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Lewis Fry Richardson – Collection of papers (Reprints)

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Lewis Fry Richardson FRS (11 October 1881-30 September 1953)

Lewis Fry Richardson was an English mathematician, physicist, meteorologist, psychologist and pacifist who pioneered modern mathematical techniques and weather forecasting, and the application of similar techniques to studying the causes of wars and how to prevent them. He is also noted for his pioneering work concerning fractals and a method for solving a system of linear equations known as modified Richardson iteration.

Richardson's interest in meteorology led him to propose a scheme for weather forecasting by a solution of differential equations, the method used nowadays, though he published *Weather prediction by numerical process* in 1922, suitable fast computing was unavailable.

In April 1912, soon after the loss of the ship Titanic, Richardson registered a patent for iceberg detection using acoustic echolocation in air. A month later he registered a similar patent for acoustic echolocation in water, anticipating the invention of sonar by Paul Langevin and Robert Boyle six years later.

Since 1997 the Lewis Fry Richardson medal has been awarded by the European Geosciences Union for "exceptional contributions to nonlinear geophysics in general".

This collection of reprints was donated by Professor Harry Bryden.

Item	Box
1908a A freehand graphical way of determining stream lines and equipotentials. Proceedings of the Physical Society of London, 21, pp. 88-124 (also Philosophical Magazine S6 15, pp. 237-69)	1
1908b The lines of flow in saturated soils. Proceedings of the Royal Dublin Society, 11, pp. 295-316	1
1910 The approximate arithmetical solution by finite differences of physical problems involving differential equations, with an application to the stresses in a masonry dam. Philosophical Transactions A, 210, pp. 307-57	1
1911 The approximate solution of various boundary problems by surface integration combined with freehand graphs. Proceedings of the Physical Society of London, 23, pp. 75-85	1
1913a The measurement of mental "nature" and the study of adopted children. Eugenics Review, 4, pp. 391-394	1

1915a Standardising a Milne-Shaw seismograph, Reprint of the British Association for the Advancement of Science (Manchester), pp. 74-79	1
1918 International voting power. War & Peace, 53, pp. 193-196.	1
1919a A form of Knudsen's vacuum manometer. Proceedings of the Physical Society of London, 31, pp. 270-276	1
1919b Atmospheric stirring measured by precipitation. Proceedings of the Royal Society of London A, 96, pp. 9-18	1
1919d The deflection of light during a solar eclipse. Nature, 104, pp. 393-394	1
1919e The mathematical psychology of war. Oxford: W. Hunt	1
1919f Description of line squall. Quarterly Journal of the Royal Meteorological Society, 45, p. 112	1
1920a Some measurements of atmospheric turbulence. Philosophical Transactions of the Royal Society A, 221, pp. 1-28	1
1920b Convective cooling and the theory of dimensions. Proceedings of the Physical Society of London, 32, pp. 405-409	1
1920c The supply of energy from and to atmospheric eddies. Proceedings of the Royal Society A, 97, pp. 354-373	1
1920e Note on the theorem by Mr G. I. Taylor on curves which oscillate regularly. Proceedings of the London Mathematical Society, 20, pp. 211-212	1
1920f Sun-flash balloons for continuous signalling. Quarterly Journal of the Royal Meteorological Society London, 46, pp. 293-4	1
1921a Lizard balloon for signalling the ratio of pressure to temperature. Professional Notes for the Meteorological Office No. 18, pp. 74-93	1
1921b Cracker balloons for signalling the ratio of pressure to temperature. Professional Notes for the Meteorological Office No. 19, pp. 95-115	1
1928c (with students of Westminster Training College) Contact potential in the Dolezalek electrometer connected idiostatically. Proceedings of the Physical Society, 40, pp. 234-239	1

1928d (with V. Stanyon) An absolute current balance having simple approximate theory. Proceedings of the Physical Society, 41, pp. 36-42	1
1929a A search for the law of atmospheric diffusion. Beitrage zur Physik der freien Atmosphere, pp 24-29	1
1929b Quantitative mental estimates of light and colour. British Journal of Psychology, 20, pp. 27-37	1
1929c Imagery, conation and cerebral conductance. Journal of General Psychology, 2, pp. 324-352	1
1930a (with R.S. Maxwell) The quantitative mental estimation of hue, brightness or saturation. British Journal of Psychology, 20, pp. 365-367	1
1930b (with J.S. Ross) Loudness and telephone current. Journal of General Psychology, 3, pp. 288-306	2
1930c (with J. Arthur Gaunt) Diffusion regarded as a compensation for smoothing. Memoirs of the Royal Meteorological Society, 30, pp. 171-175	2
1930d (with R.S. Maxwell) A new type of practical examination designed to be fair competition. Proceedings of the Physical Society, 42, pp. 108-125	2
1930e The analogy between mental images and sparks. Psychological Review, 37, pp. 214-217	2
1930f Reflectivity of woodland, fields and suburbs between London and St Albans. Quarterly Journal of the Royal Meteorological Society, 61, pp. 31-38	2
1932a The measurability of sensations of hue, brightness or saturation. Report of a joint discussion on vision held on June 3 rd 1932 at Imperial College of Science by the Physical and Optical Societies, pp 112-116. London: Physical Society	2
1932d Determinism. Nature, 129 p. 316	2
1933a A quantitative view of pain. British Journal of Psychology, 23, pp. 401-403	2
1933b Third order aberrations of seismograph springs. Geophysical Supplements to the Monthly Notices of the Royal Astronomical Society, 3, pp. 125-131	2
1933c Photography of faint transient light-spots. Nature, 131, pp. 401-402	2

1933d Time-marking a cathode-ray oscillography. Proceedings of the Physical Society, 45, pp. 134-141	2
1933e Part of the discussion on a paper by N.R. Campbell on: 'The measurement of visual sensations by "mental estimates"'. Proceedings of the Physical Society, 45, pp. 584-589	2
1935a Mathematical psychology of war. Nature, 135, pp. 830-831	2
1935b Mathematical psychology of war, Letter to the Editor. Nature, 136, 1025	2
1935c Time-marking a cathode-ray oscilloscope by harmonics. Proceedings of the Physical Society, 47, pp. 25-262	2
1936 Quanta and diffusion. Unpublished MS, [3 p.]	2
1937a Hints from physics and meteorology as mental periodicities. British Journal of Psychology, 28, pp. 212-215	2
1937b The Behaviour of an Osglim Lamp. Part I. Introduction, drift, equilibrium and A.C. bridge measurements and Part II. Oscillograph methods, steady motion and relaxational oscillations. Proceedings of the Royal Society of London A, 162, pp. 293-335	2
1937c The behaviour of an Osglim Lamp. Part III. Osglisms in parallel, forming models of reciprocal inhibition. Proceedings of the Royal Society of London A, 163, pp. 380-390	2
1938b The arms race of 1909-13. Nature, 142, pp. 792-793	2
1938c Generalised foreign politics. British Association for the Advancement of Science (Cambridge), pp. 488-189	2
1939a Generalized foreign politics. British Journal of Psychology, Monograph Supplements, 23, 99 p.	2
1941a Frequency of occurrence of wars and other fatal quarrels. Nature, 148, p. 598	2
1941b Mathematical theory of population movement. Nature, 148, p. 784	2
1944a Stability after the war. Nature, 154, p. 240	2

1944b The distribution of wars in time. Journal of the Royal Statistical Society, 107, pp. 242-250	2
1945 Distribution of wars in time. Nature, 155, p. 610	2
1946a Chaos, international and inter-molecular. Nature, 158, p. 135	2
1946b The number of nations on each side of war. Journal of the Royal Statistical Society, 109, pp. 130-156	2
1946c The probability of encounters between gas molecules. Proceedings of the Royal Society A, 186, pp. 422-431	2
1947b Social science in the gap between the Royal Society and the British Academy. Nature, 159, p. 269	2
1948a Variations of the frequency of fatal quarrels with magnitude. Journal of the American Statistical Association, 43, pp. 523-546	2
1948c War moods: I. Psychometrika, 13, pp. 147-174	2
1948d War moods: II. Psychometrika, 13, pp. 197-232	2
1949a The persistence of national hatred and the changeability of its objects. British Journal of Medical Psychology, 22, pp. 166-168	2
1949b Meteorological publications by L.F. Richardson as they appear to him in October 1948. Weather, 4, pp. 6-9	2
1950b A method for computing principal axes. British Journal of Psychology (Statistical Section), 3, pp. 16-20	2
1950c War and eugenics. Eugenics Review, 42, pp. 25-36	2
1950d A purification method for computing the latent columns of numerical matrices and some integrals of differential equations. Philosophical Transactions of the Royal Society of London A, 242, pp. 439-491	2
1950e Psychological factors of peace and war (ed. T.H. Pear). Chapter X Threats and security and Chapter XI Statistics of fatal quarrels. London: Hutchinson.	2

1951a Spectrum of atmospheric turbulence. <i>Nature</i> , 167, 318	2
1951c Could an arms race end without fighting? <i>Nature</i> , 168, [4 p.]	2
1951d Could an arms race end without fighting? <i>Nature</i> , 168, p. 920	2
1952a Dr S.J.F. Philpott's wave-theory. <i>British Journal of Psychology (General Section)</i> , 43, pp. 169-199	2
1952b Is it possible to prove any general statements about historical fact? <i>British Journal of Sociology</i> , 3, 77-84	2
1952c Contiguity and deadly quarrels: the local pacifying influence. <i>Journal of the Royal Statistical Society A</i> , 115, 219-231	2
1951a Transforms for the eddy-diffusion of clusters. <i>Proceedings of the Royal Society A</i> , 214, 1-20	2
1952e The criterion of atmospheric turbulence. <i>Quarterly Journal of the Royal Meteorological Society</i> , 78, pp. 422-425	2
1953a Voting in an international organization. Unpublished MS, [27 p.]	2
1953b The submissiveness of nations. <i>British Journal of Statistical Psychology</i> , 4, pp. 77-90	2
1953c Three arms-races and two disarmaments. <i>Sankhya: Indian Journal of Statistics</i> , 12, 205-228	2
Loose papers, including the listing of the contents for <i>The collected papers of Lewis Fry Richardson</i> . [15 p.]	2