

WILLIAM CAWTHORNE

UNWIN

F. R. S.

List of correspondence and papers in the

IMPERIAL COLLEGE ARCHIVES

IMPERIAL COLLEGE OF SCIENCE AND
TECHNOLOGY
(University of London)

List of the papers and correspondence
of

WILLIAM CAWTHORNE UNWIN , F. R. S.

preserved in the Imperial College Archives.

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WILLIAM CAWTHORNE UNWIN, F.R.S. 1838 - 1933.

W.C. Unwin was Professor of Engineering from 1884 to 1909 at the Central Technical College, (later the City and Guilds College), which was founded by the City and Guilds of London Institute. In 1907 it became a constituent college of the Imperial College.

Miss Dorothy Unwin, cousin of the Professor, presented his papers to the College in 1936. They were used by E.G. Walker for his biography 'The Life and Work of William Cawthorne Unwin', which was published by the Unwin Memorial Committee in 1938. Letters printed or referred to in this book are noted in the list.

The letters are, unless otherwise described, all holograph or signed typewritten letters.

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- 1. General correspondence.
- 30. Research reports and other papers.
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ABBREVIATIONS

- A.S.C.E. - American Society of Civil Engineers.
- C.T.C. - Central Technical College.
- INST. C.E. - Institute of Civil Engineering.
- PROC. INSTN. CIV. ENGRS. - Proceedings of the Institute of
Civil Engineers.
- R.S. - Royal Society.

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ADAMS, Edward Dean. b. 1845 c. d. 1931.

All letters except those marked * are typewritten.

1. December 12, 1890.
17, Nassau Street,
New York. Sends greetings for Christmas and
some object representative of
America.
2. February 4, 1893.
Cataract Construction
Co., 35, Wall Street,
New York. Comments on book of W.C.U.'s and
his plans for Canadian power house.
3. April 21, 1893.
1-4. Cataract Construction
Co., 15, Broad Street,
New York. Details of progress on electric
system for Niagara Falls.
4. November 1, 1893.
The same. Details of contract awarded to
Westinghouse Electric Co.
5. Offprint: obituary of E.K. Adams
from Electrical World, July 30,
1904.
6. October 1, 1904. Electrical World, p. 584.
Review of book by E.K. Adams.
- * 7. October 9, 1904.
Rohallion, Rumson
Hills. Personal acknowledgement of
W.C.U.'s letter of condolence,
enclosing [6] above. [On death of
son].
8. February 25, 1905.
71, Broadway, New
York. Sends copy of his son's book.
9. November 16, 1918.
1-3. The same.
Life, p. 155. Gives details of life; is writing
book on Niagara scheme, would
like suggestions from W.C.U.,
and his signed photograph.
10. December, 1918 ?
1-4. Carbon copy. Memorandum by
W.C.U. on Niagara Falls scheme.
Unsigned.
11. December 16, 1918.
29, Palace Gate. Copy. W.C.U. to E.D.A. Reply
to [9] enclosing photograph etc.
Unsigned.
12. January 6, 1919.
1-2. 71, Broadway, New York. Account of visit to Niagara; meeting
of new company.
13. January 17, 1923.
1-3. 598, Madison Ave.,
New York. Presentation of W.C.U. [by proxy]
at A.S.C.E.: E.D.A. has presented
Legros etching of W.C.U. to Metro-
politan Museum of Art.

ADAMS, Edward Dean. [continued].

14. April 1, 1925.
The same. Thanks for gift of Kelvin's life by Thompson.
15. May 7, 1925.
The same. Thanks for W.C.U.'s response to Adams' Dinner Committee's announcement of testimonial dinner.
16. September 11, 1925.
598, Madison Ave.,
New York. Enquiry about breast wheels erected by Sir. W. Fairbairn.
17. October 3, 1925.
The same. Thanks for reply to above; progress on 'Niagara Power'.
18. October 19, 1925.
The same. Enquiry about inscription on bust of Newton. (Made of Wedgwood Basalt).
19. October 21, 1925.
1-2. The same. Elucidation of mysterious wording on Wedgwood bust.
20. February 5, 1926.
The same. Covering letter. Sends copy of letter he has just sent to Professor Forbes.
21. The same.
1-3. See Life, p. 165. Carbon copy. To Professor George Forbes; progress on 'Niagara Power' award of John Fritz Gold medal.
22. July 31, 1926.
1-2. Brown's Hotel,
London. Sends chapter of 'Niagara Power' for comments.
- * 23. August 7, 1926.
The same.
See Life, p. 166. Arrangements for W.C.U. to visit E.D.A. and dedicate the 'Niagara Room' at the hotel.
24. January 3, 1927.
1-2. 920, Fifth Avenue,
New York. Asks for list of people whom W.C.U. thinks should receive 'Niagara Power'.
25. February 3, 1927.
The same. Thanks for list of names and societies etc.
26. April 12, 1929.
1-2. 598, Madison Ave.,
See Life, p. 167. Hopes to write on International Niagara Commission; asks W.C.U. for copy of his report.

ADAMS, Edward Dean. [continued].

27. May 3, 1929. Copy. W.C.U. to E.D.A.
1-4. 29, Palace Gate. Comments on development of
See Life, p. 167. electrical water power; unable
to contribute to E.D.A.'s pro-
jected survey owing to age.
28. May 29, 1929. Acknowledgement of the above.
598, Madison Ave.,
New York.

See also SELLERS, Coleman.

ARMSTRONG, William George. Baron Armstrong of Cragston.
1810-1900.

29. July 19, 1865. Thanks for letter dealing with
Newcastle on Tyne. artillery questions.

BAKER, Sir Benjamin. 1840 - 1907.

30. October 30, 1882. Comments on controversy
2, Queen Square Place, between Airy and Siemens
Westminster. over submarine cable.
31. October 25, 1887. Has been investigating fracture
The same. of iron links of bridge.
Forth Bridge Railway
Engineers Office.
32. October 28, 1887. Further testing; details of
The same. wind pressure on bridge.
33. Forth Bridge Railway, Effects of wind pressure;
Engineer's Office, sending steel for testing;
South Queensferry. sketch of test pieces.
See Life, p. 80.
34. January 19, 1888. Sending more links for tes-
2, Queen's Square. ting; sketch.
35. November 23, 1893. Comments on elastic theory
The same. applied to stone.
36. November 30, 1893. Comments on education of
The same. engineers; teaching what must
See Life, p. 112. be unlearnt in later practice,
refers to Rankine on arches.
37. November 27, 1896. Comments on structure of
The same. Bouzey Dam.
See Life, p. 115.

BAKER, Sir Benjamin. [continued].

38. January 1, 1897. Description of reservoir dam,
The same. with sketch.
39. January 12, 1897. Further details on reservoir.
The same.
40. October 26, 1898. Outlines method of blocking
The same. channels at Aswan dam; sketch.

BASSET, Alfred Barnard. 1854 - 1930.

41. November 18, 1892. Enquires about Unwin's law of
1-2. United University slipping which he has adopted
Club. but which is questioned by
Rayleigh and Lamb; explains
difficulties.

BELGIUM. Liege: Association des Ingénieurs.

42. February 28, 1922. Typewritten. In French. From
16, Quai des États the President, M.O. Leper-
Unis, Liege. sonne. Award of Honorary
Membership.

BOCQUET, J A

43. December 1, 1879. Expresses pleasure at W.C.U.'s
Ecole Municipale permission for him to translate
des Apprentis, Ville his book; asks for any additions
de Paris, 60, Boul. de etc.
la Villette, 60.

BRAMWELL, Sir Frederick Joseph. 1818 - 1903.

44. November 8, 1893. Had no hand in Unwin's election to
5, Great George St., Council of Royal Society; techni-
Westminster. cal comments on his Cantor
lectures.

BUTLER, Henry Montagu. 1833 - 1918.

45. October 15, 1890. Sends copy of statute on position of
Trinity Lodge, professors.
Cambridge.

CATARACT CONSTRUCTION COMPANY.

See ADAMS, Edward Dean.
ROWLAND, Henry.
SELLERS, Coleman.

CHESNEY, Sir George Tomkyns. 1830 - 1895. President of
Coopers' Hill College.

46. January 21, 1875. Unwin's salary is to be raised;
Indian Civil Eng. appreciation of his services.
College, Coopers' Hill.
47. November 3, 1880. Letter of appreciation of
33, Malvern Road, Unwin's work, when he retired
Kensington. from Presidency.
See Life, p. 73.
48. September 29, 1884. Congratulations on becoming
The Yarrows, Simla. Professor at the Central
Technical College.
49. August 7, 1891. Asks Unwin to come and visit
Home Close, Greyswood, him.
Haslemere.

CITY AND GUILDS OF LONDON INSTITUTE. Central Institution.
(Later Central Technical College).

50. May 19, 1893. From A. L. Soper. Typewritten.
Gresham College, Arrangements for teaching
Baskinghall Street. during absence of Ayrton and
Unwin at Chicago Commission.
51. Memorandum by W.C.U.: Minutes of Central Technical
College adopted by Executive Committee, July 30, 1903:
appreciation of Unwin's services on his resignation from
the Professorship.

CITY AND GUILDS OF LONDON INSTITUTE. Old Centralians.

52. August 3, 1921. To the New York Association of
1-2. 29, Palace Gate. Old Centralians. Thanks for
congratulations on award of the
Kelvin medal. From W. C. U.

Accompanying correspondence :-
July 11, 1952.

A. M. S. Holbein to Librarian,
City and Guilds College: Mr.
S. S. A. Watkins of New York
has sent above letter and after
discussion think Unwin Library
is best place for it.

CITY AND GUILDS OF LONDON INSTITUTE. Old Centralians.

Accompanying correspondence (continued).

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|------------------|---|
| August 18, 1952. | J. W. Voelcker, editor of the Central, to Librarian. Enquires about letter. |
| August 20, 1952. | S. S. A. Watkins to Librarian - thanks for letter. |

CLARKE, George Sydenham. 1st Baron Sydenham of Combe.
1848 - 1933.

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| 53. | October 6, 1880.
3, Medway Villas,
New Brompton. | Thanks for gift of camera from Cooper's Hill staff on his resignation. |
| 54. | May 5, 1884.
War Office. | Chatty letter on Unwin's appointment to Central Institution - calls him 'ruffian' for not letting him know plans for leaving Cooper's Hill. |

COOPER, Theodore. 1839 - 1919.

- | | | |
|------|----------------------------|---|
| 55. | November 28, 1888. | Defends American principles of bridge building, attacks theories of a Mr. Thompson who has been supported by Baker. |
| 1-2. | 35, Broadway,
New York. | |

COTTERILL, James Henry. 1836 - 1922.

- | | | |
|------|---|--|
| 56. | January 27, 1873.
Royal School of
Naval Architecture. | Has been given Professorship of Applied Mechanics at the School. |
| 57. | February 18, 1877.
18, Gloucester Place,
Greenwich. | Thanks for copy of Unwin's book; hopes his own work on Steam will soon be completed. |
| 58. | April 9, 1884.
Belair Cottage,
Landon Road,
Tunbridge Wells. | Congratulations on Central Institute appointment; weariness with book he is writing; alarmed at absence of W. C. U. 's names in list of candidates for R. S. |
| 59. | July 29, 1884. | Arrangements for visit to Canada; hopes to see more of W. C. U. : disgust with book, now finished. |
| 1-2. | 18, Gloucester Place.
Greenwich. | |

COTTERILL, James Henry. (continued).

60. December 22.
St. Leonards'. Comments on formulas for loss of heat in sudden enlargements. Outlines theory for total energy of a perfect fluid. Diagram.
61. October 24, 1890.
1-2. 18, Gloucester Place,
Greenwich. Discusses advantages of Cambridge professorship for W. C. U.; urges his application for post.
62. July 22, 1892.
1-2. Villa Hollandia,
Bad Gastein. Holiday plans; hopes W. C. U. will not be tempted by American offers; views on action of tides.
63. October 16, 1892.
18, Gloucester Place,
Greenwich. Discusses MacFarlane Gray's Paris paper; comments on him personally.
64. November 5, 1893.
The same. Glad that W. C. U. is on R. S. Council; business of a joint Trusteeship.
65. April 19, 1919.
Hill Crest, Park-
stone, Dorset. Reminiscences of the past.

DALBY, William Ernest. 1862 - 1936.

66. July 31, 1904.
45, Clifton Road,
Crouch End, N. Honour of succeeding W. C. U. at the College; debt to his writings.

DEACON, George Frederick. 1843 - 1909.

67. November 8, 1889.
Lake Vyrnwy,
Oswestry. Thanks for copy of W. C. U.'s article in Encyclopaedia Britannica on Hydraulics; holiday abroad cut short owing to difficulties with aqueduct tunnel under the Mersey; asks W. C. U. to test some Argentinian bricks for resistance to compression.
68. November 17, 1889.
G. W. R. train,
Oswestry to
Paddington. Arrangements for meeting; reports rise of Lake to level of overflow sill with fine effects of foam.

DENNY, Sir Archibald. 1860 - 1936.

69. June 17, 1915. Thanks for copy of Presidential address [to Institution of Mechanical Engineers] with comments.
1-2. Seven Ship Yard,
Dumbarton.

[See also 174].

DWELSHAUVERS-DERY, Victor August Ernest. 1836 - 1913.

70. July 5, 1888. In French. Thanks for attentions during stay in London; account of experiments with metal with enclosed graph [missing]; glad to hear W. C. U. teaches his method to his pupils. (Method of heat exchange?).
Liege.
71. December 18, 1888. Thanks for W. C. U. 's 'Address on the use of theory', need for 'physiology of steam engine' in Belgium; asks if W. C. U. could look over his paper on Willan's experiments on velocity.
Liege.
72. May 7, 1890. In French. Thanks for copy of W. C. U. 's 'Elements of machine design.'
Liege.
73. October 17, 1890. Letter written on form for questionnaire enquiring about experimental laboratories for steam engines attached to Technical Colleges. In French. Asks W. C. U. about some points connected with this survey on which he is about to publish the results.
Liege.
74. November 29, 1893. In French. Importance of laboratory teaching for mechanical engineers; in confidence describes experiences with own pupils who cannot put theory into practice; is commenting on letter about education of engineers from W. C. U.
Liege.
75. April 2, 1901. Thanks for letter; comments on Rankine.
Universite de Liege,
Cabinet du Recteur.

ELECTRIC TRACTION COMPANY LIMITED.

76. February 1, 1897. From F. Hudleston. Sends copies
16, Great George St., of tenders for Electrical traction
Westminster. plant for Central London Railway.

EMERY, A H

77. December 24, 1888. Typewritten. Describes construc-
1-2. Stamford, tion of pressure gauge in 1867;
Connecticut. 1870, with details; declares his
designs were not influenced, as
W.C.U. had stated, by Thomasset
machine.

EWING, Sir James Alfred. 1855 - 1935.

78. October 20, 1890. Thanks for testimonial; has no
University College, one suitable for the place W.C.U.
Dundee. mentions.

FAIRBAIRN, Sir Thomas. 2nd Bart. 1823 - 1891.

79. September 25, 1876. Asks for W.C.U.'s considered
Brambridge House, opinion of his father, Sir W.
Bishopstoke, Fairbairn, as man and scientist,
Southampton. to be used as material for forth-
coming life by Dr. W. Pole.
80. September 29, 1876. Thanks for reply, hopes W.C.U.
The same. will take the time he requires to
consider his statement.
81. November 4, 1876. Thanks for his very interesting
The same. communication.

FAIRBAIRN, Sir William. 1789 - 1874.

82. February 6, 1856. To Rev. W.J. Unwin. W.C.U. has
Manchester. been recommended to him; asks
See Life of Unwin, for further information about him
p. 31. for possible appointment as clerk
to W.F.
83. February 9, 1856. To the same. Youth, lack of ex-
The same. perience W.C.U.'s only defects;
See Life, p. 31. asks when he may see him.

FAIRBAIRN, Sir William. (continued).

84. March 10, 1856.
 The same.
 See Life, p. 32. To the same. W.C.U. giving satisfaction; appointed at £6 per month. Note added on blank sheet from W.C.U. to his father. [Life, p. 33].
85. June 22, 1858.
 Inverness. Glad to hear of successful experiments on density of steam, which he will follow up on his return, asks W.C.U. to get apparatus ready.
86. February 11, 1859.
 Manchester. To Rev. W.J. Unwin. Has raised W.C.U.'s salary; value of his services.
87. December 26, 1859.
 Manchester. Sends £10 as reward for services; asks him to keep account of expenses for experiments, on his visit to consult Tate; the importance of this joint investigation; [on superheated steam; Life, p. 37].
88. February 18, 1862.
 2, Victoria Street,
 See Life, p. 49. Instructions about rewriting Report (of Special Committee on Iron; Life, p. 48).
 Signature cut away.
89. March 19, 1862.
 The Polygon,
 Manchester.
 See Life, p. 50. Regret at parting with Unwin; testimonial to his services; encloses cheque for £20.
90. July 2, 1862.
 Manchester. W.C.U. has been awarded £100 for services to Admiralty Committee [see Life, p. 50].
91. May 28, 1863.
 The Athenaeum.
 See Life, p. 51. Thanks him for defending his reputation against Kirkcaldy; asks him to check over Mills and Mill work.
92. July 31, 1863.
 Manchester. Asks W.C.U. to make list of Errata in author's copy of Mills and Mill work.
93. July 8, 1864.
 Manchester.
 See Life, p. 51. Offers him possibility of partnership in Irish engineering works; retiring partner being one of his old pupils.
94. December 30, 1864.
 Manchester. Unfavourable comments on Pole's 'Life of Stephenson'; sorry he did not succeed with the Dublin firm; will keep look out for him.

FAIRBAIRN, Sir William. (continued).

95. August 3, 1865.
Blackwell,
Derbys. Will use W.C.U.'s formula for calculating perforation of armour plates in his book on Iron shipbuilding.
96. October 16, 1865.
Adelphi Hotel,
Liverpool. Agrees perfectly with W.C.U.'s unspecified proposals and will make necessary arrangements.
97. November 7, 1865.
Manchester. To Rev. W.J. Unwin. Expresses his confidence in W.C.U.
98. August 9, 1867.
Manchester.
See Life, p. 53. Asks W.C.U. if he can work out a summary of results of experiments on relative values of steel and iron in their mechanical properties and structural values.
99. October 24, 1867.
Manchester. Has been canvassing Professors of Owen's College on W.C.U.'s behalf (for Chair of Engineering) suggests he acquires as many testimonials as possible for this competitive post.
100. Undated. Unsigned testimonial [draft ?] for W.C.U.'s application for Manchester chair.
101. March 28, 1868.
Manchester.
See Life, p. 55. Informs W.C.U. of his failure to secure Professorship.
102. July 7, 1869.
The Polygon, Ardwick,
Manchester.
See Life, p. 56. Pleasure at W.C.U.'s success; is looking out for suitable appointment for him; offers his services.
103. July 16, 1869.
Edinburgh.
See Life, p. 57. Congratulations at his appointment to School of Naval Architecture.
104. January 16, 1872.
Manchester. Asks if W.C.U. could come for a month to work on experiments on conservation of heat.
105. February 20, 1872.
Manchester.
See Life, p. 96. Describes new engine and boiler just erected.
106. July 4, 1872.
Edinburgh.
See Life, p. 60. Further details of boiler and its fuel consumption.

FAIRBAIRN, Sir William. (continued).

107. November 21, 1872.
Manchester. Asks if W. C. U. can finish a paper on Iron ship building which old age and ill health prevents him from completing.
108. January 5, 1873.
Manchester.
See Life, p. 64. Suggests W. C. U. applies for chair at Glasgow left vacant by death of Rankine.
109. February 26, 1873.
Manchester. Enquires about progress with paper [alluded to in 107 above. ?].
110. March 5, 1873.
Manchester. Did not mean W. C. U. to rewrite the paper; would like to receive calculations.
111. April 1, 1873.
Manchester. Will send W. C. U. the paper when it is returned by Stokes. P. S. reads: You are quite right in supposing that Sir John Lubbock, Huxley and Dr. Hooker, the new President, will have the Royal Society entirely in their own hands.
112. April 4, 1873.
Manchester. Sends paper from Royal Society; cannot trust himself to write abstract so is therefore asking W. C. U. to do this.
113. April 10, 1873.
The Polygon,
Manchester. Thanks for writing abstract which is a little too long; encloses £10 in recognition of W. C. U. 's help.
114. August 28, 1874.
Coopers' Hill
College, Staines.
See Life, p. 65. W. C. U. to Lady Fairbairn. Letter of condolence on death of Sir William.

FITZMAURICE, Sir Maurice. 1861 - 1924.

115. September 3, 1917.
29, Palace Gate. W. C. U. to Sir F. M. Gives list of war committees on which he has been working.
116. February 7, 1919.
Foreign Office. Typewritten carbon copy. From V. Wellesley to Sir F. M. Thanks for work of Nile Projects Committee.

FORREST, James. 1825 - 1917. Secretary of the Inst. C. E.

117. April 15, 1893. Discussion of affairs of Institution
Marine Hotel, of Civil Engineers; designations
Hastings. in list of members, display at
[I. C. E. writing paper]. Institute, reception etc.
See also 142.

FOSS, William E

118. December 12, 1894. Long letter about the flow of water
1-5. Boston Water Works, through pipes, with numerous
Western Division, references, description of
Brighton, Mass. U.S.A. current experiments etc.

FREEMAN, John Ripley. 1855 - 1932. President, Am. Soc. C. E. 1922.

119. May 7, 1894. Typewritten. Sends sample sheets
31, Milk Street, of logarithmic cross section paper
Boston. made under his management by
lithographic process. Is working
on his observations on experi-
ments on flow of water in pipes.
120. July 8, 1922. Typewritten. Expresses pleasure
815, Grosvenor at W. C. U. 's election to Honorary
Building, membership of Am. Soc. C. E. ,
Providence, R. I. reminiscences of his own
[Am. Soc. C. E. paper]. hydraulic experiences.
121. February 21, 1923. From John Dunlop, Secretary.
Am. Soc. C. E. , Typewritten. Describes ceremony
33, West 39th Street, of presentation of W. C. U. 's
New York. diploma of membership which
was by proxy. Enclosure,
121a below.

- 121a. A typewritten carbon copy of remarks by Dr. George F.
Swain, Past Pres. Am. Soc. C. E. , Professor of Civil
Engineering, Harvard, when presenting Professor Unwin
to the President.

See also 224. American Society of Civil Engineers.

See also 210. SWAIN, George F.

FROUDE, Robert Edmund. 1846 - 1924.

122. February 7, 1881. Comments on W. C. U. 's R. S.
1-2. Admiralty Experiment paper on water friction, describes
Works, Torquay. experiments on effect of tempera-
ture on flow of water through
various sizes of pipe, asks for
figures of W. C. U. 's results.

GERMANY. BERLIN. Charlottenburg, Technische Hochschule.

123. February 4, 1896. In German. Typewritten.
Acknowledgement of consign-
ment of sand.

GLAZEBROOK, Sir Richard Tetley. 1854 - 1935.

124. October 11, 1906. Typewritten. Arrangements
National Physical for meeting to discuss
Laboratory, Bushy points arising from W. C. U. 's
House, Teddington, 1896 Report on Testing of
Middlesex. Cylinders for holding Com-
pressed gases; raising carbon
limit in steel
125. December 15 [1923]. Thanks for kind references to
Bushy House. work of laboratory in W. C. U. 's
report to the C. I. W. on gauge
testing of ? [word illegible].

GREAT BRITAIN. Admiralty.

126. June 28, 1862. Copy. To the Chairman of
Admiralty. the Committee on Iron plates
See Life, p. 50. [Sir J. D. Hay]. Expresses
satisfaction of Government
with services of Committee;
award of £200 to Fairbairn,
Pole, etc., £100 to Mr. Unwin -
'in accordance with your recom-
mendation'.

GREAT BRITAIN. Board of Trade.

127. May 19, 1896. From Assistant Secretary,
Railway Dept., Railway Department. Inst. of
7, Whitehall Gdns., Civil Engineers has suggested
R 4174. W. C. U. as its representative
on Committee enquiring into loss
of strength in steel rails owing
to long wear by railways; hopes
he will act on Committee.
128. May 25, 1900. Thanks W. C. U. for his work
7, Whitehall Gdns., on Committee on steel rails.
E 14353.
129. December 10, 1912. Thanks of Board for work as
The same. Senior Delegate to 6th Congress
of International Association for
Testing Materials.

GREAT BRITAIN. Department of Scientific and Industrial Research.

130. August 23, 1924. From Frank Heath. Thanks for services as member of Committee on Gauging Rivers.
16, Old Queen St.,
Westminster.

GREAT BRITAIN. Ministry of Munitions. (Metropolitan Munitions Committee; Board of Management).

131. March 11, 1920. From A.J. Claxton, Liquidator.
88, Kingsway. All members of Committee given full discharge from any liability for contracts etc; - appreciation of services rendered to Committee.

See also 209. STEVENSON, Sir James.

GREAT BRITAIN. Privy Council Clerk of the Council, Almeric Fitzroy.

132. February 6, 1923. Typewritten. W.C.U.'s term of office as Member of Senate of University of London due to expire in May; Lord President thinks he will probably wish to be relieved of duty, expresses thanks for services.
Privy Council Office.
133. February 27, 1923. Typewritten. Owing to prospect of early legislation to deal with reform of Senate asks if W.C.U. would consent to be renominated as member.
The same.
134. April 17, 1923. Typewritten. Sends Order in Council reappointing W.C.U.
The same.
135. Printed. Order in Council,
16th April 1923.

GREENHILL, A George (Sir George Greenhill, 1847 - 1927 ?)

136. October 23, 1880. Very mathematical letter on Cotterill's theorem on 'Distribution of energy'.
Emmanuel College,
Cambridge.

HARDY, Thomas. 1840 - 1928.

137. December 13, 1881. Thanks for book on astronomy;
The Avenue, Wimborne. reference to W.C.U.'s work
See Life, p. 72. on machines.

HAWKSLEY, Thomas. 1807 - 1893.

138. March 11, 1885. Comments on W.C.U.'s lecture
30, Great George St., on water motors.
Westminster.
See Life, p. 79.
139. January 7, 1886. Does not wish to involve
The same. Unwin in controversy.
See Life, p. 79.

HERSCHEL, Clemens. 1842 - 1930.

140. June 5, 1888. This letter is reproduced in
1-2. Holyoke Water Power full in facsimile [facing p. 80
Co., Office of the of Life] and printed on p. 81;
Hydraulic Engineer, deals with application of
Holyoke, Mass. Venturi principle.

IMPERIAL COLLEGE.

File of letters, 1910 - 1926, between the College and Professor Unwin, as representative of the Institution of Civil Engineers on the Governing Body of the College [Filing Office No. 66].

IMPERIAL COLLEGE. From the Chairman of the Governing Body, the 1st Marquess of Crewe.

141. March 14, 1922. Conveys congratulations of
Crewe House, Governors on award of
Curzon Street. Kelvin Gold Medal to W.C.U.

INSTITUTION OF CIVIL ENGINEERS.

142. February 6, 1867. From James Forrest. Secretary.
25, Great George St. Printed letter, announcing
election as Associate Member.
143. November 8, 1917. From J.H.T. Tudsbery. Sec-
Great George St. retary. Award of Howard Prize.
Typewritten.

INSTITUTION OF CIVIL ENGINEERS. (continued).

144. November 9, 1917. From W.C.U. to Tudsbery.
29, Palace Gate. Typewritten copy. Acknowledgement of award.
145. April 11, 1919. From J.H.T. Tudsbery.
Great George St. Secretary. Appointment to
Governing Body of Imperial
College (renomination).
Typewritten.
146. June 14, 1920. Typewritten. Committee on
The same. Deterioration of Structures
exposed to sea action. From
Secretary. Asks W.C.U. if
he will serve in the place of
the late Sir John Wolfe-Barry.
147. November 4, 1920. From J.H.T. Tudsbery. Thanks
The same. for kind letter (on retirement
from Secretaryship ?).
148. January 25, 1921. From the President, J.A. Brodie.
The same. Award of Kelvin Gold Medal.
See Life, p. 159. Typewritten.
149. January 27, 1921. From W.C.U. to President.
1-2. 29, Palace Gate. Acknowledgement of award.
150. November 6, 1923. From the President. Type-
Great George St. written. Regret at W.C.U.'s
resignation of Chairmanship
of Examinations Committee.
151. December 3, 1924. From the Assistant Secretary
The same. W.F. Spear. Typewritten.
Election as Honorary Member
of the Institution, with list
of signatures.
152. December 15, 1926. From the Secretary. Type-
The same. written. Congratulations
from President and Council at
his entry into his 89th year.

INSTITUTION OF MECHANICAL ENGINEERS.

153. November 27, 1916. Typewritten. Appointed Examiner
11, Great George St. of Papers for possible award of
Thomas Hawksley Gold medal.

JACOBUS, D

154. June 15, 1901. Typewritten. Thanks for copy of 'Elements of Machine Design' which he uses with his classes.
Department of Experimental Mechanics and Engineering Physics, Stevens Institute of Technology, Hoboken, New Jersey.

JAMES, T E

155. January 29, 1926. Is writing an article on Victorian octogenarian engineers; asks for photograph of W. C. U.
Park Cottage, Ruislip, Mddx.
156. February 6, 1926. Thanks for letter; repeats request for photograph.
The same.

KIRK, Alexander Carnegie. 1830 - 1892.

157. April 27, 1880. Describes origin of dispute with Kirkcaldy's (?) over steel testing affair connected with the Board of Trade.
Lancefield House, Glasgow.

LEAVITT, Erasmus Darwin. 1836 - 1916.

158. June 18 (1894?). Typewritten. Thanks for copy of Howard lectures.
Cambridgeport, Mass., U. S. A.

LONDON. The University. H. Cloughton, Secretary.

159. May 9, 1927. Typewritten. Encloses copy of letter from Privy Council about W. C. U.'s membership of Senate.
South Kensington.
160. May 3, 1927. Carbon typewritten copy. P. C. does not propose to recommend any replacements for representatives on Senate whose term of office is ended.
Privy Council Office.
161. May 11, 1927. From W. C. U. Draft acknowledgement of above; refers to interest in work on Senate.
29, Palace Gate.

See also 189. RÜCKER, Sir Arthur.

McLEOD, Herbert. 1841 - 1923.

162. April 16, 1886. Cooper's Hill, Staines. Congratulations on election to Royal Society.

MONCRIEFF, J Mitchell. Lieut. Col. 1865 - 1931.

163. May 11, 1928. 57-59, Victoria Street. Typewritten. Sends copy of his lecture to Structural Engineers on Earth Pressure theories.

NICHOLAS, J S

164. November 10, 1928. 1-3. 52, Ebury Road, Rickmansworth. See Life, pp. 43 - 44. Typewritten copy. To J.S. Wilson. Discusses Fairbairn's railway bridge over River Spey. (See 226).

OSMOND, F

165. December 16, 1896. Paris. To ? In French. Glad that Unwin agrees with their ideas; discusses effects of 'ecrouissage' on metals.
Note: Ecrouissage has three meanings in metalworking - cold rolling, hard hammering, etc. ,

OTTLEY, Col. Sir John Walter. 1841 - 1931.

166. November 19, 1909. 712, Salisbury House, London Wall. See Life, p. 139. Sends copy of India Office letter for work on Ravi Siphon Committee; expresses pleasure at working with W.C.U., joint connection with Cooper's Hill.
167. November 17, 1909. India Office, Whitehall, P.W.2039. Typewritten copy. Lord Morley to Sir John - as Secretary of State for India thanks him for report on committee considering design of syphon of lower Bari Doab Canal, expresses appreciation of Committee's work.

PEARSON, Karl. 1857 - 1936.

168. May 5, 1900. Discusses how changes in
1-2. 7, Well Road, constitution of University will
Hampstead. affect means of livelihood of
King's and University College
staff who depend solely on
students' fees; discrimination
in faculty lists; difficulties of
situation.

PERKINS, James

169. January 12, 1889. Apologises for not acknow-
90, Lower Thames ledging a Report of W. C. U. 's
Street. with explanations about delay
in printing it; expresses ad-
miration and its support of
Sterne's (?) application.

PIDGEON, W

170. July 15, 1890. Thanks for copy of a report.
Walsingham House,
Piccadilly.

POLE, William. 1814 - 1900.

171. May 27, 1876. Asks with what particular
See Life, p. 65. works of Fairbairn W. C. U.
would like to be associated
(for Life of Fairbairn).
172. June 19, 1876. Will put in a special paragraph
describing the association of
Unwin and Fairbairn.

PRIESTMAN, William D

173. September 11, 1931. Typewritten. Refers to inva-
1-2. Holderness Foundry, luable encouragement from W. C. U.
Hull. when endeavouring to create
power from use of petroleum
oils.

PURVIS, Frank Prior. 1850 - 1940.

174. September 26, 1884. Encloses diagrams; the
Seven ship Yard, results of tank work showing
Dumbarton. effect of temperature on
resistance, with explanations.
175. September 27, 1884. Tables showing effect of
temperature on model
results.
176. September 27, 1884. Diagram tables. Model 14 1/19th
of S.S. Pau Tah; details of ex-
periments.

RAWLINSON, Sir Robert. 1831 - 1898.

177. April 17, 1895. Invitation to dinner before
Lancaster Lodge, James Forrest Lecture at
11, Boltons. Inst. C. E. to be given by
W.C.U., R.R. presiding.

REULEAUX, Franz. 1829 - 1905.

178. August 14, 1888. Studying friction of air in
Switzerland. pipes; asks for copy of W.C.U.'s
book, for reference for a forth-
coming publication of his own,
of which he will give W.C.U.
a copy.

REILLY, Calcott. 1829 - 1900.

179. April 4, 1871. Explanation of his appointment
3, Storey's Gate, as Professor of Construction
Great George St. at the Cooper's Hill College,
See Life, pp. 62-4. a post for which W.C.U. had
also applied.
180. January 9, 1874. Amusing letter about new
(Cooper's Hill chaplain and the inauguration
College). of the new chapel by the Bishop
of Winchester in the so far
hypothetical new pulpit.
181. March 18, 1886. To Henry E. Allen, Clerk to
Cooper's Hill, Convocation, University of
Staines. London. Discusses degrees in
engineering, qualities required
for successful engineer.

REILLY, Calcott. (continued).

182. April 15, 1894. Brighton. Acknowledgement of letter of condolence on death of his wife.

RIEDLER, Alois. 1850 - 1936.

183. November 22, 1912. Charlottenberg, Berlin. Asks where a rotating crane for measuring resistance of aeroplanes is to be erected by Vickers.

ROBERTS, Sir Owen. 1835 - 1915.

184. June 15, 1894. Clothworkers' Hall, Mincing Lane. Thanks for copy of book on 'Development of power from Central stations'.

ROBINSON, Mark H

d. 1924.

185. May 6, 1897. Willans and Robinson Ltd., (Rugby). Typewritten. Discusses results of 'triple expansion non condensing trials' etc.

ROWLAND, Henry Augustus. 1848 - 1901.

186. September 8, 1893. Johns Hopkins University, Baltimore. Asks if W.C.U. can support in writing his claim for fees against the Cataract Company.

LONDON. Royal Society.

187. January 7, 1912. In Latin. Printed, signed by the President, Sir Archibald Geikie. Invitation to celebrations of 250th anniversary of Society's foundation.

LONDON, Royal Society of Arts.

188. June 26, 1912. John St., From H. T. Ward. Secretary. Typewritten. Notification of election as member of Council of the Society.

SHIBA, Baron Chuzaburo. 1873 - 1934.

197. July 22, 1910. Thanks for letter; details of
c/o Japanese Lega- future movements and
tion, addresses.
75, Avenue Marceau,
(Paris).

SIMMONS, Sir John Lintorn Arabin. 1821 - 1903.

198. February 17, 1868. To Sir W. Fairbairn. Thanks
Chatham. for recommending Unwin
as lecturer; expresses
great satisfaction with him.

SMEATONIAN SOCIETY OF CIVIL ENGINEERS.

199. July 8, 1912. From John A. Rennie, Hon.
1, Elvaston Place, Treasurer. Asks if he will
Queen's Gate. take up his election as Presi-
dent of the Society.

SMITH, Hamilton. 1840 - 1900.

200. March 22, 1886. Comments on a formula;
1, Pembroke Crescent, inaccuracy of Darcy's work.
Bayswater.

201. October 16, 1888. Illness of daughter at Homburg;
22, Obere Promenade, present of fishing rod.
Homburg.

202. February 18, 1893. Has bought Unwin some
Exploration Co., Ltd., shares.
30, St. Swithin Lane,
E. C.

SMITH, Mrs. Hamilton.

203. May 17, 1887. Acceptance of dinner invi-
Hotel Metropole. tation.

204. February 8, 1897. Family news; invitation to
Oakleigh, dinner; future plans.
Chislehurst.

STEARNS, Frederic Pike. 1851 - 1919.

205. August 16, 1892. Typewritten. Thanks for documents on tidal waters of
13, Beacon St., Boston, Mass. Thames.

STEIGER, Alph.

206. February 24, 1904. Thanks for help at reading of his paper at the Inst. C. E., will
28, Victoria St. prepare diagrams suggested by Unwin; encloses blueprint on speed of turbine.

206/2. Blueprint: Electricity works, Switzerland; experiment made with the automatic governor.

207. June 17, 1926. Typewritten. Sends articles on
44, Scarsdale Villas, Kensington. turbines.

STRUTT, John William. 3rd Baron Rayleigh. 1842 - 1919.

208. April 16, 1879. Thanks for tracing showing
Terling Place, results of Hagen's observations;
Witham, Essex. comments on results of Froude at Torquay.

STEVENSON, Sir James. 1st Baron Stevenson of Holmbury.
1873 - 1926.

209. March 31, 1919. Acknowledgement of services
War Office. to the Metropolitan Board of Management, Munitions Committee.

SWAIN, George Fillmore. 1857 - 1931.

210. April 2, 1923. Had great pleasure in pre-
Harvard Engineering presenting Unwin's name for Hon.
School. membership of the A.S.C.E.

See also 121, carbon copy of remarks made by G.F.S. when presenting Professor Unwin to President as Hon. Member, 1923.

SWITZERLAND, Geneva. Président du Conseil Administratif.
[Signature illegible].

211. 1888. In French. Asks him to forward
Geneva. letter to a Mr. Stoney, for
technical literature to help
with 'barrages' on Rhone.

212. July 9, 1890. In French. Thanks for copy
Geneva. of book.

TATE, Thomas. 1807 -

213. January 6, 1866. Congratulations on appoint-
Hastings. ment as manager in Fairbairn
works; desires to correspond;
comments on Fairbairn's book
on 'Iron ships'.

TAYLOR, Sir Alexander. 1826 - 1912.

214. June 16, 1884. Thanks for gift of cheque as
Cooper's Hill, Mechanical Laboratory prize.
Staines.

THOMSON, William. 1st Baron Kelvin. 1824 - 1907.

215. October 7, 1891. Thanks for papers on Niagara
Netherhall, Largs. he found on his return from
Madeira; comments on water-
flow in Madeira.

216. June 9, 1894. Dictated. Thanks for copy of
34, Hans Place. 'Hydrodynamics'.

THURSTON, Robert Henry. 1839 - 1903.

217. December 20, 1889. Typewritten circular, asking
Director's Rooms, for information about applica-
Sibley College, tion of steam jacket to steam
Cornell University. engine.

218. June 26, 1890. Typewritten. Thanks for copy
The same. of book on machine design.

219. October 8, 1890. Typewritten. Asks for sugges-
The same. tions for persons to be nomina-
ted to fill appointments in
projected school of Marine
Engineering.

THURSTON, Robert Henry. 1839 - 1903.

220. November 25, 1891. Regrets for printer's errors
The same. in some work of Unwin's he
was putting through press.

UNWIN FAMILY.

221. March 26, 1856. From Unwin's grandfather.
14, Weymouth Terrace, Reflections on Unwin's de-
Hackney Road. parture and good fortune in
securing present position,
etc. Signature missing.
222. January 22, 1875. From the Rev. W. J. Unwin.
The College, Congratulations on rise in
Homerton. salary. (See 47).
223. December 11, 1918. From S. Unwin. Birthday
Hill Brow, congratulations.
Tunbridge Wells.

UNITED STATES OF AMERICA. American Society of Civil
Engineers.

224. June 26, 1922. From Elbert M. Chandler,
33, West 39th Acting Secretary. Election
Street, as Honorary Member of the
New York. Society.

WALKER, Edward George. 1885 - 1957.

225. July 26, 1950. To. F.W. James. Type-
16, Heath Rise, written. Encloses letter
Putney. from Unwin to brother of
Sir Alfred Chatterton.
[See 226].
226. June 27, 1912. Enquiry about address of
29, Palace Gate. A. Chatterton so that he may
congratulate him on birth-
day honour.

WALTER, Wilfrid.

227. March 7, 1914. Portrait is not ready; might
84, Hampstead Way. be worth sending it to the
Academy.

WILSON, John Sigismund. 1875 - 1955.

236. November 1, 1928. Typewritten. Asks if Unwin
49-50, Parliament will write short article for
Street. 25th volume of the 'Central'.
237. November 12, 1928. Thanks for letter and memo-
The same. randum. Points out omissions
(where Unwin had not done him-
self justice); encloses copy of
letter. (See 164).
238. November 17, 1928. Thanks for article; had been
The same. missed at Institution [of C. E.]
Council dinner.

WINGFIELD, Charles Humphrey. 1855 - 1941.

239. February 6, 1922. Criticism of error in 1909
edition of 'Machine design'.

WOOD, Frederick John.

240. July 18, 1868. To the Rev. W. J. Unwin.
3, New Square, Endorsed 're application -
Lincoln's Inn. for professorship of Engi-
neering at Owen's College!
Comments on report on Unwin's
testimonials in report of
Senate.

YARROW, Sir Alfred (Fernandez). 1842 - 1932.

241. November 21, 1922. Thanks for congratulations on
Homestead, Hind- his marriage.
head, Surrey.

RESEARCH REPORTS AND OTHER PAPERS.

1. Report drafted by Unwin and signed by Sir William Fairbairn on the Fay and Newall brakes. Dated June 30, 1859. 25 ff. Typescript copy, first page missing. Accompanying letter about this copy being made from Sir John Aspinall, dated November 25, 1913.
2. M.S. Notebook with observations on the flow of the Thames between Fulham Bridge and Hammersmith Bridge, etc. 1882. 113 ff. 7" x 4½".
3. Thames Pollution Commission : reduction of observations on the Thames, taken by Professor Way, Mr. Baldwin Latham, and Mr. Mansergh. n.d. 16" x 25". [1883]. Printed.
4. M.S. Notebook with notes on Leicester Corporation Conduit, 1899; - Canvey scheme, December, 1899; - Derwent Valley Water scheme, dam no. 2; - Recalculation, June 2, 1905; - Howden dam no. 2, Densu dam, calculation for Mr. Walter Hunter. 9". 30 ff.
5. Report on the equipment of a laboratory for testing materials. 7 ff. n.d. Duplicated typescript.
This report was made at the suggestion of Dr. Ripper in view of the establishment of a laboratory at Sheffield University '.
6. Recalculation of sewer, [with notes on Liverpool Outfall Sewer] 13 ff. n.d. [1915 - 16]. Duplicated typescript.

Strength of brickwork in cement. 12 ff. n.d. Duplicated typescript. Also typescript reports of tests of concrete on brick, University of Liverpool, Walker Engineering Laboratories, August - October 1916. 8 ff.
Tests of material for Northern Outfall Sewer. Details of tests, with 5 photographs, April - May, 1915, one sheet. See 'Life', p. 154, for a reference to Unwin's Investigations on behalf of the Liverpool Corporation.
7. The Nile Project Committee. Report, in form of letter, to the Secretary of State for Foreign Affairs, [January 1919]. 25 p. Duplicated typescript, unsigned.
The report discusses charges brought against the Egyptian Ministry of Public Works about irrigation projects in the Sudan.
8. Letter to Sir J. J. Thomson, Committee on Science about the education of engineers. n.d. 4 ff. [1919]. Typescript. Signed.
9. Memorandum on career. Signed W. C. Unwin, April 13, '22. 6 ff. Typescript.
10. Notes on career of H. Bazin. n.d. 4 ff. Typescript, unsigned [1922 - 24].

SPEECHES AND ADDRESSES.

1. March 11, 1902. Address to Woolwich Polytechnic. 21 p. Typescript.
2. October 26, 1907. Address to students of Croydon Polytechnic. 10 p. Typescript.
3. November 24, 1910. Crewe Mechanics' Institute. 11 p. Typescript.
4. May, 1912. Presidential address to the Institution of Civil Engineers. 22 p. M.S.
5. December 18, 1912. Speech, Merchant Venturers' College, Bristol; 17 p. typescript; also, press cutting of speech.
6. November 19, 1913. Mechanics' Institute, Horwich. M.S. 15 ff, and typescript, 10 p., also press cutting of speech.
7. March 6, 1916. Presidential address to the Institution of Mechanical Engineers, 8 p. Typescript, also proof of printed speech.
8. 1921. Speech of thanks at presentation of Kelvin medal. 4 p. Typescript.
Life, pp. 160 - 162.

DRAWINGS.

1. 28 pen and ink drawings of apparatus and machinery. n. d.
2. Four engineering drawings, probably made about 1875 - 6. Gauging of the Thames at Ankerwyke, 25 - 26 October, 1876. Ankerwyke Sections. Water levels. Section of Albert Bridge.
3. Drawing of key wall at Telok Ayer, May 7, 1906.

PORTRAITS.

Etching by Alphonse Legros. Head in profile, facing left, size about 9" x 6".

Oil painting on canvas, by A. M. Martin. Full face, head and shoulders. Size about 26" x 23".

The archives collection includes a number of photographs of Unwin, and he also appears in group photographs of the staff and students of his department.

List compiled by Mrs. J. Pingree;
typed on an IBM Executive typewriter,
Bold Face no. 2, and reproduced
in the Mathematics Department by
courtesy of Professor H. Jones,
F.R.S., on a Gestetner 200 Offset
Machine.

Imperial College of Science and
Technology, Autumn, 1966.

