



## Inventory

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**Manuscripts of John Allan Broun**

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John Allan Broun (1817-79) was born in Dumfries, studies at Edinburgh University, and in 1842 was appointed Director of the magnetic observatory founded by Sir Thomas Brisbane at Makerstoun. In 1852 he became Director of the Trivandrum Magnetic Observatory (founded by the Rajah of Travancore in 1841). Returning to Europe in 1865, Broun first lived on the Continent and then in London, where he continued to systemize and publish the results of his researches.

Broun's account of his work at Makerstoun is published in 3 volumes of the Transactions of the Royal Society of Edinburgh (vols XVII-XIX, 1945-50). His other most important publication is Observations of Magnetic Declination made at Trivandrum and Augusta Malley.

The papers have been arranged under the following sections. This is meant only to be a rough guide as there is a great deal of overlap between the sections, both in date and contents.

1-2	CORRESPONDENCE
3-44	SCIENTIFIC PAPERS FROM MAKERSTOUN
45-79	SCIENTIFIC PAPERS FROM TRIVANDRUM
80-85	SCIENTIFIC PAPERS FROM AUGUSTEER
86-95	COMPARISONS BETWEEN AUGUSTEER AND TRIVANDRUM
96-116	ESSAYS, LECTURES, MSS
117-8	LATER PAPERS
119-34	MISCELLANEOUS
135-70	NOTEBOOKS OF CALCULATIONS

### **Correspondence**

1. Letters from Sir Thomas Brisbane and Broun to James D Forbes, Secretary of RSE, mainly concerning Broun's work and the observatory at Makerstoun, 1845-9 and two drafts of a letter from Broun to Professor P G Tait, 1872.
2. Letters concerning the publication of Broun's results and the disposal of the manuscripts, 1876-91.

### **Scientific papers from Makerstoun and comparisons with other parts of the world**

3. Decennial solar spots, 1831-71.
4. Variations in magnetic declination, 1837-65.

5. Observations from the magnetic observatory at Simla including declination measurements at Simla, 1841-4.
6. Barometer readings taken over 26 day period in Singapore, 1841-45.
7. Barometer readings from various parts of the world, 1842-7.
8. Monthly means of magnetic declination, Bombay and St Helena, 1842-61.
9. Diurnal variation of magnetic declination, 1842-62.
10. Bifilar means, Makerstoun and Dublin, 1843-53.
11. "Observations of Deflection and Vibration for the determination of the Absolute Horizontal Intensity", 1843-4.
12. Measurement of the direction and velocity of air currents, Makerstoun, 1843-6.
13. Functions of sines and values of measurements at Makerstoun and Hobart, 1843-6.
14. Notes and bifilar measurements of temperatures at Makerstoun, St Helena, Singapore, Hobarton, Cape of Good Hope and Madras, 1842-6.
15. Magnetic readings (for Makerstoun?), 1843-1849.
16. "1844 Makerstoun declination differences", 1844.
17. "Makerstoun declination differences with reference to the Moon's hour angle", 1844.
18. "Means used for differences of Makerstoun declinometer", 1844.
19. Daily means of Declinometer operations for every hour from 29 January to 9 March 1844", Toronto, Makerstoun, Hobarton, Trivandrum, 1844.
20. "Hundreth of scale division 1844". Cape of Good Hope, St Helena, Makerstoun.
21. "Toronto Declination differences with reference to the moon's hour angle", 1844.

22. Measurements of horizontal force at St Helena, 1844.
23. "Daily means of Bifilar Trivandrum for every hour July 29 – August 3 1844". Followed by tables for Cape of Good Hope, St Helena, Hobarton, Makerstoun, 1842-52.
24. Papers concerning bifilar coefficients in various parts of the world, 1844-45.
25. "Lunar magnetic declination for Makerstoun", 1844-5.
26. "Makerstoun lunar magnetic declination including the disturbed days", 1844-5.
27. "Sums of Makerstoun's declination differences with reference to the Moon's hour angle for each month", 1844-5.
28. "Makerstoun obs Declinometer, some pages headed "Abstract for Daily Observations of Declination Magnetometer at Makerstoun Observatory", 1844-45.
29. "Weekly means of Makerstoun declinometer for 1844", 1844-5.
30. "Four weekly means of Makerstoun declinometer for 1844 and 1845".
31. "Makerstoun declination differences, 1844-5".
32. "Solar period": graphs, tables and calculations, including tables for Trivandrum and Makerstoun, 1844-1845.
33. Lunar Tables from Hobarton, Trivandrum and Singapore. 1844-78.
34. "Balance 1845 Differences of hourly vibrations", 1845.
35. "Differences between the hourly observation and monthly mean declination 1845 Makerstoun".
36. Magnetic observations including some with Professor Forbes' magnets: deflection observations and vibrations, temperature experiments, torsion coefficients, 1845-6.
37. Meteorological observations, 1846. Location unknown.
38. "Observations during the Expedition to Cheviot" 1847.

39. Magnetic and meteorological observations at various stations on Cheviot, and comparisons between Cheviot and Makerstoun, 1847.
40. Meteorological observations, 1847. Location unknown.
41. "Miscellaneous graphs of magnetic and meteorological observations, some showing term-day magnetical observations at Makerstoun and Cheviot", 1840s.
42. Calculation of the bifilar temperature coefficient at Makerstoun and Dublin, 1840s and 1850s.
43. Miscellaneous notes and measurements, 1940s and 1950s.
44. Miscellaneous notes and measurements, 1940s and 1950s.

### **Trivandrum**

45. "Trivandrum magnetic observatory". Log Book, including readings and calculations, 1841-4.
46. "Observatory at Trivandrum. Abstract of daily observations", 1843.
47. "Observatory at Trivandrum. Abstract of daily observations", 1844-5.
48. "Trivandrum magnetic observatory". Log Book, including readings and calculations, 1852-4.
49. "Notes from Day Book for Note Books?", 1852-69.
50. Barometer – Lunar diurnal variation, 1853-8.
51. Barometric readings, Trivandrum with some corrected for temperatures 1853-64.
52. Various observations from Trivandrum, including tables concerning temperature coefficients, 1853-63.
53. "Adie's horizontal force. Grubb's horizontal force 1854".
54. Tables of lunar disturbance, 1854-64.
55. "26 day period. Mean magnetic declination Trivandrum 1854-70", with other observations.

56. "Differences of Adie's declinometer January 1854 – January 1855".
57. "Thermometer of Adie's vertical force magnetometer", 1855.
58. "Abstracts of Adie's vertical force magnetometer", 1855-6.
59. Bifilar temperature measurements, 1855-64.
60. Temperature coefficients for Adie's balance, 1855-9.
61. "Abstract of daily observations made at Trivandrum Observatory" with Adie's balance magnetometer, 1855-61.
62. Comparison of daily means of Bifilar no.1 and Bifilar no.2 with tables of daily means of horizontal force, 1855-64.
63. "Adie's bifilar, 1855-64".
64. "Adie's bifilar thermometer", 1855-64.
65. "Adie's balance magnetometer, 1855-64.
66. Bifilar differences with reference to the moon's hour angle, 1855-60.
67. "Bifilar mean difference with reference to the moon's hour angle, 1855-64".
68. Bifilar lunar observations, 1855-64.
69. Bifilar observations, 1855-64.
70. "Comparisons and Observations of Trivandrum Magnetic Declination with those made at Sherttlay", 1858-9.
71. "Hourly variation of magnetic declination at Trivandrum and other papers, including tables concerning lunar variation", 1859, n.d.
72. "Daily mean declination of moon's age, 1859-64.
73. Bifilar difference with reference to moon's hour angle, 1861-4.
74. Daily means of balance thermometer and thermometer of bifilar, 1865-78.
75. Magnetic observations made at the Trivandrum Observatory, 1865-1879.

76. Readings with 2 bifilar, 1868-9.
77. Temperature corrections for Adie's balance magnetometer.
78. Miscellaneous measurements and calculations, 1850s-1860s.
79. Miscellaneous measurements and calculations, 1850s-1860s.

### **Augusteer**

80. Notes, mainly concerning Augusteer, including clock errors, 1855-65.
- 80A. "Daily Means of Augusteer Bifilar Thermometer", 1856-8.
81. "Augusteer Magnetic Declination", 1857.
82. "Lunar diurnal variation of barometer at Augustia", 1857-8.
83. "Weekly Reports of Magnetic and Meteorological Observations at Augusteer Observatory", 1859.
84. "Lamont's and Adie's declination observations at Augusteer Observatory", 1864-5.
85. "Observations of magnetometers made at the Observatory Augusteer", 1864-5.

### **Comparisons between Augusteer and Trivandrum**

86. Log book of Trivandrum and Augusteer with observations and calculations, 1854-55.
87. "Abstract of daily observations at Trivandrum and Augusteer", 1855.
88. "Comparison between Trivandrum and Augusteer declinatometers in Scale Divisions", 1855-56.
89. "Differences between Trivandrum and Augusteer declinations in angular values", 1855-57.
90. "Mean difference Augusteer and Trivandrum declination (in angular values)", 1855-57.

91. "Differences between hourly magnetic declination at Trivandrum and Augusteer, 1855-58, 1864-5.
92. "Differences between Augusteer and Trivandrum bifilars", including mean differences, 1855-8.
93. Readings of balances at Trivandrum and Augusteer and calculations upon them, 1856-8.
94. "Comparison between Trivandrum and Augusteer declinatometers in Scale Divisions", 1856-59.
95. Magnetic declinations Augusteer and Trivandrum, 1856, 1858, 1870.

### **Papers, essays and lectures**

96. Data for paper on Horizontal Force – Observation at Colonial Station also experiments with bifilar lines, n.d.
97. Notes on Portable Bifilar, n.d.
98. Notes on Bifilar coefficients, n.d.
99. Notes on the Decennial period, n.d.
100. "Discussion for Decennial inequality and secular movement, Makerstoun, Paris, Trivandrum. Paper at the French Academy, 1879".
101. "Expansions of  $1/(c + x)$ ", n.d.
102. Draft paper on magnetism, n.d.
103. "Differential Inclination", n.d.
104. "On the variations of the Horizontal Force of the Earth's Magnetism shown within the British Isles", n.d.
105. "Temperature coefficient of the Dublin Bifilar magnetometer", n.d.
106. "Essay on determination of the temperature coefficients for the Bifilar Magnetometer", n.d.
107. Paper on magnetic declination, n.d.



108. "Notes on measurement of base lines and distances by means of telescope and mirror on measuring rods", n.d.
109. "Remarks on Daniells meteorology", n.d.
110. Notes on paper by Professor Stewart, n.d.
111. "Aduction Inclinator", n.d.
112. "Description of the Actinometer & Instructions how to use it", n.d.
113. "Notes on Comparisons of the daily means of horizontal force at different places", n.d.
114. "On the calculations for the Moon's hourly variation and hourly disturbance of Magnetic Declination", n.d.
115. "Notes on Adie's Unifilar and bifilar magnetometer", ca. 1870.
116. Untitled MSS and notes, n.d.

#### **Later papers**

117. Tables concerning magnetic declination, 1860s.
- 117a. Mean declination for 44 months, 1860s.
118. "Differences Adie and Grubb", 1867-70.

#### **Miscellaneous papers**

119. "Gauss on the Intensity of Terrestrial Magnetism", copied by Broun at Greenwich, 1842.
120. 'Letter from M Eucke to Quetelet on least Squares VII vol of Quetelets correspondence', copied by hand, 1842.
121. Trial formulas, 1842-67.
122. Graphs of magnetic observations from various parts of the world, 1843-58.
123. Gray book with comparative tables and tables of observations. Indexed, 1852-5.

124. Untitled tables, 1853.
125. Sums of differences on various subjects, some untitled, 1854-64.
126. Difference between Adie's unifilar and Lamont's (new instrument)?, 1864.
127. William Ellis "Inquiry as to whether the tendency to dispersion of cloud under a full moon in any way depends on lunar influence". Philosophical Magazine, July 1867.
128. Work done by Mr Cantine, 1877-8.
129. Newspaper cutting from The Daily Review, May 1880: report of the half yearly general meeting of Scottish Meteorological Society.
130. Graphs of magnetic forces, n.d.
131. Horizontal and vertical force magnetometers, n.d.
132. Lists of observations copied from notebooks and calculations, n.d.
133. Loose sheets, papers with incomplete headings, scraps and notes, n.d.
134. Note on domestic expenditure, n.d.

### **Notebooks**

135. No.1, 1853.
136. No.2, 1853.
137. No.3, 1853.
138. No.4, 1854.
139. No.4A, 1854.
140. No.4B, 1854.
141. No.5, 1854.
142. No.6, 1854.
143. No.7, 1855.

144. No.8, 1855.
145. No.9, 1855.
146. No.9A, 1856.
147. No.10, ?1857.
148. No.11, 1858.
149. No.12, 1859.
150. No.13, 1859.
151. No.14, 1859.
152. No.15, 1860.
153. No.16, 1860.
154. No.16A, 1860-4.
155. No.17, 1860.
156. No.18, 1861-2.
157. No.19, 1863.
158. No.20, ?1863.
159. No.21, 1863.
160. No.22, 1864.
161. No.23, 1864.
162. No.24, 1864.
163. No.25, 1864.
164. No.26, 1864.
165. No.27, 1864.

166. No.28, 1865.

167. No.29, 1865.

168. No.30, 1865.

169. Valuation of Adie's Balance magnetometer, 1860.

170. Sun and star clock observation, 1864-5.