existence of an electromagnetic spectrum !
Suggested ways of detecting ether leading to Michaelson Morley experiment. Work lead to radio, radar, television, micro-waves, thermal imaging, infra-red telescopes.
Provided basis for Einstein's work on relativity.

Statics, Stresses in structures, Reciprocal Diagrams

On reciprocal figures and diagrams of forces. *Phil. Mag. XXVII. 1864, pp. 250-261. Scientific Papers Vol. I pp. 514-525 12 pages*

On the calculation of the equilibrium and stiffness of frames. *Phil. Mag. XXVII. 1864, pp. 294-299. Scientific Papers Vol. I pp. 598-604 7 pages.*

On reciprocal diagrams in space and their relation to Airy's function of stress. *London. Math. Soc. Proc. II. 1869, pp. 58-60.. Scientific Papers Vol. II 102-104 3 pages.*

On reciprocal figures, frames and diagrams of forces. *Edinb. Roy. Soc. Proc. VII. 1872, pp. 53-56.; Edinb. Roy. Soc. Trans. XXVI. 1872, pp. 1-40. Scientific Papers Vol. II 161-207 47 pages*

On Bow's method of drawing digrams in graphical statics, with illustrations from Peaucellier's linkage. *Cambridge Phil. Soc. Proc. 2. 1876, pp. 407-414. Scientific Papers Vol. II pp. 492-497 6 pages.*

Showed how to calculate stresses in framed arch and suspension bridges (was first to do so?) and how to use M's Reciprocal Theorem for statically indeterminate frame structures (he was the first to do so).
Lead to Luigi Cremola interpreting reciprocal diagrams as a duality in projective 3-space.

Properties of Solids, Surfaces and Fluids

On the equilibrium of elastic solids. *Edinb. Roy. Soc. Trans. XX. 1853, pp. 87-120. [1850]. Scientific Papers Vol. I pp. 30-79 50 pages.*
On the transformation of surfaces by bending. *Camb. Phil. Trans. IX. 1856, pp 445-470.* SP I pp80-114 35 pages
The construction of stereograms on surfaces. *London. Math. Soc. Proc. II. 1869, pp. 57-58. [1868*]. *Scientific Papers Vol. II p. 101 1 page*
On the displacement in a case of fluid motion. *London. Math. Soc. Proc. III. 1869-1871, pp. 82-87.[1870]. Scientific Papers Vol. II pp. 208-214 7 pages*
Note to Mr Röhr's paper on, 'Spheric and cylindric motion in viscous fluid'. *London. Math Soc. Proc. 5. 1873-74, pp. 138-139. [1874]*

Maxwell Stress Tensor.

Control Theory and Cybernetics

On governors. *Roy. Soc. Proc. XVI. 1868, pp. 270-283; Phil. Mag. XXXV. 1868, pp. 385-398. Scientific Papers Vol. II 105-120 16 pages.*

Above paper regarded as the foundations of control theory and theory of servo-mechanisms (cybernetics).
For stability, characteristic equation of the linear differential equation has to have all its roots with negative real parts.

Instruments

Description of a new form of platometer, an instrument for measuring the area of plane figures drawn on paper. *Edinb. Trans. Scot. Soc. Arts, IV. 1856. pp. 420-428. Scientific Papers Vol. I pp. 230-237 8 pages.*
On an instrument to illustrate Poinsot's theory of rotation. *Brit. Assoc. Rep. 1856 (pt. 2) pp. 27- 28. Scientific Papers Vol. I pp. 246-247 2 pages.*
On the elementary theory of optical instruments. *Camb. Phil. Soc. Proc. I. 1866, pp. 173-175.[1856]. Scientific Papers Vol. I 238-240 3 pages.*
On the general laws of optical instruments. *Quart. Jour. Math II. 1858, pp. 233-246. Scientific Papers Vol. I pp. 271-285 15 pages.*
General considerations concerning scientific apparatus. *Scientific Papers. Vol II. pp. 505-522 18 pages.*
Instruments connected with fluids. *Scientific Papers. Vol II ,pp. 523- 528 5 pages.*

Lightning Conductors

Lightning conductors. *Telegr. Engin. Journ. 4. 1875, pp. 429-43.*
On the protection of buildings from lightning. *Brit. Assoc.Rep. 1876 (Sect.) pp. 43-45. Scientific Papers Vol. II pp. 538-540 3 pages.*
On the protection of buildings from lightning. *Symons Meteorol. Mag. 11, 1876, p. 132.*

Reviews, Essays and Biographies

'Elements of Natural Philosophy'. By Sir W. Thomson and P.G. Tait. (Review). *Scientific Papers. Vol II. pp. 324-329. Scientific Papers Vol. II pp. 324-328 5 pages.*
'An essay on the mathematical principles of physics.' by the Rev. James Challis, M.A. &c. (Review) *Scientific Papers. Vol II. pp. 338-342 5 pages.*
Reprints of papers on electrostatics and magnetism. By Sir William Thomson. (Review). *Scientific Papers. Vol II. pp. 301-307 7 pages.*
Faraday. *Scientific Papers. Vol II. pp. 355-36 and pp. 786-794.*
Herman Ludwig Ferdinand Helmholtz. *James Clerk Maxwell: Scientific Papers. Vol II, pp. 592-598 7 pages..*
Plateau on soap bubbles (Review). *Scientific Papers. Vol II. pp. 393-399 7 pages.*
Grove's, 'Correlation of physical forces' (Review). *Scientific Papers. Vol II. pp. 400-4065 6 pages.*
Whewell's writings and correspondence. *Scientific Papers. Vol II, pp. 528-52 5 pages3.*
On the unpublished electrical papers of the Hon. Henry Cavendish. *Cambridge Phil. Soc Proc. 3, 1880, pp. 86-89.[1877]. Scientific Papers Vol. pp. 612-614 4 pages.*
Tait's Thermodynamics (Review). *Scientific Papers. Vol II. pp. 660- 67 12 pages.*
Thomson and Tait's Natural Philosophy (Review). *Scientific Papers.Vol II. pp. 776-786. 10 pages*
Paradoxical Philosophy (Review). *Scientific Papers. Vol II. pp. 756- 762 7 pages.*
Does the progress of Physical Science tend to give any advantage to the opinion of Necessity (or Determinism) over that of the Contingency of Events and the Freedom of the Will? (11.2.1873) *Campbell and Garnett- Life of James Clerk Maxwell 1884. pp362-366.*

Essay on Free Will and Determinism is said to presage Chaos Theory.

Articles and Addresses of an Expository Nature

Inaugural Address at Marischal College, Aberdeen, *(reference not known).*
Inaugural Address at King's College London, *American Journal of Physics, Vol. 47, No. 11, pp. 928-933 6 pages.*
Introductory lecture on Experimental Physics (as Cavendish Professor). *Scientific Papers. Vol II. pp. 241-256 15 pages.*

Attraction. *Scientific Papers. Vol II. pp. 485-492 7 pages.*.
Address to the Mathematical and Physical Section of the British Association. *Brit. Assoc. Rep. XL. 1870 (Sect.), pp. 1-9. Scientific Papers Vol. Iipp. 215-229 15 pages.*
Ether. *Scientific Papers. Vol II. pp. 763-776* 13 pages.
Diffusion. *Scientific Papers. Vol II. pp. 625-647 22 pages.*
Reports on special branches of science. *Scientific Papers. Vol II. pp. 794-796 3 pages.*.
Diagrams. *Scientific Papers. Vol II. pp. 647-660 13 pages.*.
The telephone; Rede Lecture, Cambridge, May 24, 1878. *Nature, 18. 1878, pp. 159-163. Scientific Papers Vol. II pp. 742-755 14 pages.*
Capillary action. *Scientific Papers. Vol II, pp. 541-592*. 7 pages.
Constitution of bodies. *Scientific Papers. Vol II, pp. 616-624 9 pages*

Electrical Standards

Reports of the Committee on Electrical Standards appointd by the British Association for the Advancemant of Science (with Thomson W, Joule J P, and Jenkin F), London 1873.

Determination of fundamental units in electricity.

Unclassified

On a bow seen on the surface of ice. *Edinb. Roy. Soc. Proc. VII. 1872, p.69. Scientific Papers Vol. II p 160 1 page.*
Remarks on Mr Hanlon's paper on the Vena Contracta. *London. Math. Soc. Proc. III. 1869- 71, pp. 6-8.*
On the mathematical classification of physical quantities. *Scientific Papers. Vol. II. pp. 257-267. Scientific Papers Vol. II 257-266 10 pages.*

Primarily Mathematical

On the descriptions of oval curves and those having a plurality of foci. *Edinb. Roy. Soc. Trans. Proc. II. 1851, pp. 89-91.[1846]. Scientific Papers Vol. I pp 1-3 3 pages.*
On the theory of rolling curves. *Edinb. Roy. Soc. Trans. XVI. 1849, pp. 519-540 Scientific Papers Vol. pp.14-29 26 pages.*.
On a particular case of a descent of a heavy body in a resisting medium. *Camb. and Dubl. Math. Journ. IX 1854, pp. 145-148.*
On the equilibrium of a spherical envelope. *Quart. Journ. Math. VIII. 1867. pp. 325-333 Scientific Papers Vol. II pp. 86-95 10 pages.*
On the cyclide. *Quart. Jour. Math. IX. 1868, pp. 111-126. Scientific Papers Vol. II pp. 144-159 16 pages.*
On hills and dales. *Phil. Mag. XL 1870, pp. 421-427*. SP II 233-240 8 pages.
On the geometrical mean distance of two figures on a plane. *Edinb. Roy. Soc. Trans. XXVI. 1872, pp. 729-733. Scientific Papers Vol. II 280-285 6 pages.*

On the condition that, in the transformation of any figure by curvilinear coordinates in three dimensions, every angle in the new figure shall be equal to the corresponding figure in the original figure. *London. Math. Soc. Proc. IV. 1871-73, pp. 117-119.[1872]. Scientific Papers Vol. II 297-300 4 pages.*

On the problem of the calculus of variations in which the solution is discontinuous. *Cambridge Phil. Soc.II. 1876, pp. 292-295. Scientific Papers Vol. II p 310 1 page.*

On approximate multiple integration between limits of summation. *Cambridge Phil. Soc. Proc. 3. 1880, pp. 39-47. [1877]. Scientific Papers Vol. II pp. 604-611 8 pages.*

On a paradox in the theory of attraction. *Cambridge Phil. Soc. Proc. 3. 1880, pp. 34-39. [1877]. Scientific Papers Vol. II 599-603 5 pages.*

Harmonic analysis. *Scientific Papers. Vol II. pp. 797-799 3 pages.*

Above paper On Hills and Dales regarded as starting the branch of mathematics now called global analysis (presumably means topology?).
Pioneered (with Tait) vector analysis, inventing the term 'curl'.

Books written by James Clerk Maxwell

1. On the Stability of the Motion of Saturn's Rings, (1859), *Macmillan.*
2. Theory of Heat, (1870), *London.*
3. A Treatise on Electricity and Magnetism, (1873), *Oxford.*
4. Matter and Motion, (1873) , *London.*
5. The Electrical Researches of the Honourable Henry Cavendish, F.R.S. written between 1771 and 1781, edited from the original manuscripts in the possession of the Duke of Devonshire, K.G., (1879), *Cambridge*
6. Elementary Treatise on Electricity and Magnetism, (1881, revised ed. 1888), ed. W. Garnett, *Oxford.*
7. The scientific papers of James Clerk Maxwell (ed.Niven W D), (1890), *Cambridge University Press.*