

**THE COLLECTED PAPERS**

**of**

**J.H. FREMLIN**

**For the years 1939 to 1988**

**in two volumes**

**CONTENTS**

Compiled in 1990 by Dr N.A. Dyson  
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## CURRICULUM VITAE

### JOHN HEAVER FREMLIN

Emeritus Professor

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**Date of Birth:** 4th March 1913  
Kingsbury, Middlesex  
Son of Dr. H.S. Fremlin

**Education:** Berkhamsted School and Trinity College,  
Cambridge

**Married:** 1937  
Reinet, daughter of H.E. Maasdorp  
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**Children:** 1 son and 2 daughters.

**Appointments:** Research staff, Standard Telephones and Cables Ltd.  
1937-45.  
  
Research Fellow, Birmingham University 1945-46.  
  
Lecturer in Physics, 1947-58.  
  
Reader, 1958-65.  
  
Professor of Applied Radioactivity 1966-80.  
  
Scientific consultant on Nuclear Power Problems  
to Cumbria County Council; Hon. member.  
Hospital Physicists Association.

**Publications:** Applications of Nuclear Physics, 1964;  
Be Fruitful and Multiply: Life at the Limits  
of Population, 1972;  
Power Production - What are the Risks? 1985.  
  
Various papers and articles in technical journals.

**Recreation:** Stereo-photography of wild flowers.

## A. Collected Papers, Vol. I.

### 1. Electronics, technical and instrumental physics

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- 2.13 The ionization of fast neutral deuterium atoms, *Proc. Phys. Soc.*, 75, 850, (1960) (with Chalklin, L.P.).
- 2.14 Helium 3 reactions in nuclear photographic emulsions, *Phil. Mag., Ser. 7*, 44, 141 (1953).
- 2.15 Artificial activity induced in carbon by fast  $^3\text{He}$  ions, *Proc. Phys. Soc.*, A65, 762, (1962).

### 3. Heavy-ion Physics

- 3.1 Nuclear reactions produced by nitrogen and oxygen ions, *Phil. Mag. Ser. 7*, **45**, 173, (1954) (with Chackett, K.F. and Walker, D.).
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- 3.5 Nuclear reactions produced by fast nitrogen ions, *Proc. Phys. Soc.*, **A66**, 495, (1953), (with Chackett, K.F. and Walker, D.).
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- 4.22 Remote-controlled study of the history of lunar volatiles, (from *Lunar Utilization Volume*, Lunar Science Institute, July 1976).
- 4.23 Relativity defended, *New Humanist*, February 1979, p. 140.
- 4.24 Polonium haloes in mica, *Nature Lond.*, **278**, 333, (1979).
- 4.25 The twin paradox - the other side, *Eur. J. Phys.*, **1**, 59, (1980).

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- 5.2 The uptake, exchange and release of fluorides at the surfaces of the teeth, *Brit. Dent. Journ.*, **104**, 47, (1958), (with Hardwick, J.L. and Mathieson, J.).
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- 5.21 Distribution of C, Ca, P in dental enamel (in "Nuclear activation techniques in the life sciences", IAEA, Vienna, 1967). (with Stubbins, M.).
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- 5.23 Distribution of lead in teeth, Proc. Analyt. Div. Chem. Soc., p. 195 (July 1976) (with Tanti-Wipawin, W.).
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- 5.26 Why oppose only fluoride? Birmingham Evening Mail, January 30th, 1985.

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- 6.2 Hardening of tungsten carbide tools by charged particle irradiation, Metals Technology, p. 538, (November, 1975), (with Askouri, N.A.).
- 6.3 On-line wear monitoring by surface activation, Int. Journ. App. Rad. and Isotopes, 26, 61, (1975), (with Askouri, N.A., Chen, N.S., Ettinger, K.V., Nowotny, R. and Wills, G.B.).

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- 7.3 The preparation of astatine labelled proteins, *Int. Journ. Nucl. Med. and Biol.* 5, 229, (1978), (with Vaughan, A.T.M.).
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- 8.5 A new dating technique using thermally stimulated current, *Archaeometry*, 12, 67, (1970), (with Hwang, F.S.W.).
- 8.6 Thermoluminescence of biological materials, *Nature Lond.*, 232, 257 (1971), (with Christodoulides, C.).
- 8.7 Thermoluminescence from unirradiated flints, *Archaeometry*, 14, 127, (1972), (with Göksu, H.Y.).
- 8.8 Thermoluminescence of Apollo 12 samples, 3rd lunar science conference, p. 2955 (with Durrani, S.A., Prachyabrued, W., Christodoulides, C., Edgington, J.A., Chen, R. and Blair, I.M.).
- 8.9 A skull named "Fred", *Times*, 10th February, 1973.
- 8.10 Age determination of burned flint by a thermoluminescent method, *Science*, 183, 651, (1974), (with Göksu, H.Y., Irwin, H.T. and Fryxell, R.).
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- 8.12 Thermoluminescence and fission-track studies of the Oklo fossil reactor materials (in "The Oklo Phenomenon", *IAEA, Vienna, 1975*), (with Durrani, S.A., Khazal, K.A.R., Malik, S.R. and Hendry, G.L.).

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- 9.4 Use of the cyclotron for whole body neutron activation analysis, *Int. Journ. App. Rad. and Isotopes*, 21, 725, (1970), (with Chamberlain, M.J., Holloway, I. and Peters, D.K.).
- 9.5 Activation analysis by pulsed cyclotron beams, *Nucl. Inst. and Meth.*, 85, 61, (1970), (with Chen, N.S.).
- 9.6 Determination of nitrogen in living patients, *Nature New Biology*, 236, 187, (1972), (with Biggin, H.C., Chen, N.S., Ettinger, K.V., Morgan, W.D., Nowotny, R. and Chamberlain, M.J.).
- 9.7 Determination of whole body calcium, *Seminars in Nuclear Medicine*, 2, No. 1, 86, (January 1972).
- 9.8 Measurement of whole-body nitrogen, (in *Radioactive Isotope in Klinik and Forschung*, 1972), (with Chamberlain, M.J.).
- 9.9 Current status and clinical potential of *in vivo* activation analysis (in *In vivo neutron activation analysis*, IAEA, Vienna, 1973) (with Chamberlain, M.J.).
- 9.10 How to measure the meat without a bed pan, *Nursing Times*, (1973).
- 9.11 Cadmium by *in vivo* neutron activation analysis, *J. Radioanal. Chem.*, 19, 207, (1974), (with Biggin, H.C., Chen, N.S., Ettinger, K.V., Morgan, W.D., Nowotny, R., Chamberlain, M.J. and Harvey, T.C.).
- 9.12 Cadmium-Its *in vivo* Detection in Man, *Phys. Med. Biol.* 20, 88 (1975), (with McLellan, J.S., Thomas, B.J. and Harvey, T.C.).
- 9.13 Measurement of Liver-Cadmium concentrations..... *Lancet*, 1269, June 7th 1975, (with Harvey, T.C., McLellan, J.S. and Thomas, B.J.).
- 9.14 "Argonaut": an (n, $\alpha$ ) reaction used to measure calcium *in vivo*, *Proc. Analyt. Div. Chem. Soc.*, August 1975, (with Ozbas, E., Chettle, D.R., Dabek, J., Ettinger, K.V., Prestwich, W.V. and Thomas, B.J.).
- 9.15 The measurement of liver-cadmium in patients by neutron activation analysis, *Radioactive Isotope in Klinik und Forschung*, 12, 155, (1976), (with Thomas, B.J., Harvey, T.C., McLellan, J.S. and Dykes, P.W.).
- 9.16 Nuclear resonant scattering..... for the *in vivo* measurement of hepatic copper, *Phys. Med. Biol.*, 21, 970, (1976), (with Vartsky, D., Thomas, B.J. and Hawkes, D.J.).
- 9.17 *In vivo* measurement of calcium by the argon-37 method, *J. Nucl. Med.*, 19, 54 (1978), (with Bell, C.M.J., Dabek, J.T., Chettle, D.R., James, H. and Thomas, B.J.).
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- 9.20 A transportable system for measurement of kidney cadmium *in vivo*, *Int. J. of App. Rad. and Isotopes*, 32, 109 (1981), (with Al-Haddad, I.K., Chettle, D.R. and Fletcher, J.G.).
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- 10.2 Let us think about pollution, not just feel, Mensa Journal, 142, 1-3, January 1971.
- 10.3 The Hazards of Nuclear Power, World Federation of Scientific Workers, 3, 7-12 (Scientific World), (1973).
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- 10.7 Waste processing at Windscale, Nuclear Active Journal (Journal of the SAAEB), (1978).
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- 10.9 Absorption of Actinides from Shellfish by the Mammalian Gut (in "Biological Implications of Radionuclides released from Nuclear Industries, Vol. I", IAEA, Vienna, 1979), p. 459 (with Wilson, C.K.).
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### TAIL-PIECE

- 13.1 More 'Rhymes for the Times', Birmingham Post (18 February 1961).
- 13.2 Birmingham firsts - an open letter of an historical nature, giving details of important work first carried out in the Department of Physics, (10 November 1987).
- 13.3 Thirty years on: an informal talk on the occasion of the reunion of the class of '58 (25 September 1988).

### Further papers

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### C. Books

- 14.1 Applications of Nuclear Physics (English University Press, 1964).
- 14.2 Be fruitful and multiply: life at the limits of population (Hart-Davis Ltd., 1972).
- 14.3 Power production: what are the risks?" (Adam Hilger, 1985; OUP paperback edition, 1987; 2nd edition, Hilger and Watts, 1989).

D. Other Work

- 15.1 Investigations of the cathode dark space in the abnormal discharge in hydrogen and deuterium (with additional experimental work on neutron production using low voltages and high currents, and the disintegration of deuterium by low velocity deuterons), Cambridge PhD. thesis, 1938.
- 15.2 DSc. thesis, Birmingham 1957.
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