

# CONTENTS OF VOLUME I

Biographical Memoir by Dr J. C. Burkill	xxv
<i>Biographical Memoirs of Fellows of the Royal Society</i> , <b>28</b> , 323–36, 1978.	
Comments	xxxviii

## 1. DIFFERENTIAL EQUATIONS

Introduction	3
1924, 7. Trajectories of a small horizontal velocity in a resisting medium. <i>Proc. Camb. phil. Soc.</i> <b>22</b> , 217–33.	4
1937, 3 (with E. T. LITTLEWOOD). Some remarkable approximate formulae arising in ballistics. <i>Proc. Lond. math. Soc.</i> <b>2 43</b> , 324–36.	21
1968, 2. A ballistic paradox. <i>Math. Gaz.</i> <b>52</b> , 132–4.	34
Comments on 1924, 7; 1937, 3; 1968, 2.	37
1951, 1 (with M. L. CARTWRIGHT). Some fixed point theorems. <i>Ann. Math.</i> <b>54</b> , 1–37.	38
1959, 3. A theorem on fixed points. <i>Calcutta math. Soc. (1958–9) Golden Jubilee Commemorative Volume</i> , 87–95.	75
Comments on 1951, 1; 1959, 3.	83
1945, 2 (with M. L. CARTWRIGHT). On nonlinear differential equations of the second order: I. The equation $\ddot{y} - k(1 - y^2)\dot{y} + y = bk \cos(\lambda t + a)$ , $k$ large. <i>J. Lond. math. Soc.</i> <b>20</b> , 180–9.	85
1947, 1 (with M. L. CARTWRIGHT). On non-linear differential equations of the second order II. The equation $\ddot{y} + kf(y, \dot{y}) + g(y, k) = p(t) = p_1(t) + kp_2(t)$ ; $k > 0$ , $f(y) \geq 1$ . <i>Ann. Math.</i> <b>48</b> , 472–94. [Addendum <b>50</b> , 504–5, 1949.]	95
1957, 1. On nonlinear differential equations of the second order: III. The equation $\ddot{y} - k(1 - y^2)\dot{y} + y = b\mu k \cos(\mu t + \alpha)$ for large $k$ and its generalizations. <i>Acta math.</i> <b>97</b> , 267–308. [Errata, at end of 1957, 2.]	120

1957, 2. On nonlinear differential equations of the second order: IV. The general equation $\ddot{y} + kf(y)\dot{y} + g(y) = bkp(\phi)$ , $\varphi = t + a$ . <i>Acta math.</i> <b>98</b> , 1–110.	162
1960, 2. On the number of stable periods of a differential equation of the van der Pol type. <i>I.R.E. Trans. Circuit Theory CT-7</i> <b>4</b> , 535–42.	272
1963, 2. I. On van der Pol's equation with large $k$ . II. Celestial mechanics over a very long time. <i>Nonlinear Problems</i> (Proceedings of a symposium conducted by the Mathematics Research Center, United States Army at the University of Wisconsin, 30 April–2 May 1962) (ed. R. E. Langer), pp. 161–75. University of Wisconsin Press, Madison.	280
Comments on 1945, 2; 1947, 1; 1957, 1; 1957, 2; 1960, 2; 1963, 2.	295
1952, 2. On the problem of $n$ bodies. <i>Communications du séminaire mathématique de l'université de Lund</i> , tome supplémentaire (dédié à Marcel Riesz), pp. 143–51. [Correction, <i>K. Fysiot. Sallsk. Lund Forh.</i> <b>29</b> , 97–98, 1959.]	296
1959, 1. On the equilateral configuration in the restricted problem of three bodies. <i>Proc. Lond. math. Soc.</i> <b>3</b> <b>9</b> , 343–72. [Corrigendum, <i>Proc. Lond. math. Soc.</i> <b>3</b> <b>10</b> , 640, 1960.]	307
Comments	336
1959, 2. The Lagrange configuration in celestial mechanics. <i>Proc. Lond. math. Soc.</i> <b>3</b> <b>9</b> , 525–43. [Addendum, <i>Proc. Lond. math. Soc.</i> <b>3</b> <b>10</b> , 640, 1960.]	337
Comments	355
Comments on 1952, 2; 1959, 1; 1959, 2.	355
1963, 1. Lorentz's pendulum problem. <i>Ann. Phys.</i> <b>21</b> , 233–42. [Corrections at end of 1964, 5.]	356
1964, 3. Adiabatic invariance II. Elliptic motion about a slowly varying center of force. <i>Ann. Phys.</i> <b>26</b> , 131–56.	366
Corrections	391
1964, 4. Adiabatic invariance III. The equation $\ddot{x} = -V_x(x, w)$ . <i>Ann. Phys.</i> <b>29</b> , 1–12.	392
Corrections	403
1964, 5. Adiabatic invariance IV. Note on a new method for Lorentz's pendulum problem. <i>Ann. Phys.</i> <b>29</b> , 13–18.	404

1964, 6. Adiabatic invariance V. Multiple periods. <i>Ann. Phys.</i> <b>30</b> , 138–53.	410
Comments on 1963, 1; 1964, 3; 1964, 4; 1964, 5; 1964, 6.	425
1966, 3. Unbounded solutions of $\ddot{y} + g(y) = p(t)$ . <i>J. Lond. math. Soc.</i> <b>41</b> , 491–6.	427
1966, 4. Unbounded solutions of an equation $\ddot{y} + g(y) = p(t)$ , with $p(t)$ periodic and bounded and $g(y)/y \rightarrow \infty$ as $y \rightarrow \pm \infty$ . <i>J. Lond. math. Soc.</i> <b>41</b> , 497–507.	433
1966, 5. On linear differential equations of the second order with a strongly oscillating coefficient of $y$ . <i>J. Lond. math. Soc.</i> <b>41</b> , 627–38.	444
Comments on 1966, 3; 1966, 4; 1966, 5.	456

## 2. REAL ANALYSIS

<i>Subsection 2 (a). Trigonometric polynomials</i>	
Introduction	459
1961, 1. On the mean values of certain trigonometrical polynomials. <i>J. Lond. math. Soc.</i> <b>36</b> , 307–34.	460
Comments	488
1962, 3. On the mean values of certain trigonometrical polynomials II. <i>Illinois J. Math.</i> <b>6</b> , 1–39.	490
Comments	528
1962, 4. On the real roots of real trigonometrical polynomials. <i>Studies in Mathematical Analysis and Related Topics: Essays in Honor of George Pólya</i> (ed. G. Szegő and others), pp. 219–26. Stanford University Press.	530
Comments	537
1964, 1. On the real roots of real trigonometrical polynomials (II). <i>J. Lond. math. Soc.</i> <b>39</b> , 511–32.	539
Comments	560
1966, 1. The real zeros and value distribution of real trigonometrical polynomials. <i>J. Lond. math. Soc.</i> <b>41</b> , 336–42.	561
Comments	567

1967, 3. Some new inequalities and unsolved problems. 568

*Inequalities* (ed. O. Shisha), pp. 151–62. Academic Press, New York.

Comments 579

*Subsection 2 (b). Trigonometric series*

Introduction 583

1926, 10. Mathematical notes (2): On a theorem of Kolmogoroff. 584  
*J. Lond. math. Soc.* 1, 229–31.

Comments 586

1929, 3. Mathematical notes (10): On a theorem of Zygmund. 587  
*J. Lond. math. Soc.* 4, 305–7.

Comments 590

1929, 5 (with K. GRANDJOT, V. JARNIK, and E. LANDAU). Bestimmung einer absoluten Konstanten aus der Theorie der trigonometrischen Reihen. 591  
*Annali Mat. pura appl.* (IV) 6, 1–7.

Comments 598

1931, 4 (with R. E. A. C. PALEY). Theorems on Fourier series and power series. 599  
*J. Lond. math. Soc.* 6, 230–3.

Comments 603

1937, 1 (with R. E. A. C. PALEY). Theorems on Fourier series and power series (II). 604  
*Proc. Lond. math. Soc.* 2 42, 52–89.

Comments 641

1937, 2 (with R. E. A. C. PALEY). Theorems on Fourier series and power series (III). 642  
*Proc. Lond. math. Soc.* 2 43, 105–26.

Comments 664

Comments on 1931, 4; 1937, 1; 1937, 2. 664

1936, 3. On the Fourier coefficients of functions of bounded variation. 666  
*Q. Jl Math.* 7, 219–26.

Comments 674

1938, 1. Mathematical notes (14): On a theorem of Hardy and Littlewood. <i>J. Lond. math. Soc.</i> <b>13</b> , 194–5.	675
Comments	676
1954, 1. On a theorem of Paley. <i>J. Lond. math. Soc.</i> <b>29</b> , 387–95.	677
Comments	686
1962, 1. A theorem on trigonometrical series with $\sum( a_m  +  b_m )$ convergent, with an application to a convergence problem. <i>J. Lond. math. Soc.</i> <b>37</b> , 252–5.	687
Comments	690
<i>Subsection 2 (c). Inequalities (and rearrangements)</i>	
Introduction	693
1925, 2. A theorem on power series. <i>Proc. Lond. math. Soc.</i> <b>2</b> <i>23</i> , 94–103.	694
1926, 6. On the mean values of power series. <i>Proc. Lond. math. Soc.</i> <b>2</b> <i>25</i> , 328–37.	704
Correction	714
1930, 4. Mathematical notes (13): On mean values of power series (II). <i>J. Lond. math. Soc.</i> <b>5</b> , 179–82.	715
Comments on 1925, 2; 1926, 6; 1930, 4.	718
1930, 7. On bounded bilinear forms in an infinite number of variables. <i>Q. Jl Math.</i> <b>1</b> , 164–74.	720
Comments	730
1960, 1. On the inequalities between functions $f$ and $f^*$ . <i>J. Lond. math. Soc.</i> <b>35</b> , 352–65.	732
Comments	746
<i>Subsection 2 (d). Theory of series and Tauberian theorems</i>	
Introduction	749
1910, 1. On a class of conditionally convergent infinite products. <i>Proc. Lond. math. Soc.</i> <b>2</b> <i>8</i> , 195–9.	750
Comments	754

1910, 2. Note on the convergence of series of positive terms. <i>Mess. Math.</i> <b>39</b> , 191–2.	755
Comments	756
1911, 1. The converse of Abel's theorem on power series. <i>Proc. Lond. math. Soc.</i> <b>2</b> <i>9</i> , 434–48.	757
Comments	772
1935, 1. Note on the preceding paper [Ramaswami's]. <i>J. Lond. math. Soc.</i> <b>10</b> , 309–10.	774
Comments	775
1967, 1. A theorem about successive derivatives of a function and some Tauberian theorems. <i>J. Lond. math. Soc.</i> <b>42</b> , 169–79.	776
Comments	787
BIBLIOGRAPHY	I

## CONTENTS OF VOLUME II

### 3. THE ZETA FUNCTION AND NUMBER THEORY

Introduction	791
1912, 1. Quelque conséquences de l'hypothèse que la fonction $\zeta(s)$ de Riemann n'a pas de zéros dans le demi-plan $R(s) > \frac{1}{2}$ . <i>C.r. hebd. Séanc. Acad. Sci., Paris</i> <b>154</b> , 263–6.	793
Comments	796
1913, 7 (with H. BOHR and E. LANDAU). Sur la fonction $\zeta(s)$ dans le voisinage de la droite $\sigma = \frac{1}{2}$ . <i>Bull. Acad. r. Belg. Cl. Sci.</i> <b>12</b> , 1144–75.	797
Comments	828
1914, 5. Sur la distribution des nombres premiers. <i>C.r. hebd. Séanc. Acad. Sci., Paris</i> <b>158</b> , 1869–72.	829
1927, 3. Mathematical notes (3): On a theorem concerning the distribution of prime numbers. <i>J. Lond. math. Soc.</i> <b>2</b> , 41–5.	833

1937, 4. Mathematical notes (12): An inequality for a sum of cosines. <i>J. Lond. math. Soc.</i> <b>12</b> , 217–21.	838
Comments on 1914, 5; 1927, 3; 1937, 4.	843
1922, 1. Researches in the theory of Riemann zeta-function. <i>Proc. Lond. math. Soc.</i> <b>2</b> <i>20</i> , xxii–xxvii. Records for 10 February 1921.	844
1924, 8. Two notes on the Riemann zeta-function. <i>Proc. Camb. phil. Soc.</i> <b>22</b> , 234–42.	851
1924, 9. On the zeros of the Riemann zeta-function. <i>Proc. Camb. phil. Soc.</i> <b>22</b> , 295–318.	860
1926, 2. On the Riemann zeta-function. <i>Proc. Lond. math. Soc.</i> <b>2</b> <i>24</i> , 175–201.	884
1928, 2. Mathematical notes (5): On the function $1/\zeta(1+ti)$ . <i>Proc. Lond. math. Soc.</i> <b>2</b> <i>27</i> , 349–57.	911
1928, 3. On the class-number of the corpus $P(\sqrt{-k})$ . <i>Proc. Lond. math. Soc.</i> <b>2</b> <i>27</i> , 358–72.	920
Comments on 1922, 1; 1924, 8; 1924, 9; 1926, 2; 1928, 2; 1928, 3.	935
1924, 6 (with A. WALFISZ). The lattice points of a circle. (With a note by E. LANDAU.) <i>Proc. R. Soc. Lond. A</i> <b>106</b> , 478–88.	939
Comments	950
1971, 2. The quickest proof of the prime number theorem (in memory of H. Davenport). <i>Acta Arith.</i> <b>18</b> , 83–6.	951
Comments	955

#### 4. COMPLEX ANALYSIS

Introduction	959
<i>Subsection 4 (a). Functions in the unit disc</i>	
1925, 3. On inequalities in the theory of functions. <i>Proc. Lond. math. Soc.</i> <b>2</b> <i>23</i> , 481–519. [Correction at end of 1926, 6.]	963
Comments	1002

1927, 4. Mathematical notes (4): On a theorem of Fatou. <i>J. Lond. math. Soc.</i> <b>2</b> , 172–6.	1005
Comments	1010
1927, 5. Mathematical notes (6): On the definition of a subharmonic function. <i>J. Lond. math. Soc.</i> <b>2</b> , 189–92.	1011
Comments	1014
1927, 6. Mathematical notes (7): On functions subharmonic in a circle. <i>J. Lond. math. Soc.</i> <b>2</b> , 192–6.	1015
Comments	1019
1928, 5. Mathematical notes (8): On functions subharmonic in a circle (II). <i>Proc. Lond. math. Soc.</i> <b>2</b> <i>28</i> , 383–94.	1020
Comments	1032
1931, 1. Mathematical notes (9): On functions subharmonic in a circle (III). <i>Proc. Lond. math. Soc.</i> <b>2</b> <i>32</i> , 222–34.	1033
Comments	1045
1932, 1 (with R. E. A. C. PALEY). A proof that an odd schlicht function has bounded coefficients. <i>J. Lond. math. Soc.</i> <b>7</b> , 167–9.	1046
Comments	1048
1938, 3. On the coefficients of schlicht functions. <i>Q. Jl Math.</i> <b>9</b> , 14–20.	1049
Comments	1056
 <i>Subsection 4 (b). Functions in the plane</i>	
1907, 1. On the asymptotic approximation to integral functions of zero order. <i>Proc. Lond. math. Soc.</i> <b>2</b> <i>5</i> , 361–410.	1059
Comments	1109
1908, 1. A general theorem on integral functions of finite order. <i>Proc. Lond. math. Soc.</i> <b>2</b> <i>6</i> , 189–204.	1110
Comments	1126

1908, 2. Asymptotic approximation to functions defined by highly-convergent product forms.	1127
<i>Trans. Camb. phil. Soc.</i> <b>20</b> , 323–70.	
Comments	1175
1909, 1. On the Dirichlet series and asymptotic expansion of integral functions of zero order.	1176
<i>Proc. Lond. math. Soc.</i> <b>27</b> , 209–62.	
Comments	1229
1909, 2. On a class of integral functions.	1230
<i>Trans. Camb. phil. Soc.</i> <b>21</b> , 301–59.	
Comments	1288
1930, 3. Mathematical notes (11): On exceptional values of power series.	1289
<i>J. Lond. math. Soc.</i> <b>5</b> , 82–7.	
Comments	1295
1952, 1. On some conjectural inequalities, with applications to the theory of integral functions.	1296
<i>J. Lond. math. Soc.</i> <b>27</b> , 387–93.	
Comments	1303

## 5. PROBABILISTIC ANALYSIS

Introduction	1307
1938, 2 (with A. C. OFFORD). On the number of real roots of a random algebraic equation.	1309
<i>J. Lond. math. Soc.</i> <b>13</b> , 288–95.	
Correction	1316
1939, 1 (with A. C. OFFORD). On the number of real roots of a random algebraic equation. II.	1317
<i>Proc. Camb. phil. Soc.</i> <b>35</b> , 133–48.	
Correction	1332
1943, 2 (with A. C. OFFORD). On the number of real roots of a random algebraic equation III.	1333
<i>Mat. Sb.</i> <b>12</b> (54), 277–86.	
Comments on 1938, 2; 1939, 1; 1943, 2.	1343

1945, 1 (with A. C. OFFORD). On the distribution of zeros and $\alpha$ -values of a random integral function (I).	1345
<i>J. Lond. math. Soc.</i> <b>20</b> , 130–6.	
1948, 2 (with A. C. OFFORD). On the distribution of zeros and $\alpha$ -values of a random integral function (II).	1352
<i>Ann. Math.</i> <b>49</b> , 885–952. [Errata <b>50</b> , 990–1, 1949.]	
Comments on 1945, 1; 1948, 2.	1421
1966, 2. On polynomials $\sum^n \pm z^m, \sum^n e^{\alpha_m i} z^m, z = e^{\theta i}$ .	1423
<i>J. Lond. math. Soc.</i> <b>41</b> , 367–76.	
Comments	1433
1967, 2 (with Y. M. CHEN). Some new properties of power series. (Prof. B. N. Prasad Memorial Volume.)	1434
<i>Indian J. Math.</i> <b>9</b> , 289–324.	
1968, 1. A ‘pits effect’ for all smooth enough integral functions with a coefficient factor $\exp(n^2 \alpha \pi i)$ , $\alpha = \frac{1}{2}(\sqrt{5} - 1)$ (dedicated to L. J. Mordell).	1470
<i>J. Lond. math. Soc.</i> <b>43</b> , 79–92.	
1968, 3. The ‘pits effect’ for the integral function	
$f(z) = \sum \exp\{-p^{-1}(n \log n - n) + \pi i \alpha n^2\} z^n, \alpha = \frac{1}{2}(\sqrt{5} - 1)$ .	1484
<i>Abhandlungen aus Zahlentheorie und Analysis zur Erinnerung an Edmund Landau (1877–1938)</i> , pp. 193–215. VEB Deutscher Verlag der Wissenschaften, Berlin. [Published also as: <i>Number Theory and Analysis. A collection of papers in honor of Edmund Landau (1877–1938)</i> . Plenum Press, New York.]	
Correction	1504
1970, 1. The ‘pits effect’ for functions in the unit circle.	1505
<i>J. Anal. Math.</i> <b>23</b> , 237–68.	
Corrections	1536
1970, 2. The ‘pits effect’ for standard integral functions of finite nonzero order.	1537
<i>Mathematical Essays Dedicated to A. J. Macintyre</i> (ed. L. Shankar), pp. 247–56. Ohio University Press, Athens.	
Comments on 1967, 2; 1968, 1; 1968, 3; 1970, 1; 1970, 2.	1547
1969, 1. On the probability in the tail of a binomial distribution.	1548
<i>Adv. Appl. Probab.</i> <b>1</b> , 43–72.	
Comments	1578

## 6. UNCLASSIFIED MATHEMATICS

1922, 5. On an integral equation. (With a note by E. A. MILNE.) <i>Proc. Camb. phil. Soc.</i> <b>21</b> , 205–15.	1581
Comments	1591
1926, 9. Mathematical notes (1): On transfinite cardinals. <i>J. Lond. math. Soc.</i> <b>1</b> , 193–4.	1592
Comments	1594
1941, 1. Mathematical notes (14): Every polynomial has a root. <i>J. Lond. math. Soc.</i> <b>16</b> , 95–8.	1595

## 7. MISCELLANEOUS

Introduction	1601
1929, 6. [Review of] <i>Collected Papers of Srinivasa Ramanujan</i> (ed. by G. H. HARDY, P. V. SESHU AIYAR, and B. M. WILSON). <i>Math. Gaz.</i> <b>14</b> , 425–8.	1602
Comments	1605
1948, 3. Large numbers. <i>Math. Gaz.</i> <b>32</b> , 163–71.	1606
1948, 4. Newton and the attraction of a sphere. <i>Math. Gaz.</i> <b>32</b> , 179–81.	1615
Comments	1618
1964, 2. Back to 1941. <i>Math. Gaz.</i> <b>48</b> , 164–9.	1619
Comments	1624
1967, 4. The Mathematician's Art of Work. <i>Rockefeller Univ. Rev.</i> <b>5</b> , 1–7.	1625
1971, 1. Adventures in ballistics, 1915–1918, I. <i>Math. Spectrum</i> <b>4</b> , 31–8. [Errata at end of 1972, 1.]	1632

1972, 1. Adventures in ballistics, 1915–1918, II. <i>Math. Spectrum</i> 4, 80–6.	1640
'A mathematical education'. <i>A Mathematician's Miscellany</i> , pp. 66–83. Methuen, London, 1953. [1953, 1.]	1647
<b>BOOKS BY J. E. LITTLEWOOD</b>	1665
<b>BIBLIOGRAPHY</b>	I