

**SECTION E**

**LECTURES AND BROADCASTS**

**E.1-E.90**

**E.1-E.70**

**LECTURES**

**E.71-E.90**

**BROADCASTS**

**LECTURES**

- E.1 "The chemistry of dielectric loss", Alembic Club, Oxford, 20 January 1936.  
4pp manuscript notes.
- E.2 "Dielectric constants of liquids", Colloid Science Laboratory colloquium, Cambridge, 19 February 1940.  
10pp manuscript draft plus 1p manuscript addition.
- E.3 Invitation from W.E. Salt, Secretary, Regional Committee on Education for H.M. Forces, 5 February 1948, to participate in "Brains Trust", Royal Naval Petty Officers' School, Corsham. Frank agreed.
- E.4 Untitled 6pp manuscript draft beginning "Willard Gibbs recognised in 1878 that the growth of a perfect crystal could involve nucleation of each new crystal layer." Reference to "the subsequent 70 years" dates it to c.1948.
- E.5 Letter from W.E. Salt, 3 February 1949, thanking Frank for his readiness to lecture at H.M.S. Osprey, Portland, but stating that since the invitation "a practising Astronomer" resident in Dorset had been found who might be willing to give the lectures.
- E.6 Untitled 9pp manuscript draft beginning "In this lecture I do not propose to give instruction on design of furnaces or anything of that sort ... On this occasion I am concentrating on the subject of growth from the melt". Latest bibliographical reference, 1951.
- E.7 Untitled 6pp manuscript draft beginning "I have to tell you this evening about some work that Burton and Cabrera and I did theoretically a couple of years ago ... ". Refers to research 1949-51.

- E.8 "Direct observation of dislocation networks in metals", 1954.  
2pp typescript plus 1 figure and 3 photographs.
- E.9, E.10 "The nature of the real crystal"; Institute of Metals 45th Annual May Lecture, 29 March 1955, *Bibliog.* 60. See also F.80.
- E.9 19pp manuscript draft with 1p note on topics covered.
- E.10 17pp typescript; correspondence; manuscript notes.
- E.11 Letter of thanks, 7 March 1956, for lecture on "Atomic Energy in Industry" to Bristol Business and Professional Women's Club.
- E.12-E.17 Course of seven lectures on "Dislocations" delivered at Società Italiana di Fisica Physics Summer School, Varenna, 14 July - 3 August 1957.
- E.12-E.15 Manuscript and typescript drafts of Frank's lectures.
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| E.12 | 1    | E.14 | 4, 5 |
| E.13 | 2, 3 | E.15 | 6, 7 |
- E.16 36pp typescript copy of the complete course.
- E.17 Miscellaneous material including Frank's speech thanking the organisers of the summer school.
- E.18 Correspondence, January 1958, re invitation to speak on "Complex alloy structures considered as packings of spheres", National Physical Laboratory, 13 March 1958. *Bibliog.* 57 and 67. See D.44, D.45.
- E.19 "Lucretius", Bristol Latinists, 25 July 1961.  
1p manuscript "peroration".

- E.20 "Lecture for the Holweck prizegiving", 1963.  
The Holweck prize was awarded jointly by the Physical Society and the Societé Française de Physique. In 1963 Frank was the recipient.  
6pp typescript draft (in French).
- E.21-E.27 "The Earth as a ceramic body", contribution by Frank to Accademia Nazionale dei Lincei 1st International Course on Material Science: Ceramic Science and Technology, Tremezzo, Italy, 8-20 September 1968.  
The course was published as *Chemical and Mechanical Behaviour of Inorganic Materials*, ed. A.W. Searcy, D.V. Ragone and U. Colombo (New York, 1970).
- E.21 18pp typescript draft of Frank's paper with manuscript correction and annotation.
- E.22 Correspondence re arrangements, 1968, 1970. Includes letter from Frank to Searcy, Course Director, regretting that his manuscript was not yet ready, a delay caused in part by "the necessity to get my mother-in-law out of occupied Czecho-Slovakia".
- E.23 Programmes.
- E.24, E.25 Outline of topics covered by lecturers and summaries of papers presented.  
2 folders.
- E.26, E.27 Contents of folder inscribed "The Earth as a Ceramic Body": miscellaneous manuscript notes, calculations, figures.  
2 folders.
- E.28 "Talk for Extramural Science Teachers". 23 March 1970.  
3pp typescript and manuscript draft.

- E.29 Correspondence, 1971, 1972, re "The mechanics of the Earth's crust", lecture to Manchester and District Branch, Institute of Physics, 24 January 1972.
- E.30, E.31 "Crystals", Institution of Electrical Engineers Kelvin Lecture, 27 April 1972.
- E.30 19pp typescript and manuscript draft.
- E.31 Correspondence re arrangements; manuscript notes.
- E.32 Correspondence, 1972, 1973, re "When is a crystal not a crystal?", lecture to Royal Radar Establishment, 5 April 1973.
- Frank considered this as a trial run for his Presidential Address to the British Association for the Advancement of Science (E.35).
- E.33, E.34 "Crystals Imperfect", Royal Society Bakerian Lecture, 14 June 1973.
- E.33 20pp typescript draft with manuscript corrections and 4pp references.
- E.34 Notice of lecture; list of invitees; bibliographical notes etc.
- E.35 "When is a crystal not a crystal", British Association Section A, Presidential Address, August 1973.
- 24pp manuscript draft; list of slides. See also E.32.
- E.36, E.37 "Snow Crystals", Royal Institution Discourse, 21 February 1975.
- E.36 Correspondence; summary of Discourse; manuscript figures.
- E.37 Slides.

E.38-E.40 "The Laws of Thermodynamics", recording made for Audio Learning Ltd., October 1975.

Frank, J.M. Gregory, D.H. Everett and D.R. Wilkie collaborated in a taped discussion on thermodynamics for sixth-form and undergraduate students.

The material is principally correspondence between the participants and Audio Learning but includes photocopies of material drafted for the discussion, December 1974 and October 1975, and other notes.

E.38 1974 May-September

E.40 1975, 1978.

E.39 1974 October, December

E.41-E.44 "Persistently extensional flow and the flow alignment of long chain molecules", lecture to the Pulp and Paper Research Institute of Canada on its 50th Jubilee, McGill University, Montreal, 5 November 1975. *Bibliog.* 129.

E.41 20pp manuscript draft; reprint.

E.42 Correspondence, 1975, chiefly with S.G. Mason, Director of Applied Chemistry Division of Pulp and Paper Research Institute, re arrangements.

E.43 Summer 1975 and Spring 1976 issues of *Trend*, the Research Institute's house journal, featuring Frank's lecture.

E.44 Miscellaneous background material.

E.45 Correspondence, 1975, re "The growth of snow crystals", lecture to South West Branch, Institute of Physics, Exeter, 3 May 1976.

E.46-E.50 Course on polymers, Consiglio Nazionale delle Ricerche Gruppo Nazionale della Materia Summer School on Microstructure and Mechanical Properties of Metals and Polymers, Perugia, 24 August - 11 September 1976.

Frank declined to present the course, recommending A. Keller instead. He offered advice to the organisers and chaired a discussion on 6 September.

E.46, E.47 Correspondence re arrangements; information.

2 folders.

- E.48-E.50      Lecturers' summaries and course notes, with associated material.  
3 folders.
- E.51-E.55      "Effects of pressure change in the Earth due to differentiation in the mantle", Cambridge Philosophical Society G.I. Taylor Memorial Lecture, 23 January 1978.  
Frank was the first Taylorian lecturer.
- E.51            25pp manuscript draft with 1p manuscript introduction.
- E.52            16pp typescript draft.
- E.53            Correspondence, chiefly with Sir Brian Pippard and J.A. Jacobs, 1977-78, re arrangements.
- E.54, E.55      Manuscript notes.  
2 folders.
- E.56            "Air Intelligence", South Western Branch, Institute of Physics, Bristol, 9 October 1980.  
9pp manuscript notes for lecture; letter of thanks.
- E.57-E.63      "Snow Crystals", Royal Swedish Academy of Sciences, Stockholm, 3 June 1981.  
Frank delivered the lecture on the occasion of the award of the Academy's Gregori Aminoff Medal for his work on crystallography. It was published in *Contemporary Physics* (*Bibliog.* 140).
- E.57            19pp manuscript and 9pp typescript drafts.
- E.58            Lists of slides; references.
- E.59            Correspondence with Royal Swedish Academy re arrangements; itinerary.

- E.60 Correspondence with editor of *Contemporary Physics*, re publication of the lecture.
- E.61 Transparencies.
- E.62, E.63 Slides.  
2 folders.
- E.64 Correspondence re "Crystal growth without dislocations", William James Dunning Memorial Lecture, School of Chemistry, Bristol University, 17 November 1981.
- E.65 "Orientation Mapping", American Institute of Metals Lecture, ICOTOM-8, Santa Fe, September 1987. (*Bibliog.* 146).  
33pp manuscript draft.
- E.66 "Phase change", nd.  
24pp manuscript draft.
- E.67 "Shear transformations", nd.  
10pp manuscript draft.
- E.68 Untitled 3pp manuscript draft beginning "Je veux discuter en cette conférence la supraconductibilité du point de vue d'un qui s'intéresse en premier ligne du géométrie des défauts des cristaux", nd.
- E.69 Untitled 13pp manuscript draft beginning "Monsieur Professeur Bauer, Mesdames et Messieurs ... Je parle sur le sujet de la croissance des cristaux", nd. With 1p manuscript notes in English.
- E.70 Invitation to lecture on "Air Scientific Intelligence" to Bristol University Chemical Physics Society, nd.



## BROADCASTS

- E.71, E.72 "Cosmic Rays".
- Frank's report on the 1948 Colston Research Society symposium on Cosmic Rays (H.2) was broadcast on the BBC's West of England Home Service on 21 September, General Overseas Service on 11 October and London Home Service on 18 November. The broadcast was published by the Central Office of Information in *Glos Anglii* (Poland) and *British Ally* (USSR).
- E.71 Draft script; 3pp typescript draft "Cosmic Ray Conference in Bristol" summarising the programme.
- E.72 Correspondence from BBC, CIO and listeners to broadcast of 18 November.
- E.73 Invitation to give interview for BBC European/English Service, 25 September 1948.
- E.74 Scripts of broadcasts for BBC radio Science Review series by N.F. Mott ("Physics") and C.F. Powell ("Mesons"), 1948.
- E.75 "Physics Talks".
- Frank gave a series of seven talks for the BBC Latin American Service in 1949.
- Correspondence from BBC; typescript and manuscript drafts of talks III ("The age of the earth"), VI ("How does a crystal grow?") and VII (report on recent progress in nuclear physics).
- E.76 "The Dissemination of Physics".
- Although a "Physics Talk" dated 1949 and numbered "2", it does not appear to be part of the preceding series.
- 3pp typescript.

- E.77 Letter, 20 September 1949, from listener to talk on "the formation of the Earth", a Forces Educational Broadcast by Frank 31 August, requesting further references.
- E.78 "The magic of crystals".  
  
Frank appeared with J.H. Hollomon as a guest scientist on Science in Action television programme, Station KRON-TV, Channel 4, San Francisco, 24 September 1954.  
  
Script only.
- E.79, E.80 "New materials".  
  
Frank took part in a BBC television programme on new materials, probably broadcast in February 1964.
- E.79 Third draft of script entitled "The Solid State".
- E.80 Letter from BBC, 3 December 1963, enclosing the draft script; 3pp typescript draft of Frank's summing up.
- E.81-E.84 "Crystals and their imperfections".  
  
Frank gave this broadcast in the BBC radio "Growing Points in Physics" series B, transmitted 9 February 1967, and wrote a short article for the booklet accompanying the series.
- E.81 16pp manuscript draft; script as broadcast.
- E.82 Correspondence, 1966, including manuscript and typescript copies of Frank's contribution to the series booklet.
- E.83 Correspondence, 1967.
- E.84 Tape recording of Frank's broadcast, with covering letter.
- E.85 Brief correspondence re advice given to BBC television "Horizon" team for a programme on crystals, 1970. The project was shelved because of lack of time.

- E.86 Invitation to attend BBC-2 television programme in "Controversy" series on nuclear power, 18 August 1973.
- E.87 Copy of October 1975 issue of *Huna London*, the BBC's Arabic service magazine, with article (in Arabic) re Bristol University's "Sun Energy Machine" with which Frank was involved.
- E.88 Questions on physics prepared by Frank and A.F. Devonshire for BBC television quiz "Mastermind". With correspondence arising 1976-77.
- E.89 Correspondence, 1978, re Frank's suggestion that Sergei Kapitza, the Soviet physicist, be invited to deliver Bristol University's E.H. Young Memorial Lecture, and that the BBC might be interested in view of the popularity of Kapitza's science programmes on Soviet television.
- E.90 Brief correspondence with G. Howard, Chairman of the BBC, re reporting of Her Majesty's 1980 Christmas Day Address.  
Letter from Yorkshire Television, 9 January 1985.