

Catalogue of the papers and correspondence of
SIR FREDERICK CHARLES FRANK Kt, OBE, FRS
(b.1911)

Compiled by Timothy E. Powell and Peter Harper

Volume I

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General Introduction
Sections A - F

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GENERAL INTRODUCTION

PROVENANCE

The papers were received in March and October 1988 from Sir Charles Frank.

OUTLINE OF THE CAREER OF F.C. FRANK

Frederick Charles Frank was born in Durban, South Africa, in 1911. His parents returned to the U.K. very shortly after his birth. Frank was educated at Thetford Grammar School and Ipswich School before gaining scholarships to Lincoln College Oxford in 1929 to read Chemistry. He took his B.A. with first class honours in 1932 and received his B.Sc. a year later following research on phenyl-nitro-methane under N.V. Sidgwick and L.E. Sutton.

Frank went on to research for his D.Phil. on dielectric loss in organic materials with W. (later Lord) Jackson under E.B. Moullin at the Oxford Engineering Science Laboratory, following which he spent 1936-38 at the Kaiser Wilhelm Institut für Physik, Berlin-Dahlem, continuing his study of dielectric loss under P. Debye.

On his return to Britain Frank won an 1851 Senior Studentship to study at E.K. Rideal's Colloid Science Laboratory Cambridge but his dielectric studies of rubber and plastic were cut short by the outbreak of war. Frank spent the first year of the war working on smoke-filters and smoke-screens with O. Gatty, joining the Chemical Defence Research Establishment, Porton, in June 1940. In November, however, Frank was transferred to the Air Ministry's Assistant Directorate of Intelligence (Science) at the request of its Assistant Director, and Frank's friend from Oxford, R.V. Jones. He spent the rest of the war with the Air Ministry. 1940 was also the year of his marriage to Maia Maita Asché, the daughter of Professor B.M. Asché.

In 1946 Frank took up a post in the Bristol University Physics Department for research in solid state physics (initially dielectric relaxation, and relaxation of the Kerr effect) though one of the first topics which engaged him was the synthesis of the elements in the origin of the Universe. Through sharing a room with W.K. Burton and N. Cabrera, however, Frank switched to research on crystal dislocations. His work with Burton and Cabrera was to demonstrate the role dislocations play in the growth of crystals. Apart from crystal defects Frank's wide-ranging research interests at Bristol included the mechanical properties of polymers, the theory of liquid crystals and the mechanics of the interior of the Earth.

Frank was appointed Reader in 1951, Melville Wills Professor in 1954 and Henry Overton Wills Professor and Director of the H.H. Wills Physics Laboratory in 1969. Appointment as Professor Emeritus upon reaching official retirement age in 1976 enabled Frank to continue with his research.

Among the many honours accorded to Frank were the OBE in 1946, election to Fellowship of the Royal Society in 1954 and the conferral of a Knighthood in 1977. Frank was given Honorary Degrees by the universities of Ghent, Bath, Warwick, Surrey and Paris-Sud and by Trinity College Dublin, received awards from the Physical Society and Société Française de Physique, the Royal Society, the American Society for Crystal Growth, the Royal Swedish Academy of Sciences, the Institute of Physics and the American Institute of Metals and was elected to Associate Membership of the U.S. National Academy of Engineering, the U.S. National Academy of Science, the Indian National Academy of Sciences and the Royal Society of South Africa.

DESCRIPTION OF THE COLLECTION

The material is presented in the order given in the List of Contents. This large and comprehensive collection covers almost all aspects of Frank's professional career.

Section A, Biographical, consists principally of Frank's own biographical material and records of his career, and family and personal correspondence. Some of Frank's non-scientific interests are represented in a subsection of Clubs and Associations of which he was a member or supporter.

Section B, Bristol University, is chiefly Departmental and University administrative papers and related correspondence. Frank's service with the Colston Research Society is documented as is his contribution to the establishment of the Tyndall Memorial Lectures. The organisation of Frank's research and its funding through the Solid State Physics Fund, and his teaching duties are also represented.

Section C, Research, documents Frank's scientific research from the early 1930s. The material, principally manuscript notes, drafts, calculations and diagrams, covers a wide range of Frank's scientific interests including dielectric loss, crystal dislocations, properties of polymers, liquid crystals and geophysics. Wartime research is also represented in the section, particularly work on rockets.

Section D, Publications, brings together notes, drafts, correspondence and other related material for Frank's published work, 1935-88. This material has been linked wherever possible to Frank's numbered list of publications which is reproduced as pp.224-235 of the present catalogue. There is also an extensive sequence of editorial correspondence with publishing houses, learned societies and journals for which Frank acted as adviser, reviewer or referee. This sequence includes Frank's letters to *The Times* on scientific and non-scientific topics.

Section E, Lectures and Broadcasts, is a relatively small section. The material is mainly drafts for Frank's lectures and broadcasts (chiefly for BBC radio in the late 1940s).

Section F, Societies and Organisations, is the largest in the collection. It documents Frank's association with 44 British, overseas and international organisations including the Faraday Society, the Institute of Physics, the International Organisation of Crystal Growth, the Pugwash movement, the Royal Society and the Science Research Council. Frank was also involved with a number of local, Bristol institutions including Badminton School, the Bristol Municipal Charities and Queen Elizabeth's Hospital school.

Section G, Consultancies, comprises material relating to Frank's work for commercial organisations undertaken 1949-86. The best documented is Frank's extensive work for De Beers for whom he served on the Diamond Research Committee which oversaw De Beers-funded diamond research in UK universities

and which organised the Diamond Research Conferences. A short consultancy with British Rail, whom he advised on water-softening 1949-51, is well documented and consultancies with General Electric and IBM are also represented.

Section H, Visits and Conferences, presents a chronological sequence, 1939-87, of some of Frank's many engagements, both at home and abroad. He made many trips to the U.S.A, frequently in conjunction with a summer consultancy, and served as Visiting Professor at the Institute of Geophysics and Planetary Physics, La Jolla, California 1964-65. In 1979-80 he visited India as Raman Research Professor.

Section J, Correspondence, is a substantial section which includes several extended exchanges with friends, colleagues and former students. Among the correspondents are N. Cabrera, J.D. Eshelby, R.V. Jones and F.R.N. Nabarro.

Section K, References and Appointments, includes material for Frank's service as External Examiner for the universities of Aberdeen and Newcastle-upon-Tyne, and correspondence and papers relating to his work as Assessor for the Royal Society's Paul Fund. This material is subject to restricted access.

ACKNOWLEDGEMENTS

We are very grateful to Sir Charles Frank for making the material available and for his advice and encouragement.

Timothy E. Powell
Peter Harper
Bath 1989

SECTION A

BIOGRAPHICAL

A.1-A.98

A.1-A.8	BIOGRAPHICAL AND BIBLIOGRAPHICAL
A.9-A.30	CAREER, HONOURS AND AWARDS
A.31-A.45	DIARIES
A.46-A.63	FAMILY
A.64-A.70	PERSONAL CORRESPONDENCE
A.71-A.80	CLUBS AND ASSOCIATIONS
A.81-A.94	MISCELLANEOUS
A.95-A.98	PHOTOGRAPHS

BIOGRAPHICAL AND BIBLIOGRAPHICAL

- A.1 Curricula vitae 1936, 1947, 1976, 1978, 1983.
- A.2 Entries for *Who's Who* etc. 1973-83 and nd.
- A.3 Correspondence with E. Braun and P.K. Hoch, Aston University Technology Policy Unit, 1981. Frank was interviewed for the History of Solid State Physics project.
- A.4 Correspondence with J. Baxter of Life-Story Cassettes re "Sir Charles Frank. Reminiscences of the Physics Department, Bristol University 1946-76", a recording made in 1982.

 Includes a typescript summary of the "Reminiscences".
- A.5 "Professor Sir Charles Frank, OBE, FRS". Biographical account dated 10 August 1984.
- A.6 Brief correspondence with S.R. Weart, American Institute of Physics Center for the History of Physics, 1986. Frank gave an "oral history interview" for the Center.
- A.7 Manuscript draft by Frank beginning "We live in a self-deluding century" recording his views on scientific methodology. Nd.
- A.8 Bibliographies 1951, 1978, 1988.

CAREER, HONOURS AND AWARDS

- A.9 Oxford. Miscellaneous material 1935-38 chiefly relating to Frank's interest in cinematography. Frank was a committee member of the University Film Society and Founder and President of the University Film Unit.
- A.10 Germany. Brochure for "Laboratorium Manfred von Ardenne"; programme for meeting of Deutsche Bunsen-Gesellschaft, Breslau, June 1938; list of colour photographs Frank took of "A vanished frontier" on the old German-Czech border in June 1938.
- A.11 Correspondence, October 1938-March 1939, re employment and research opportunities, including Cambridge.
- A.12-A.16 Second World War
- A.12 Correspondence sent to R.V. Jones by D.R. Pye, Director of Scientific Research at the Air Ministry, re Frank's transfer to Scientific Intelligence, 1940.
- Letter notifying Frank of his temporary promotion to Principal Scientific Officer from 1 July 1943.
- A.13 Notification of informal discussion on "Window (A.R.D.E. trials and general operational experience)", 4 March 1944. Annotated "Transport arranged".
- Papers for visit to Paris, April 1945. Includes Frank's Allied Expeditionary Force Permit and copy of his orders.
- A.14 Correspondence from Association of Scientific Workers, 1943-44.
- A.15 Miscellaneous correspondence and papers 1941-45 and nd. Chiefly financial.

- A.16 Later correspondence re Frank's war-work, September 1976, in connection with pension entitlement.
- Brief correspondence with Sir Stanley Hooker, August 1981, who wrote to Frank after reading the account of his and R.V. Jones' work for scientific intelligence in Jones' book *Most Secret War*. Frank's reply includes reminiscences of the period.
- Reminiscences of Frank, R.V. Jones and H. Smith from a female member of scientific intelligence staff, 17 January 1984.
- A.17 Correspondence re employment 1946-48. Frank applied for the Chair in Theoretical Chemistry at Norges Tekniske Högskole, Trondheim, and, provisionally, for a lectureship in Theoretical Chemistry at Cambridge.
- A.18-A.20 Bristol University
- A.18 1948-51. Letters of appointment. Frank was appointed Research Fellow in Theoretical Physics March 1948, and reappointed 1949 and 1950. Also cutting from *Bristol Evening Post* 23 March 1951 announcing Frank's appointment to Readership.
- A.19 1954, 1963, 1969. Includes letter of congratulation on Frank's appointment to the Melville Wills Chair, 10 July 1954, and notification of appointment to the Directorship of the H.H. Wills Physics Laboratory and Henry Overton Wills Chair, 11 July 1969.
- A.20 1976. Frank's speeches given at occasions marking his retirement 10, 19 and 29 June and goodwill letters from colleagues; notification of Frank's appointment as Professor Emeritus, 23 November.
- A.21 Election to Fellowship of the Royal Society 1954.
- Nomination for medal of the Royal Society 1962. See also A.26.
- A.22 Holweck Prize of the Société Française de Physique and the Physical Society 1963.
- Includes material for 1977 reunion of Holweck prizemen. See also E.20.

- A.23 Election to Honorary Fellowship of Lincoln College Oxford 1968.
Election to Fellowship of Royal Society of Arts 1970.
- A.24 Honorary Degree of Bath University 1974.
- A.25 Conferral of Knighthood 1977.
Includes accounts of investiture, letters of congratulation etc.
- A.26 Honorary Degree of Surrey University 1977.
Election to Honorary Fellowship of the Institute of Physics 1977.
Includes biographical note for *Physics Bulletin*.
Honorary Degree of Trinity College Dublin 1978.
Royal Medal of the Royal Society 1979.
- A.27 Election to Foreign Associate Membership of U.S. National Academy
of Engineering 1980.
- A.28 Honorary Degree of Warwick University 1981.
Guthrie Medal of the Institute of Physics 1982.
- A.29 Election to Honorary Fellowship of Indian Academy of Sciences
1984.
Election to Foreign Associate Membership of Royal Society of South
Africa 1986.
Honorary Degree of Université de Paris-Sud 1986.
- A.30 U.S. Institute of Metals Lecture and Robert F. Mehl Award 1987.
See also E.65.

DIARIES

Those 1965-72 are desk diaries, several of which were kept by his secretaries.

- A.31 1964.
- A.32 1965 Red. Includes list at back of Frank's editorial, consultancy etc. commitments.
- A.33 1965 Blue.
- A.34 1966. Includes list at front of Frank's commitments.
- A.35 1967. Includes list at back of Frank's commitments.
- A.36 1968 Blue. Includes a few loose intercalated notes.
- A.37 1968 Red.
- A.38 1969 Green. Includes a few loose intercalated notes.
- A.39 1969 Red.
- A.40 1970 Red.
- A.41 1970 Green. Includes a few loose intercalated notes.
- A.42 1971 Red.

- A.43 1971 Red. Labelled "Professor F.C. Frank".
- A.44 1972. Includes a few loose intercalated notes.
- A.45 1979-80. Bristol University Pocket Diary. Includes a few loose intercalated notes and cuttings.

FAMILY

Frank Family

Most of Frank's paternal grandfather's children emigrated, principally to South Africa and Canada. Frank was born in South Africa but his father returned to England very shortly after his birth.

A.46 Frederick John Frank (son).

The only child of Sir Charles and Maita Frank died in infancy.

A.47-A.52 Frederick and Medora Celia Emma Frank (parents).

Correspondence 1939-70.

6 folders.

A.47 1939-53 and undated early correspondence

A.48 1965

A.49 1966

A.50 1967

A.51 1968

A.52 1969-70

A.53 Edward H. Frank (brother).

Correspondence 1950, 1970, 1976.

A.54 Relatives in England.

Correspondence 1938-78.

A.55 Relatives in South Africa

Correspondence 1969-81.

A.56, A.57 Relatives in Canada.

Correspondence, chiefly with Phoebe Maud Skinner (paternal aunt).

A.56 1963-73

A.57 1974-81

A.58 Correspondence with Ronald Frank of Surrey re possible family connections, 1981.

A.59 Brundish Hall.

Brundish Hall, Suffolk, was the residence of Frank's maternal grandfather, Charles Read. Frank tried to discover the truth of a story that following the Hall's demolition in 1930 it was reassembled in the U.S.A.

The material includes photographs of the Hall.

Asché Family

Frank married Maia Maita Asché, of Finnish nationality, on 28 April 1940. She had many relatives in the Communist bloc and much of the material concerns attempts to get them out.

A.60 Maia Maita Frank (née Asché).

Correspondence 1946-53, 1973, 1982.

A.61 Inessa Zarin (sister-in-law).

The Zarin family were living in Harbin, People's Republic of China, and threatened with deportation to the Soviet Union (Inessa Zarin was born in St. Petersburg). The correspondence, 1954-57, concerns Frank's efforts to obtain entry visas to Australia or Chile for them. They received visas for Chile and Venezuela and were permitted to leave China in 1957.

Correspondence 1954-63.

A.62 Sophia Zinaida Forsbloom (mother-in-law).

Brief correspondence re securing her exit from Prague, 1968.

A.63 Michael Arnautov (nephew).

Brief correspondence chiefly re obtaining permission for M. Arnautov (a Soviet citizen though never resident in the U.S.S.R.) to remain in the U.K., 1968.

PERSONAL CORRESPONDENCE

Arranged chronologically.

A.64 1938-60
A.65 1962-70
A.66 1971-76
A.67 1977-79

A.68 1980-81
A.69 1982-83
A.70 1984, nd

CLUBS AND ASSOCIATIONS

A.71 Athenaeum Club 1968-82.

A.72 Clifton and Hotwells Improvement Society 1974.
 Coombe Dingle Residents' Association 1986.
 Crabtree Foundation 1970.

A.73 Friends of Brunel's Temple Meads Station 1981-82.

A.74 Friends of the Bristol Art Gallery 1954, 1967, 1973.
 Friends of St. George's, Brandon Hill 1981-82.
 Malago Society 1986.

A.75-A.79 Old Ipswichian Club 1976-83.

Frank attended Ipswich School 1927-29. He served as President of the Old Ipswichian Club 1978.

5 folders.

A.75	1976	A.78	1978 May-December
A.76	1977	A.79	1979-83
A.77	1978 January-April		

A.80 Oxford Society 1979.

Royal West of England Academy 1981-83.

Thatched House Club 1944.

MISCELLANEOUS

- A.81 1934. "The Almond Tree". Manuscript draft of a short story by Frank.
- A.82 1938-42. Includes 2pp manuscript draft by Frank "Concerning the Baconian theory", 22 August 1939.
- A.83-A.87 1946-49. Financial papers.
 5 folders.
- A.88 1949, 1951, 1956.
- A.89 1960s. Includes copy of the first English edition of *Progress, Peaceful Coexistence and Intellectual Freedom* by A. Sakharov, sent to Frank April 1969.
- A.90 1970-71. Chiefly sale of Frank's periodicals.
- A.91 1972-79. Includes Frank's comments on a disarmament proposal in a letter of 23 November 1976.
- A.92 1980-82.
- A.93 1983-86.
- A.94 Nd.

PHOTOGRAPHS

- A.95 Portrait photographs taken following Frank's election to Fellowship of the Royal Society 1954.
- Photographs taken during Frank's consultancy with General Electric 1956 (G.100-G.101). One of the photographs (of Frank with G.W. Sears and S.S. Brenner) was reproduced in the *Schenectady Union-Star* (G.101).
- A.96 International Conference on Crystal Growth, N.Y., August 1958 (H.30). Includes group photograph of conference, with key.
- Battelle Institute colloquium, Switzerland, May 1966 (H.60). Includes group photograph of colloquium.
- Frank and wife at "Wedding of Zbigniew Stachowski... Clifton, 8 July 1966".
- A.97 Frank and K.H.G. Ashbee inspecting their "nitinol" heat engine 1975. See also J.2.
- Group photograph in envelope inscribed "?Colston Symposium Group 1976 (Remote sensing)" (B.125).
- Sektion für Kristallwachstum der Schweizer Gesellschaft für Kristallographie meeting, Switzerland, October 1978 (H.118). Sent with Christmas card 1980.
- Group photograph of 31st Pugwash Conference, Banff, Canada, August-September 1981 (F.230-F.238).
- Group photograph of the Gordon Research Conference on Crystal Growth, N.H., July 1982 (H.150), with key.
- A.98 Miscellaneous undated photographs of Frank and colleagues.

SECTION B

BRISTOL UNIVERSITY

B.1-B.151

B.1-B.76

PHYSICS DEPARTMENT

B.1 -B.41 Administration

B.42-B.56 Research

B.57-B.76 Teaching

B.77-B.151

UNIVERSITY

B.77 -B.89 General correspondence and papers

B.90 -B.117 Committees

B.118-B.146 Societies and Organisations

B.147-B.151 Tyndall Memorial Lectures

- B.9 1975. Includes material re "presentation to Dr. N. Thompson on his retirement", with 3pp typescript copy of Frank's tribute to Thompson given at the farewell ceremony, 22 July.
- B.10, B.11 1975. University Grants Committee Physical Sciences Subcommittee Regional Conference, Bristol, 1 May. Frank represented the Bristol University Physics Department.
- B.10 Papers and correspondence for preliminary meeting of university representatives "to agree on what issues they would like to raise", Bristol, 7 March.
- B.11 Papers for Regional Conference.
- B.12 1976. Chiefly material "For Presentation to A.F. Devonshire" on his retirement. Includes manuscript notes on Devonshire's career and 3pp typescript copy of Frank's tribute to Devonshire, given 2 July.
- B.13 1977, 1978. 1977 material is chiefly re 50th anniversary of the official opening of the H.H. Wills Physics Laboratory. Includes 14pp manuscript copy of Frank's "reminiscences" of the laboratory from 1946, delivered 11 July.
- B.14 1985, 1986.
- B.15 Nd. Includes "Of responsibility and the delegation of duties [of a head of department]", 3pp manuscript (by Frank); "University places for students of physics" by N. Thompson, 10pp duplicated typescript plus 1p graphs; "The Growing Wastage of University Physics Students" by R.G. Chambers, 8pp duplicated typescript; letter from A. Keller [?1973] re history of polymer physics group.

Steering Committee

1964-76

B.16-B.24 Papers for committee meetings.

9 folders.

B.16	1964, 1965	B.21	1971, 1972
B.17	1966	B.22	1973
B.18	1967, 1968	B.23	1974
B.19	1969	B.24	1975, 1976
B.20	1970		

Staff meetings

1968-75

B.25-B.28 Papers for staff meetings.

4 folders.

B.25	1968-71	B.27	1973
B.26	1972	B.28	1974, 1975

Personnel

1956-76

A chronological sequence of papers and correspondence *re* staff appointments, promotions, etc.

13 folders.

B.29	1956, 1958	B.36	1969 (4)
B.30	1963, 1964	B.37	1969 (5)
B.31	1965-67	B.38	1970
B.32	1968	B.39	1971
B.33	1969 (1)	B.40	1972-74
B.34	1969 (2)	B.41	1975, 1976, nd.
B.35	1969 (3)		

Research

B.42-B.52 Funding
B.53-B.56 Colloquia and Schools

Funding

1954-78

The material chiefly relates to the funding of research in the Physics Department by the Science Research Council and to the financial support of the Department's Solid State Physics Fund, principally by De Beers.

At B.52 is a report on a consultancy carried out by the Department for the Ministry of Supply.

- B.42-B.47 Correspondence and papers re Science Research Council (SRC) funding of research.
- B.42 1968, 1969. Includes material re SRC support for polymer research.
- B.43 1970. Includes enquiries from universities seeking likely candidates for SRC studentships, and related correspondence with B.H. Flowers, SRC chairman, re Cooperative Awards in Pure Science (CAPS).
- B.44 1971. Includes correspondence with C.E.H. Bawn (Polymer Committee) re SRC support for polymer research.
- B.45 1972. Includes correspondence re visit of SRC Physics Committee to Bristol University, February, with copy of their report.
- B.46 1973. Includes correspondence with Flowers re postdoctoral fellowships and CAPS, and photocopied manuscript proposal from G.P. Tonkin for "A Gravimeter Development", 17 September.
- B.47 1974, 1975. 1975 correspondence is chiefly re proposal for exploratory research on poly-SN.

- B.48-B.51 Correspondence and papers re Solid State Physics Fund.
- Frank took over responsibility for this departmental fund from M.H.L. Pryce in 1964. It received contributions principally from De Beers' subsidiary Industrial Distributors (Sales) Ltd. (later De Beers Industrial Diamond Division Ltd.) for research into the physical properties of diamond.
- The material consists chiefly of covering letters from De Beers accompanying payment of funds, and correspondence to the university authorities authorising payments from the fund. The covering letters from De Beers to Pryce and his successor, Frank, also refer to the simultaneous payment of consultancy and Diamond Research Committee fees. Material relating to Frank's work as a consultant and committee member may be found at G.24-G.27 and G.56-G.75 respectively.
- B.48 General correspondence re administration of the fund, various dates, 1954-75.
- B.49, B.50 Correspondence re payments to the fund, 1962-78.
- 2 folders.
- | | | | |
|------|---------------|------|---------|
| B.49 | 1962-67, 1971 | B.50 | 1974-78 |
|------|---------------|------|---------|
- B.51 Correspondence re expenditure from the fund, 1961-67.
- B.52 "Report on Extra-Mural work carried out in the Department of Physics, University of Bristol, for the Ministry of Supply ... February to July, 1954." With Frank's manuscript notes headed "Cinnabar HgS".
- Colloquia and Schools 1946-78
- B.53 Summer School on the quantum theory of crystalline solids with particular reference to semi-conductors, 1946.
- Duplicated typescript outline of the course prepared for "other members of the [Telecommunications Research] Establishment who ... could not attend". With miscellaneous manuscript notes and graphs found with it.

- B.54 Departmental colloquia, 1948-50.
- Invitations to give colloquia and correspondence arising. Those agreeing include G.I. Finch, H.A. Jahn, A.C.B. (later Sir Bernard) Lovell (1948), G.V. Raynor (1949) and A.F. Brown (1950).
- ICI-Bristol University Theoretical Physics Discussion on Crystal Growth, 18 February 1948.
- Correspondence re arrangements.
- B.55 Summer School on the Theory of Crystal Growth, 19-24 September 1949. Frank gave three lectures, "A general account of the growth of crystal", "The geometry of dislocations" and "The role of dislocations in crystal growth".
- Correspondence re arrangements; notice; lecture notes.
- Letter from H.A. Fairbank re colloquium on "Second sound in liquid helium II", 10 April 1954.
- B.56 Vacation School on Dislocations in Metals and Inorganic Crystals, 24-29 March 1958. Frank lectured on "The theory of dislocation networks", "Dislocations and diffusion processes" and "The theory of etching processes".
- Programme only.
- Mott School on Crystal Growth, 6-10 April 1970. Frank welcomed the School and spoke on "Theories of crystal growth mechanisms".
- Programme; lecture syllabuses.
- Notices for Physics Department colloquia, 1977, 1978 and nd.

Teaching

B.57-B.67	Undergraduate
B.68-B.72	Postgraduate
B.73-B.76	Miscellaneous

Undergraduate

- B.57, B.58 Syllabuses, lecture timetables, course outlines and course notes for undergraduate teaching.
- | | | | |
|------|---------------|------|---------|
| B.57 | 1950, 1965-69 | B.58 | 1974-76 |
|------|---------------|------|---------|
- B.59 Syllabus for stage III Special Honours Lectures on Solid State Physics, 1955-56. With manuscript notes for lectures.
- B.60 B.Sc. examination papers, 1953, 1955, 1956.
- B.61 Exercise book, used 1960-67, containing Frank's manuscript notes on undergraduates and their work.
- B.62 Physics problem sheets, 1971-72 and nd.
- B.63, B.64 Material re stage III physics courses 1973-74. Chiefly Frank's manuscript notes and questions on geophysics.
- 2 folders.
- B.65 "Stage III Projects 1977-78". Contents of folder so inscribed.
- B.66 Miscellaneous correspondence and papers re undergraduate courses, various dates 1949-72.
- B.67 Duplicated typescript copies of 16 lectures on geophysics, nd.

Postgraduate

- B.68 Correspondence and notes re postgraduates, various dates 1949-74 and nd.
- B.69-B.71 M.Sc. course in Physics of Materials.
This course was initiated by Frank.
- B.69 Material found in folder with attached note from N. Thompson inscribed "This folder contains papers relating to the M.Sc. course including the detailed exam results, and the correspondence with [A.J.] Kennedy." Kennedy was external examiner for the newly established course 1965-66.
- B.70 Papers re course 1969-71.
- B.71 Papers re course 1975-76, nd.
- B.72 Miscellaneous papers and correspondence re M.Sc. courses.

Miscellaneous

- B.73 "Regular and Irregular Motion", photocopy of manuscript text of "An informal series of talks by M.V. Berry", 1976.
- B.74 "An Introduction to Algebraic Topology", typescript notes of lectures given by B.R. Pollard, 1976-77.
- B.75 Student essays.
- B.76 "Physics since 1910" syllabus, 1961; "Introduction" by Frank beginning "The extension by flow of polymer chain molecules ...", 6pp photocopied manuscript; "Stress functions: a mechanical analogue", Project Assessment by P. Gosshy, 12pp photocopied manuscript; etc.

UNIVERSITY

General correspondence and papers

- B.77 1956, 1963, 1964. 1963 letter expresses the wish of the Deans of the Faculties (including Frank) to honour Sir Alfred Pugsley for his services as Acting Vice-Chancellor.
- B.78 1965, 1966.
- B.79, B.80 1968. Correspondence and papers re presentations for honorary degrees, 9 July, at which Frank was a public orator. Includes copies of Frank's orations.

2 folders.
- B.81 1969 February. Chiefly material re Bristol University Peace Group forum "What Research? And What For?" at which Frank spoke on behalf of the Vice-Chancellor. With 7pp manuscript draft of Frank's contribution.
- B.82 1969. Includes draft of Frank's "Address for Senate, 16th June 1969, on the retirement of C.F. Powell".
- B.83 1970.
- B.84 1971. Includes Frank's letter of 31 December suggesting candidates for honorary degrees.
- B.85 1972.
- B.86 1973, 1974. Chiefly material re visit of University Grants Committee (UGC), 27 November 1974.

- B.87 1975, 1976. 1976 material is re Interim Report of the Joint Working Party of the Committee of Vice-Chancellors and Principals and the UGC on Tuition Fees. (Frank received the material as a member of Senate). With 3pp manuscript draft letter to the Vice-Chancellor on "Fees".
- B.88 1976, 1977. Correspondence and papers re "Presentation of Sir Alan Hodgkin for the Degree of D.Sc.". Frank was public orator. Includes draft of Frank's oration, and letter of thanks from Hodgkin.
- B.89 1979-82, 1984, nd. Includes *University Newsletter* 12 June 1980 with letter from Frank re military research, and correspondence arising.

Committees

Arts Lectures Committee 1976-87

This committee arranged series of lectures on the arts. Frank was a member of the committee for the period covered by the material.

B.90-B.93 Papers for committee meetings and brief related correspondence. Includes copies of Frank's introductions to Arts Lectures, 17 February and 9 November 1976.

4 folders.

B.90	1976-79	B.92	1983-85
B.91	1980-82	B.93	1986, 1987

Board of Extra-Mural Studies 1965-67

Frank was appointed to the Board 1 January 1965. See also H.67-H.71.

B.94-B.99 Papers for Board meetings.

6 folders.

B.94	1965 January, May	B.97	1966 October
B.95	1965 November	B.98	1967 January, May
B.96	1966 January, May	B.99	1967 October

Committee on Departmental Organisation 1963-64

Frank chaired this committee, established in May 1963 "to consider the arrangements for consultation and discussion within Departments of the University". It reported the following May.

B.100 Copy of letter requesting information "regarding present practice" and views on general principles, Frank's manuscript notes on responses and manuscript draft of Committee Report etc.

Committee on Ordinances and Regulations for Higher Degrees 1966, 1967

Following a Government request that workers in industrial and government laboratories be given opportunities to gain higher degrees, Frank and A.R. Collar were asked by the committee to put forward ideas for liberalising the regulations surrounding the award of higher degrees.

Much of the material relates to Frank's suggestion that a "Mature Ph.D." degree be instituted to allow worthy candidates whose work did not merit a D.Sc. nevertheless to be awarded a doctorate.

B.101 Correspondence with university authorities, C.F. Powell and Collar, 1966.

B.102 Papers for committee meetings, including suggested amendments to university regulations.

Committee on Technical Staff 1975

B.103 One letter only, 29 January.

ICI Research Fellowships Committee 1975

B.104 Report on ICI postdoctoral fellowships scheme.

Joint Committee on Tutorial Classes 1965-68

This was a joint committee of representatives of the Department of Extra-Mural Studies, the Workers Educational Association and Local Education Authorities. Frank attended as a member of the Board of Extra-Mural Studies (B.94-B.99).

B.105-B.108 Papers for committee meetings, 1965-68.

4 folders.

B.105 1965
B.106 1966

B.107 1967 February, May
B.108 1967 November, 1968

Knowlson Trust Fund Committee

1963-67

This committee was appointed in April 1963 to allocate funds from the bequest of J.M. Knowlson, engineer, for travel grants to students and junior staff. Frank was a committee member from its establishment.

B.109-B.111 Papers for committee meetings and Frank's manuscript comments on reports provided by recipients of grants upon their return.

3 folders.

B.109 1963

B.111 1966, 1967

B.110 1964, 1965

Laboratory Assistants Committee

1954

B.112 Minutes of meeting, 3 November.

"Sub-Committee of Senate which was asked to make a report on the history of events which culminated in the sit-in [occupation of Senate House by students, December 1968] ... "

The sit-in occurred over the issue of reciprocal membership of the Bristol University Students' Union with students' unions at other institutions of further and higher education in the area. A number of students, feeling the university authorities were procrastinating, occupied Senate House.

The senate sub-committee, comprising Frank, C.F. Powell, P.J. Randle and W.D. Howarth, supported the actions of the Vice-Chancellor, A.R. Collar, in securing the eviction of the occupying students.

B.113, B.114 Material re the sit-in, chiefly statements by the sit-in "Action Committee" (and sympathisers) and the university authorities. Also includes typescript draft and final copy of the sub-committee's report, 11 December, and typescript draft and final copy of "Letter to all members of the University" drafted by the sub-committee for the Vice-Chancellor, 9 January 1969.

2 folders.

B.115 Background papers on reciprocal membership issue.

- B.116 News-sheets produced by the Informal Information Office established in the Physics Department, December 1968, February-June 1969.
- B.117 Miscellaneous material.

Societies and Organisations

An alphabetical sequence of other university bodies.

Association of Alumni

1977-84

Frank was invited to become Honorary President for the 1977-78 session and was re-elected several times thereafter. As President he also served on the Joint Executive Committee of Convocation and the Association of Alumni.

B.118 Correspondence, chiefly re Presidency, 1977-79, 1982.

B.119, B.120 Papers for meetings of Joint Executive Committee of Convocation and the Association of Alumni.

2 folders.

B.119 1978-80

B.120 1981-84

Association of University Teachers

1973, 1982

B.121 Miscellaneous material.

Bristol Scientific Club

1972-86

Frank was a Past President of the Club.

B.122 Correspondence and papers, including membership lists.

Colston Research Society

1966-86

Frank's connection with the Colston Research Society for the promotion of research in the University of Bristol dates from 1948, when he attended the First Colston Symposium on Cosmic Radiation, organised by N.F. (later Sir Nevill) Mott (see H.2).

In 1966 Frank was invited to sit on the Society's Research Fund Committee which administered a grant from the Society to assist, chiefly, in the publication of research work. Frank was a member of the Council of the Society from 1974, being re-elected in 1978, 1980 and 1984.

In the mid-1970s Frank was associated with two Colston Symposia, as organiser in 1974 and as a chairman in 1976.

Information Office

1973-83

- B.135 Correspondence. Includes Frank's note on P.A.M. Dirac compiled for the Information Office on the occasion of Dirac's appointment to the Order of Merit, 1973.

Library

1975-78, nd.

- B.136 Correspondence.

Mac Innes Club

1976, 1979

- B.137 Papers re meetings.

School for Advanced Urban Studies

1973

- B.138 Papers re constitution of the School, with Frank's notes and copy of letter to Vice-Chancellor, 14 March, "Observations on the Constitution of the School for Advanced Urban Studies".

Senior Common Room (SCR)

1965-68, 1976

Frank was chairman of the SCR committee 1966-68, member of the Art committee 1965-67 and convenor of the Dining subcommittee 1967-68.

- B.139-B.145 Correspondence and papers.

7 folders.

B.139	1965	B.143	1967 Nov, Dec
B.140	1966	B.144	1968 Jan-May
B.141	1967 Jan-May	B.145	1968 June-Dec, 1976
B.142	1967 June-Oct		

University of Bristol Physical Society

1966-78

- B.146 Correspondence and papers. See also B.49 and B.51.

Includes cutting from Bristol paper showing Frank, M.H.L. Pryce, A.M. Tyndall and C.F. Powell at Physical Society dinner c.1954-61.

Tyndall Memorial Lectures

Following his appointment as Director of the H.H. Wills Physics Laboratory in 1969, Frank and his wife endowed a biennial lecture on the physical sciences to commemorate A.M. Tyndall, Professor of Physics at the University 1919-1948. The first was delivered by Sir Bernard Lovell.

- B.147 Correspondence re endowment of Tyndall Memorial Lectures, 1969.
- B.148 Correspondence, 1970, re Lovell's Lecture on "The Astronomer's Universe" 3 December, and Dinner Party following. With typescript draft of Frank's toast to the memory of Tyndall.
- B.149 Correspondence, 1972, re second Lecture, given by Sir George Porter on "Chemistry in Microtime", 7 December.
- B.150 Correspondence, 1974, re third Lecture, given by R.V. Jones on "The Other Way Round", 9 December.
- B.151 Brief correspondence, 1976, 1978, 1980, re later Tyndall Lecturers.

SECTION C

RESEARCH

C.1-C.203

C.1-C.33	CHEMISTRY PART II AND POSTGRADUATE
C.34-C.54	GERMANY
C.55-C.79	CAMBRIDGE
C.80-C.109	SECOND WORLD WAR
C.110-C.203	BRISTOL

CHEMISTRY PART II AND POSTGRADUATE

- C.1 "Nitro Paraffins". Contents of a folder so labelled: manuscript notes on the literature, latest bibliographical reference 1927.
- C.2 "The molecular structure of phenyl-nitro-methane and its derivatives, studied with the aid of measurements of molecular electric moment". Thesis presented for part II of the examination in Chemistry and for the degree of Bachelor of Science. Lincoln College Oxford, May 1933. 64pp typescript.
- C.3 "Résumé of portions of the Chemistry part II & B.Sc. Thesis of F.C. Frank - Oxford, May, 1933". 12pp typescript.
- C.4 "Phenyl iso-nitromethane & subst. phenyl nitro-methanes". Contents of a folder so labelled: manuscript graphs, notes and diagrams, latest bibliographical reference 1933.
- C.5 "Oxidation of Aliphatics". Contents of a folder so labelled: manuscript notes on the literature abstracted 1933, 1934.
- C.6-C.18 "Dielectric Losses". Contents of a folder so labelled divided into 13 for ease of reference.
- C.6-C.15 Manuscript notes on the literature, calculations, graphs, 1933-37. 10 folders.
- C.16 "Loss in alcohol": manuscript drafts, graphs, data etc., found clipped together; latest bibliographical reference 1934.

- C.17 "Dielectric loss evidence on the molecular condition and properties of palmitic in solid solution" by W. Jackson (later Lord Jackson) and F.C. Frank, 21 June 1935. 6pp typescript.
- "Dielectric loss measurements of W. Jackson on polystyrene ("Trolitul") mouldings prepared by F.C.F." Graph dated 27 October 1936 and 3pp manuscript.
- C.18 "Statement and discussion of power-factor and conductivity measurements on a solution of stearanilide in paraffin wax. Also results of power factor measurements on palmitic acid and beeswax solutions". 3pp manuscript by Jackson, with Frank's manuscript additions.
- C.19-C.21 "Molecular rotation". Contents of a folder so labelled: manuscript notes on the literature abstracted 1934.
- 3 folders.
- C.22 Motion of molecules in crystals. Manuscript notes on the literature abstracted 1934.
- C.23-C.25 Contents of Frank's folder divided into three for ease of reference.
- C.23 Letter from Ronsheim & Moore sending list of chemicals, 3 November 1934; two manuscript drafts entitled "A new solvent effect in dipole moment measurements", typescript draft entitled "An additional solvent effect in dipole moment measurements", 3 May 1935, etc. See also C.27.
- C.24, C.25 Notes on the literature, data, calculations etc. 1935, 1936. 2 folders.
- C.26 "Polar effect". Contents of a folder so labelled: brief correspondence 13 April 1935 and nd. from P.A. Small; notes on the strength of acids etc., some with annotations by Small; graphs.

- C.27-C.29 Contents of Frank's folder divided into three for ease of reference.
- C.27 Typescript draft entitled "An additional solvent effect in dipole moment measurements" 3 May 1935, typescript draft entitled "A new solvent effect in dipole moment measurements" by Frank and L.E. Sutton, latest bibliographical reference 1936.
- C.28 Brief correspondence March 1936; letters to [G.I.] Taylor, 3 April 1936 and 11 May 1936 and "A further note on the theory of absences in crystalline solids" dated 9 March 1936 and enclosed in Frank's letter of 3 April.
- C.29 Manuscript notes, data, calculations, graphs. Some material dated 1936.
- C.30 Letter to the editor of *Nature* on computing the electric moments of solute molecules, by E.A. Guggenheim. 3pp typescript dated 5 March 1936 and 1p table of electric moments of solute molecules, with Frank's manuscript notes attached.
- C.31 "Wrinch proteins". Contents of an envelope so inscribed, including: manuscript and typescript notes on "Wrinch on proteins", typescript dated 21 May 1936; two draft letters to [D.M.] Wrinch, one dated 12 June 1936; letter from W.T. Astbury, 19 June 1936.
- C.32 "Dossier on minor solvent effects": manuscript notes relating to work of H.O. Jenkins 1936.
- C.33 "A research in the physical chemistry of dielectrics with special bearing on dielectric losses". Frank's D.Phil. thesis retained in original covers. The degree was awarded in 1937.

GERMANY

- C.34 Notebook inscribed on front cover "P. Debye" and "Ausgewählte Kapitel der Technischen Mechanik Wintersem. 1905. A. Sommerfeld." The first page of notes is headed "Beanspruchung von Kugeln".
- C.35-C.37 Contents of Frank's folder divided into three for ease of reference. The folder was of German manufacture (F. Soennecken, Bonn).

Manuscript notes on the literature abstracted 1933-37. Include dielectric loss literature from 1923. There are many references to the work of Debye.
- C.38-C.40 Contents of Frank's folder divided into three for ease of reference. The folder was of German manufacture (F. Soennecken, Bonn).
- C.38, C.39 Manuscript notes on the literature, drafts, data, graphs etc. variously dated 1933-38 and nd. 2 folders.

Include "Recalcs of Jackson's appendix on voids, which is wrong", plan of a book on rotating molecules 16 September 1937 and diagram of "low temperature small thermostat, to supply a stream of cooled dried air at a regulated temperature" 14 December 1938.
- C.40 Printed material re scientific equipment etc.
- C.41 Contents of Frank's folder.

Manuscript notes and drafts including items in German, latest bibliographical reference 1937.
- C.42-C.47 Contents of Frank's folder. The folder contained five smaller folders, three with titles, subdividing the contents. In addition a few items were found loose.
- C.42 "Oscillographic Relaxation". Electrical circuit diagrams; manuscript draft "Oscillographische Demonstrationsversuch über Dipolrelaxation."

- C.43 Untitled. Material relating to work with E. Fischer: bibliography headed "Literatur über dielektrische Verluste und Dispersion" with manuscript note at end "zusammengestellt Fischer 29.4.38"; letters from Fischer 1938, 1939; reprint by Fischer "Einfluss der Molekelstruktur auf die dielektrische Relaxation" which acknowledges Frank as a co-experimenter.
- C.44 Untitled. Notes on the literature abstracted 1936; graphs.
- C.45 "Dielectrics & Plastics". Letter from B.W. Sillars sending "some selections from my results on paraffin wax solutions" 18 October 1937; manuscript draft dated April 1938, etc.
- C.46 "Dutta Sound Dispersion". Letter from A. Dutta, Bose Research Institute, Calcutta, 5 May 1938; manuscript drafts by Dutta and Frank on sound dispersion in liquids, etc.
- C.47 Loose items. Include small format notebook, latest bibliographical reference 1939 and draft letter to Professor Hassell nd.
- C.48-C.51 Contents of Frank's folder divided into four for ease of reference.
- C.48 19pp manuscript draft beginning "The foundations of the classical theory of solutions as laid by Van't Hoff, Arrhenius, and Ostwald are distinguished by their simplicity and the readiness with which they can be mathematically formulated". Note at end "Translation for Debye. Finished 6/5/37. F.C.F."
- C.49 Manuscript notes and calculations including "relaxation for non-rigid molecules", "energy of two touching rod-shaped molecules in dependence on the angle between them".
- C.50 Manuscript notes and calculations including "Debye script, notation"; "Debye-Ramm calculations".
- C.51 Printed matter re German scientific equipment.

- C.52 Graphs; diagrams; notes on the literature, latest bibliographical reference 1937; etc.
- C.53 Manuscript "notes on the evaluation of polarisation along axes for links", typescript draft "das Quadrupolmoment des Kerns".
- C.54 Manuscript draft beginning "Nach bekannte und gut begründete theoretische Gesichtspunkte ... gibt es beim Kristallwachstum eine besondere Hemmung in Anfang eines neuen Schichtes auf eine ausgefüllte dicht-gepackte Fläche."

CAMBRIDGE

- C.55 "The behaviour of dielectrics in alternating current fields". Three duplicated typescript "informative summaries" based on lectures by E.B. Moullin delivered at the Post Office Research Station, Dollis Hill, London, March 1938.
- C.56-C.60 Material re patenting of "A short wave generator" (British patent application no.29526/38).
- C.56-C.58 Correspondence with patent agency, industrial concerns (Marconi, General Electric Company, Metropolitan-Vickers) and colleagues (R.V. Jones, E.B. Moullin) re Frank's invention, 1938-39.
- C.56 1938 September, October. Includes provisional specification filed 12 October.
- C.57 1938 November, December.
- C.58 1939 January, March, April and nd.
- C.59 Manuscript notes and drafts.
- C.60 Printed material.
- C.61-C.65 "Relaxation Kinetics". Contents of a folder so labelled divided into five for ease of reference.
- C.61 Letter from Electrical Research Developments sending details of their products, 20 October 1938; carbon copy of letter to D.M. Wrinch, 13 December 1938; manuscript drafts of letter to Riley, 9 May 1939.
- C.62 "Frictional Electricity". 7pp typescript with manuscript additions and corrections.

- C.63 Manuscript draft headed "General principles" and beginning "Free charges and induced (or permanent) dipoles on suspended particles produce forces of attraction and repulsion between them, and between particles and the containing walls."
- C.64 Manuscript notes, drafts, graphs, calculations etc. including note of Frank's contribution to unidentified meeting and notes dated 22 March and 1 April 1940.
- C.65 Manuscript notes, drafts, calculations, data.
- C.66-C.72 Contents of Frank's "seven-in-one" folder.
- C.66 Manuscript notes headed "stat. mech", "equilibria", etc.
- C.67 Manuscript notes headed "gases", "improved argument", etc.
- C.68 Manuscript notes headed "Integrated intensity or integrated reflection", "plastic deformation", "conduction in ionic crystals", "photoconduction in alkali halides", etc.
- C.69 Letter from D.M. Wrinch, 14 December 1938; manuscript and typescript notes, diagrams re work of Wrinch.
- C.70 Manuscript notes headed "Particles" and "A model of the melting crystal", the latter dated 25 April 1939.
- C.71 Report on the work of the Cambridge branch of the Association of Scientific Workers, October 1938 - May 1939; programme for Easter term [1939].
- C.72 "Bull Moose Gap". Humorous piece explaining why Bull Moose Gap was one of the friendliest and most peaceful towns in North America. With scientific matter on verso.

- C.73 Contents of Frank's folder.
- Manuscript notes, drafts, diagrams, graphs etc. including rough drafts of letter to E.H. Neville re his "Vector maps as positive evidence in crystal analysis", *Nature* 142, December 3, 1938. The drafts of Frank's letter begin "I saw Dr. Wrinch the other day ... "
- C.74-C.77 Contents of Frank's "five-in-one" file, one compartment found empty.
- C.74 "Notes on the measurement of small differences of impedances" by W.R. Piggott, sent to Frank 17 May 1939; letter from Frank to [O.H.] Wansbrough-Jones appending "very brief notes supplementary to those Rideal sent", 8 June 1940; miscellaneous manuscript notes, calculations, diagrams.
- C.75 Manuscript notes, data, graphs. A few items dated in February and March 1939.
- Exercise book used for brief records of research March-August 1939 including experimental work on rubber.
- Report on Frank's research July-August 1939. It notes that "from Sept. 3rd other work has been performed in the same laboratory, under Prof. Rideal's direction, which cannot be reported here. From Nov. 1st. onwards the work has been paid for by the Ministry of Supply ... "
- C.76 Manuscript notes and drafts including "Concerning the conditions of applicability of the new Debye (inner field) theory of polar dielectrics", 18 November 1936 and note on the literature abstracted 8 May 1938.
- C.77 Receipts, price list, circuit diagram etc. Include items dated between December 1938 and July 1939.

- C.78 Manuscript notes on the literature, latest bibliographical reference 1939. Folder also includes letter from Lloyds Bank Oxford (found with the notes) re transferring Frank's account to their Cambridge branch 8 July 1939.
- C.79 Contents of Frank's folder.
Manuscript notes, drafts, diagrams, data, nd.

SECOND WORLD WAR

- C.80 "A theory of evaporation in wind from surfaces of small downwind length" by Frank. 8pp typescript plus figures. The figures are dated 25 September and 9 October 1940 and stamped "Photographic Department CDES Porton".
- Folder also contains "Notes on paper by Dr. Frank". 2pp manuscript signed O.G. (later Sir Graham) Sutton 24 October 1940.
- C.81 "Misc. Maths". Contents of a folder so inscribed.
- Manuscript calculations, graph. Some calculations on back of leaves from 1940 calendar, 1943 University of Bristol examination script and postwar form letter re supply of reprints to German scientist, K. Wirtz.
- C.82-C.90 "Frank. Sundry theoretical studies". Contents of a folder so inscribed. This folder contained a number of smaller folders and many loose papers.
- C.82, C.83 Contents of Frank's folder divided into two for ease of reference.
- C.82 Manuscript draft "Heightfinding in RDF - General requirements"; manuscript calculations, data, graphs.
- C.83 Undated letter from Frank at the Air Ministry to O.G. Sutton requesting meteorological data for work on ultra-short radio-waves; letter from R.L. Smith-Rose re literature on ultra-short radio-waves, 16 August 1941; "Abnormal RF Ranges - Preliminary Survey" by D.J. Garrard, 12 September 1941 (7pp typescript); manuscript calculations, data, graphs.

- C.84 Contents of Frank's folder.
- Manuscript drafts headed "Reflection at inhomogeneities", "Non-abrupt discontinuities"; Department of Scientific and Industrial Research Radio Research Board paper "Study of field strength records obtained on the Post Office Ultra-Short-Wave Radio Telephone Link between Guernsey & England. (Wavelengths 5m. and 8m.) by R.L. Smith-Rose and A.C. Stickland, 1 September 1941; DSIR RRB paper "The dielectric constant and loss factor of water vapour at a wavelength of 9cms. (frequency = 3330 mc/s.)" by J.A. Saxton, 4 March 1942.
- C.85, C.86 "The theory of errors in continuous measurement". Contents of folder so inscribed divided into two for ease of reference.
- Manuscript drafts, calculations, nd. This theoretical work relates to the process of gunnery.
- C.87 "Continuous error theory". Contents of folder so inscribed.
- Manuscript draft, calculations.
- C.88 Manuscript notes, drafts, calculations, data. Includes 15pp manuscript draft headed "Polar diagrams of arrays".
- C.89 Miscellaneous manuscript notes, calculations, graphs etc; also letter from H.M. Nautical Almanac Office to E.M. Wright enclosing mathematical table, 17 January 1945.
- C.90 "A particular type of resultant distribution", 7pp manuscript not in Frank's hand.
- C.91 "Water launch rocketry". Contents of a folder so inscribed.
- Manuscript notes and calculations headed "water launch", "condensation from burnt material"; also letter from R.F. Tuckett re "dielectric manuscript", 14 December 1943.

- C.92, C.93 Contents of Frank's folder divided into two for ease of reference.
- Notes, drafts, calculations re rockets, nd.
- C.94 "Statistics". Contents of a folder so inscribed.
- Manuscript notes headed "Differential binomial", "Zero crossings for a rectangular frequency spectrum", "A collection of noise numbers", etc. One item dated in 1944.
- C.95 "Inductive effects: the internal electrostatic behaviour of molecules", 27 July 1945. 12pp typescript.
- Folder also includes manuscript draft of paper, letter from R.J.B. Marsden commenting on paper, 31 October 1945, manuscript calculations.
- C.96 "Map projection". Contents of a folder so inscribed.
- Manuscript calculations.
- C.97-C.109 Contents of a parcel sent from the Air Ministry to Frank at Bristol, 15 August 1947.
- C.97 Correspondence 1940, 1944, 1945 and nd. Includes letter from E.C. (later Sir Edward) Bullard, 21 December 1944, thanking Frank for the report on rockets and letter from Sir Henry Tizard, 18 June 1945, thanking Frank for his contribution to an enquiry into the future of weapons.
- C.98 Contents of Frank's folder.
- Typescript note "Suggested use of medium wave frequency to standardise ultra short wave measurements" 14 December 1940; letter from Frank to R.L. Smith-Rose 22 April 1941 commenting on DSIR Radio Research Board paper on "The absorption of Ultra-short wireless waves in water vapour of the earth's atmosphere" by J.A. Saxton, with a copy of the paper; manuscript drafts including "Non-reflecting windows for night fighters".

- C.99 Contents of Frank's folder.
- Manuscript drafts "size of a cocked hat in angular measure", "refraction of radio-waves", "atmospheric refraction"; Frank's comments on Operational Research Section report on "Theory of D/F Fixing" with copy of the report; Mathematical Group TRE Swanage report on "Atmospheric Refraction and Blind Bombing"; miscellaneous manuscript notes and calculations. 1941.
- C.100 Contents of Frank's folder.
- Manuscript drafts "Beam width and beam accuracy", "Combustion of hydrazine", data, graphs etc. One item dated 22 August 1944.
- C.101 Report on rockets by Frank. 31pp duplicated typescript plus figures.
- C.102 "Brock's benefit or The future of rockets". 8pp manuscript.
- C.103 "Elementary rocket formulae". Contents of a folder so inscribed.
- Manuscript drafts.
- C.104, C.105 Manuscript notes, calculations, graphs etc. including material on rockets. 2 folders.
- C.106 Government issue notebook. With record of "sites" in the Cherbourg region, St. Lo region, and the area south of Caen. Very few pages used.
- C.107 Miscellaneous items including poems "Der Geraeteraum (nach Christian Morgenstern)" beginning "Es war einmal ein Herr von Braun", "AFIA von Bimbo Morgenstern" (2 copies, one classified "most embarrassing", "trivial" and "top secret"), and "Middle East communique" referring to Rommel and the Auk [Field Marshal Auchinleck].
- "Bimbo" was the nickname of Frederick Norman, Professor of German at King's College London 1937-65. He was at Bletchley during the war and liaised with the Air Ministry's Assistant Directorate of Intelligence (Science).

- C.108 "Schottland und England (nördlicher Teil).
Militärgeographische Operationskarte mit Eintragung der
Kriegswichtigen Wirtschaftsgebiete". 1940.
- C.109 Miscellaneous printed matter, chiefly German wartime scientific
papers.

BRISTOL

- C.110 "Interpolation". Contents of a folder so inscribed.
Letter from the British Rubber Producers' Research Association to H. Fröhlich, 5 July 1946; manuscript graphs, calculations etc.
- C.111 Manuscript notes including "The boundary layer in stirred fluids", 13 June 1949, manuscript calculations.
- C.112 Miscellaneous notes, drafts, calculations late 1940s. Includes material on dislocations.
- C.113, C.114 Typescript copies of pre-war and wartime Russian scientific papers in German, found with Atomic Scientists Association material 1948-50 (F.4-F.7).
2 folders.
- C.115-C.118 Manuscript and typescript notes, graphs, diagrams etc. re crystals research. A few items dated in 1949, 1952 and 1953.
4 folders.
- C.119 Contents of Frank's folder.
Typescript drafts "Written discussion on the Schockley-Read paper - F.C. Frank" 22 May 1950, "The importance of near-screw dislocations in the generation of vacancies and interstitial atoms and in work-hardening" nd; manuscript notes, calculations etc.
- C.120 "Comments by F.C.F." 8 January 1954. 4pp typescript re grain boundaries.

- C.121 Contents of Frank's folder.
- Manuscript draft "On grain boundary migration in a material containing pores or inclusions", notes headed "Diffusion of large vacancy aggregates", letter from Frank to G. Matsumara 10 April 1954.
- C.122-C.127 Contents of Frank's folder divided into six for ease of reference.
- Miscellaneous manuscript notes, drafts, calculations, diagrams, correspondence, photographs etc. Include manuscript draft "On the forces due to surface tension with reference to small animals", manuscript draft on martensitic transformations and manuscript draft on the problem of the growth of diamonds. A few items are dated in 1954 and 1955.
- C.128 Contents of Frank's folder.
- Typescript copy of paper by J.D. Eshelby on "The elastic interaction of point defects", manuscript notes headed "Eshelby", elastic constants data. Latest bibliographical reference 1955.
- C.129, C.130 Contents of an envelope divided into two for ease of reference.
- Manuscript notes, drafts, calculations including "A note on the crystallization of polymers", a note addressed "Dear Nevill [Mott]" beginning "I take up the discussion of Mrs. Tipper's fracture in glass which you sent me some weeks ago", and "A note on transformation stresses"; also Courtaulds research report dated March 1956.
- C.131 "X-ray diffuse scattering due to defects in diamond", 8 May 1956. 5pp manuscript draft.
- C.132 Application for patent in respect of "Process for improving the mechanical properties of diamonds" 14 May 1956, with related correspondence 1956, 1957. See also C.140.
- C.133 General Electric Research Laboratory report on "Polygonization" by W.R. Hibbard and C.G. Dunn November 1956, with Frank's manuscript notes and calculations.

- C.134 "On Schrödinger's cat, states and statements", 7 April 1957. 4pp manuscript draft.
- C.135, C.136 Manuscript and typescript notes and drafts, diagrams etc; also letter from N.F. Mott requesting information on work of students of Frank on the "Peierls-Nabarro force", 18 July 1958. 2 folders.
- C.137 "Draft application" for research on the mechanisms that operate when a metal breaks under fatigue conditions, August 1958. 4pp typescript.
- C.138, C.139 Contents of Frank's folder divided into two for ease of reference. Manuscript and typescript notes and drafts, photographs, correspondence re crystal growth, liquid structures. The correspondence (with J.D. Bernal and others) is dated in 1958 and 1959.
- C.140 "On the melting of carbon", latest bibliographical reference 1959. 7pp manuscript draft. Folder also contains a little earlier (1956) correspondence re patent for improving the mechanical properties of diamonds, found with the draft. See also C.132.
- C.141-C.143 Miscellaneous manuscript and typescript notes and drafts, etc. 1950s. 3 folders.
- C.144 Contents of Frank's folder. Manuscript notes, drafts, calculations etc. re superconductors including 2pp manuscript "On the interactions between magnetic flux and dislocations in superconductors". Latest bibliographical reference 1962.

- C.145-C.148 Manuscript and typescript drafts, notes, calculations re superconductors and superconductivity.
4 folders.
- C.145 Untitled 12pp manuscript beginning "Much practical and theoretical interest now attaches to high field superconductors ... ". Latest bibliographical reference 1962.
- C.146 Miscellaneous manuscript notes and calculations found with the preceding.
- C.147 "On superconductive dynamo geometries", 5pp typescript and 1p figures. Latest bibliographical reference 1963.
- C.148 Untitled 25pp manuscript beginning "There should not be much doubt regarding the substantial correctness of Abrikosov's theory of type II superconductors.
- C.149 Contents of Frank's folder.
Manuscript notes, calculations etc. re superconductivity, nd.
- C.150 Manuscript notes, calculations re superconductivity, nd.
- C.151-C.154 Contents of Frank's folder divided into four for ease of reference.
Manuscript notes, drafts, calculations etc., latest bibliographical reference 1963. Includes material on dislocations.
- C.155 Correspondence and papers re patent for a dynamic-electric machine, 1963-66, 1972. Includes complete specification and assignment and agreement between Frank and the National Research Development Corporation.

- C.156-C.159 Manuscript notes and drafts etc. re geophysics research during extended visit to Institute of Geophysics and Planetary Physics, University of California, La Jolla, San Diego, 1964-65. Includes correspondence with E. Orowan September 1964, March 1965 and manuscript draft "Orowan's argument for earthquake energies and displacements". See also H.50-H.52.
4 folders.
- C.160 "A hypothesis for the form of island arcs and the arcuate mountain ranges", latest bibliographical reference 1964. Manuscript and typescript drafts.
- C.161 Research report for period September 1966 - March 1967, "written 26 May 1967".
- C.162-C.164 Miscellaneous manuscript notes, calculations, diagrams, 1960s.
3 folders.
- C.165 Manuscript calculations found with paper on "Reptation of a polymer chain in the presence of fixed obstacles" by P.G. de Gennes. Latest bibliographical reference 1970.
- C.166 Manuscript notes and drafts "Temperature changes associated with adiabatic decompression in geological processes", "temperature variation in upward flow through a pipe" (not in Frank's hand), etc; also printed matter, letter dated 14 August 1971.
- C.167-C.169 Contents of Frank's folder divided into three for ease of reference.
- C.167 "Functions, mathematical and physical", 17pp manuscript draft.
- C.168 "Unravelling double helices", 3pp manuscript draft and untitled 9pp draft, manuscript notes and calculations. One item dated February 1973.
- C.169 Miscellaneous manuscript notes, calculations.

- C.170 "Alternative rotation centres and the third dimension", 14pp manuscript draft plus tables. 1974.
- C.171 "A note on the systematics of rotation-coincidence lattices", 16pp manuscript draft, tables. 1974.
- C.172, C.173 Contents of Frank's folder divided into two for ease of reference.
Manuscript notes, calculations etc. including 3pp manuscript "Some RC ladder calculations", 28 May 1974.
- C.174 Manuscript notes, calculations including "Gear ratio calculations for Michael [Zarins] - Christmas 1976".
- C.175 Manuscript notes, drafts, calculations etc. including 8pp manuscript re "two-dimensional disclinations" and "two-dimensional analysis of three-dimensional disclinations". One item dated 3 May [1977] when Frank was on an extended visit to Université de Paris-Sud (H.109).
- C.176 Manuscript notes, calculations etc. Includes draft letters 1977.
- C.177 "The effect of mobile boundaries", latest bibliographical reference 1978. 4pp manuscript, etc.
- C.178, C.179 Contents of Frank's folder divided into two for ease of reference.
- C.178 Manuscript calculations found with draft paper by C.P. Buckley on "Theory of crystallisation rates and melting rates for polymer crystals, allowing for finite M.W." For some of his calculations Frank used the back of a Bristol University memo dated 2 October 1979.
- C.179 Manuscript notes, calculations, etc. including 2pp manuscript "Caustics of helicoid" from M. Berry 7 September 1979; also letter from A.H. Windle 3 October 1979.

- C.180 "On the distribution of gauche configurations in a layer of aliphatic chains", 5pp manuscript plus calculations on notepaper of International Liquid Crystals Conference, Bangalore, 3-8 December 1979.
- C.181-C.185 Miscellaneous manuscript notes, drafts, calculations etc., 1970s. 5 folders.
- C.186-C.195 Miscellaneous manuscript notes, drafts, calculations, etc., 1980s. 10 folders. As far as possible this material has been arranged chronologically.
- C.196-C.203 Miscellaneous notes, drafts, calculations, etc., nd. 8 folders.

SECTION D

PUBLICATIONS

D.1-D.271

D.1-D.170

DRAFTS

D.171-D.270

EDITORIAL CORRESPONDENCE

D.271

PUBLISHED PAPERS

DRAFTS

A chronological sequence of material relating to publications or to the intention to publish, ranging from fully-prepared drafts to references in editorial correspondence. Where applicable reference has been made to Frank's List of Publications (reproduced at pp.224-235) in the form *Bibliog.*
...

- D.1, D.2 "Dipole induction and the solvent effect in dipole moment measurement". *Bibliog.* 1, 1935.
- D.1 60pp typescript bound in soft covers.
- D.2 Manuscript notes, diagrams and calculations found with preceding.
- D.3 "An electrical investigation of solutions of stearanilide in paraffin wax", with W. Jackson. Not listed in *Bibliog.* but published in *Trans. Far. Soc.* 31 (1935).

16pp typescript.
- D.4 "Electrical evidence on calcite imperfections". *Bibliog.* 2, 1936.

4pp typescript with manuscript corrections; related manuscript notes.
- D.5 "The carbon valency angle and dipole induction in benzyl compounds". Not listed in *Bibliog.* but published in *J. Chem. Soc.* (1936).

12pp typescript with extensive manuscript annotation and correction; letter to editor dated "31/8/36" enclosing final page of proof with correction.
- D.6 "On high dielectric constants". Not listed in *Bibliog.* but published in *Trans. Far. Soc.* 33 (1937).

Incomplete 12pp typescript with manuscript corrections.

- D.7, D.8 "Ordnung and Umwandlung in kondensierten Phasen", with K. Wirtz. *Bibliog.* 5, 1938.
- D.7 40pp typescript with manuscript corrections and 1p manuscript addition between pp.9 and 10.
- D.8 Chiefly correspondence from Wirtz, 1938, 1939. Frank worked with Wirtz while at the Kaiser Wilhelm Institut für Physik. Berlin, 1936-38.
- D.9 "Physical Chemistry of Surfaces Annual Meeting of the Bunsen-Gesellschaft". Not listed in *Bibliog.* but published in *Nature* 142 (1938).

Proof copy of Frank's report on the meeting of 2-3 June 1938. Further material relating to this conference may be found at A.10.
- D.10 "Transition stages between order and disorder in condensed phases". Not listed in *Bibliog.* but published in *Nature* 142 (1938).

14pp typescript.
- D.11-D.13 "Melting as a disorder phenomenon". *Bibliog.* 7, 1939.

This paper was communicated to the Royal Society by N.V. Sidgwick under the title "A new theory of melting points". At the suggestion of the paper's referee Frank rewrote the paper from p.3 and retitled it.
- D.11 8pp typescript draft of original paper; related correspondence; referee's report.
- D.12 15pp typescript draft of revised paper; proof copy of revised paper with manuscript annotation and correction.
- D.13 Miscellaneous manuscript notes, figures, references.

- D.14 Correspondence with Julius Springer Verlagsbuchhandlung, 1939. Frank agreed to revise the Table of Activity Coefficients of Strong Electrolytes for the sixth edition of "Landolt-Börnstein'schen Tabellenwerkes". Includes copy of contract dated 21 March 1939.
- D.15 "Theory of crystal growth". Nd. but latest bibliographical reference, 1945.
7pp manuscript draft.
- D.16 "The molecular structure of deeply super-cooled water". *Bibliog.* 8, 1946.
6pp manuscript draft dated "7.10.45"; related correspondence chiefly with *Nature*, K. Lonsdale and A.R.J.P. Ubbelohde.
- D.17, D.18 "A comparison of Debye's and Onsager's theories of the dielectric constants of concentrated polar media". *Bibliog.* 9, 1946.
See also D.19-D.21.
- D.17 Exercise book containing manuscript draft with loose manuscript notes at front and back.
- D.18 8pp typescript with manuscript annotation and correction; related manuscript notes.
- D.19-D.21 "Some mathematical models representing polar molecules in crystals". *Bibliog.* 10, 1946.
Frank submitted this article to *Trans. Far. Soc.* as four papers, with *Bibliog.* 9 (D.17, D.18) as a fifth. Following criticism of the first four papers on the grounds of length and age (being written in 1939) Frank revised and condensed them into one article. Criticism by E.A. Guggenheim of the fifth paper was, however, rebutted.
- D.19 Typescript of parts I-IV of "Mathematical models for crystals of polar molecules".
- D.20 Brief correspondence; proof of condensed paper.

- D.21 1945 Radio Research Board papers "The anomalous dispersion of water at very high radio frequencies in the temperature range 0°C to 40°C" by J.A. Saxton, and "The dielectric properties of water in the temperature range 0°C to 40°C for wavelengths of 1.24cm and 1.58cm" by Saxton and J.A. Lane. Found with D.17-D.20.
- D.22 "The mass of the neutrino". *Bibliog.* 12, 1947.
- 10pp typescript with extensive manuscript correction, and with manuscript and typescript revisions; correspondence, chiefly with N.F. Mott and the Physical Society 1945-47; manuscript notes and calculations.
- D.23 Card from *Nature*, 8 April 1947, acknowledging receipt of "Segregation of radioactive elements in the Earth's crust". Not listed in *Bibliog.*
- Letter from N. Feather, 4 November 1947, re "An isotopic abundance rule and its bearing on the origin of the nuclei" (*Bibliog.* 14).
- Letter from Central Office of Information, 17 December 1947, requesting permission to send Frank's paper "Hypothetical alternative energy sources for the 'second meson' events" (*Bibliog.* 13) for publication abroad.
- D.24 "A theory of the shape of growth pyramids on crystals". Nd. but latest bibliographical reference 1947. Not listed in *Bibliog.*
- 11pp manuscript draft; manuscript notes.
- D.25 Brief correspondence, 1948, 1949, re "The Age of Lead", submitted to *Nature* 23 December 1948. Frank enquired of E.C. (later Sir Edward) Bullard whether he should seek to have it published elsewhere. Not listed in *Bibliog.*
- Covering letter to Physical Society, 31 December 1948, sent with "Sessile dislocations" (*Bibliog.* 17).
- Brief correspondence, March, June 1949, re revision and correction of "One-dimensional dislocations" by Frank and J.H. van der Merwe published in four parts in *Proc. Roy. Soc. Lond.* 1949-50 (*Bibliog.* 22, 23, 24, 27).

/D.25 continued over ..

Letter from *Research*, 12 October 1949, acknowledging receipt of "Diffraction by a screw dislocation" (*Bibliog.* 20). With Frank's reply.

Brief correspondence with L.J. Griffin, October, November 1949, re submission of papers on crystal surfaces. Frank, Griffin and N.F. Mott had each prepared a paper on this subject. It was agreed that Mott would submit his to *Nature* whilst Frank's and Griffin's were offered for publication in *Phil. Mag.* Frank's "Note on the structure of a crystal surface" immediately followed Griffin's in *Phil. Mag.* 41 (1950) (*Bibliog.* 25).

Letter from B.M. Crowther, editor of "Science Abstracts", 23 November 1949 apologising for a mistake made in the abstraction of "Role of dislocations in crystal growth" by Frank, W.K. Burton and N. Cabrera, *Nature* 168 (*Bibliog.* 18).

D.26 Correspondence with Royal Society, 1949-50, re revision of "Radially symmetric phase growth controlled by diffusion" for publication in *Proc. Roy. Soc. Lond.* (*Bibliog.* 26).

"Multiplication processes for slow moving dislocations", with W.T. Read. *Bibliog.* 28, 1950.

4pp duplicated typescript with manuscript annotation plus correction and figures.

D.27 "On the interpretation of the 'vapor snake' in freezing cyclohexane". Not listed in *Bibliog.* but published in *J. Chem. Phys.* 18 (1950).

6pp manuscript draft; letter accepting the paper for publication.

D.28 "The equilibrium of linear arrays of dislocation", with J.D. Eshelby, H. Heilbronn and F.R.N. Nabarro. *Bibliog.* 29, 1951.

23pp typescript.

D.29 "The growth of crystals and the equilibrium structures of their surfaces", with W.K. Burton and N. Cabrera. *Bibliog.* 30, 1951.

3pp typescript summary with plates for figures 3 and 4.

"Dislocations as promoters of crystal growth: Theory". The opening sentence "This section summarizes recent contributions to the theory of crystal growth by Burton, Cabrera and Frank ... " refers to work done 1949-51.

4pp manuscript draft.

- D.30, D.31 "Crystal growth and dislocations". *Bibliog.* 37, 1952.
- D.30 39pp typescript and manuscript draft.
- D.31 Plates and legends for figures; references.
- D.32 Untitled 6pp manuscript draft beginning "In this fearfully plastic subject of plasticity, one looks for something firm to hold on to." Relates to work by Frank and A.N. Stroh on kinking (*Bibliog.* 38, 1952).
- D.33 "Martensite". *Bibliog.* 41, 1953.
- Manuscript notes; plates and legends for figures. With letter from J.K. MacKenzie and J.S. Bowles, 10 April 1953, re errors in the paper, and manuscript draft of note by Frank (probably for *Acta Metallurgica*) acknowledging errors.
- D.34 Letter from R.W. Cahn, 2 March 1953 re "the ms. of your new paper on dislocation networks" (probably *Bibliog.* 45).
- "Assignment of Burgers Vectors to a hexagonal grid of dislocations in a crystal with f.c.c. Bravais Lattice". Nd. but latest bibliographical reference, 1953.
- 12pp typescript with manuscript corrections; plates for figures; manuscript notes.
- Untitled 3pp manuscript draft beginning "Hedges and Mitchell (1953) describe patterns of lines revealed by photolytic silver in the interior of silver bromide crystals", possibly related to the preceding.
- D.35, D.36 "A study of etch patterns on aluminium surfaces", with A.J. Forty. Not listed in *Bibliog.* but letter from Forty to Frank, 11 October 1954, suggests the paper be submitted to *Acta Metallurgica*.
- D.35 Letter from Forty; 20pp manuscript draft by Forty plus 3pp manuscript appendix; 5pp manuscript appendix by Frank.
- D.36 Figures, mounted on card.

- D.37, D.38 "Convection phenomena in connection with horizontal solidification". Nd. but last page of draft is dated on back 8 January 1954. Not listed in *Bibliog.*
- D.37 24pp manuscript; figures.
- D.38 Manuscript notes.
- D.39 "Chemistry of crystal dislocations". *Bibliog.* 46, 1955.
Proof copy of chapter for *Chemistry of Solid State*, ed. W.E. Garner (Butterworths, London). Folder also includes earlier letter from Butterworths, 16 June 1952, re proposed chapter on "structure of solids" for a planned book *Chemistry of Solids*.
- D.40 "Cementite morphology in pearlite", with K.E. Puttick. *Bibliog.* 49, 1956.
12pp manuscript.
- D.41 "The origin of dislocations in crystals grown from the melt". *Bibliog.* 50, 1956.
4pp typescript; manuscript notes.
"The mechanism of diffusion of copper in germanium", with D. Turnbull. *Bibliog.* 52, 1956.
4pp typescript "1st draft".
- D.42 "The growth of tobacco mosaic particles", with G.W. Sears. Not listed in *Bibliog.*
4pp typescript; letter from Sears 18 March 1957 describing it as "a rough draft of the proposed note".
- D.43 "Diffusion of Copper in Germanium". Not listed in *Bibliog.*
4pp typescript plus figures and references; duplicated typescript discussion comments; proof copy with manuscript corrections; manuscript notes and calculations. The paper was probably written shortly after *Bibliog.* 52 (D.41).

- D.44, D.45 "Complex alloy structures regarded as sphere packings", with J.S. Kasper. *Bibliog.* 57 and 67, 1958 and 1959.
- This paper was published in *Acta Cryst.* in two parts: "Definitions and basic principles" and "Analysis and classification of representative structures". See also E.18, and H.28.
- D.44 22pp typescript copy of part I; manuscript notes and diagrams; letter from *Acta Cryst.*, 31 January 1958.
- D.45 37pp typescript "rough draft" of part II; manuscript notes and diagrams; brief correspondence from Kasper, 1957, 1958.
- D.46, D.47 "Etch pits and trigons in diamond", with K.E. Puttick and E.M. Wilks. *Bibliog.* 62 and 63, 1958.
- This paper was published in *Phil. Mag.* in two parts.
- D.46 5pp manuscript draft of appendix to part I, with plates for figures; 13pp typescript copy of part II, with plates for figures.
- D.47 "Statistical Data on Etch Pits". Contents of an envelope so inscribed.
- D.48 "On the stability of dislocations in metal whiskers", with J.P. Hirth. Not listed in *Bibliog.* but published in *Phil. Mag.* 3 (1958).
- 12pp typescript plus figure.
- D.49 "On fold configurations in crystalline polyethylene". Nd. but latest bibliographical reference, 1959.
- 18pp manuscript draft; 11pp typescript plus figures; 5pp manuscript appendix; manuscript notes.
- D.50 "Future of the general degree in British universities. *Bibliog.* 73, 1960.
- 4pp typescript with covering letter to *Nature*, 17 December 1960; incomplete typescript draft of Frank's opening speech at the Home Universities Conference (first four pages missing) on which the article was based.

- D.51, D.52 "Orientation-dependent dissolution of germanium", with M.B. Ives. *Bibliog.* 75, 1960.
- D.51 11pp typescript "Draft Copy" plus figures; covering letter from Ives, 23 October 1958.
- D.52 11pp typescript "Corrected MS"; correspondence from Ives 1960.
- D.53 Untitled 5pp typescript draft by Frank and A. Keller beginning "The existence of single crystals in polymers is by now well established. Polyethylene in particular crystallizes in the form of paraffin type lozenges ... " Undated but bibliographical references suggest it was written shortly following *Bibliog.* 70, 1959. With photographs for figures.
- D.54, D.55 Correspondence, 1957, 1959, 1960, with Pergamon Press re articles for a Dictionary of Physics. Frank was asked in 1957 to write on "Crystal growth" for vol. 1, and "Dislocations" and "Frank-Read source" for vol. 2, and in 1959 for a further contribution on "Dislocation theory". None listed in *Bibliog.*
- D.54 Correspondence; proof copies of articles on "Dislocations" and "Frank-Read Source".
- D.55 21pp manuscript draft of "Crystal Growth"; manuscript notes found with it.
- D.56 "On surface bending moments and the properties of the phase boundary between superconductive and normal metal". Nd. but latest bibliographical reference, 1962.

15pp manuscript draft and 1p summary.
- D.57 "Theory of sequential processes and its application to the crystallization of high polymers", with M.P. Tosi. *Bibliog.* 78, 1962.

10pp duplicated typescript; manuscript notes found with it.

- D.58 "Linear compounds of dislocations in silver chloride with cupric ions", with A.S. Pârasnis and J.W. Mitchell. *Bibliog.* 74, 1963.
- Originally a paper written by Frank on the basis of observations by Pârasnis, Mitchell was invited to become the third co-author because he had planned the experiments from which Pârasnis's observations derived. Mitchell raised a number of objections to details and prepared a revision under the title "Lozenge shaped dislocation loops in crystals of silver chloride containing cupric chloride".
- 14pp typescript draft plus figures of "Linear compounds ... " (not as published); 8pp typescript draft by Mitchell of "Lozenge shaped dislocation loops"; figures and photographs for the final version of the paper; correspondence, June-November 1960, between Frank, Pârasnis, Mitchell, and J.T. Bartlett, with whom Frank discussed the findings of Pârasnis.
- D.59 "Geometrical thermodynamics of surfaces". *Bibliog.* 80, 1963.
- This was a contribution to a seminar on Metal Surfaces organised by the American Society of Metals, published as chapter one of *Metal Surfaces*.
- 24pp photocopied manuscript draft plus figures; letter from American Society of Metals enclosing proof copy (not found), 6 May 1963.
- D.60 "The strength of polymers". *Bibliog.* 82, 1964.
- 17pp typescript. See also F.333.
- D.61 "On seismic radiation from a slipping fault". Not listed in *Bibliog.* but written 1964-65 whilst visiting Institute of Geophysics and Planetary Physics, La Jolla (H.50-H.52).
- 23pp typescript plus figures.
- D.62 "On theory of fracture in relation to Earthquakes". Not listed in *Bibliog.* but written 1964-65 whilst at La Jolla.
- 10pp manuscript; manuscript notes.

- D.63-D.65 "On the state and evolution of the Earth's mantle". Not listed in *Bibliog.* but written 1964-65 whilst at La Jolla.
- D.63 Manuscript draft in American A4 notepad with manuscript notes interleaved.
- D.64 56pp typescript plus figures.
- D.65 Note to "George B[ackus]" asking for comments (which have been written on the back of the note) and references, with list of references from Backus.
- D.66 "On dilatancy in relation to seismic sources". *Bibliog.* 83, 1965.

46pp typescript plus references; manuscript notes; related correspondence with American Geophysical Union, 1965, and E. Orowan. See D.70, D.71.
- D.67 "On Miller-Bravais indices and four-dimensional vectors". *Bibliog.* 84, 1965.

15pp typescript.
- D.68 "Deduction of earth strains from survey data". *Bibliog.* 86, 1966.

Correspondence 1965, 1966, chiefly with Seismological Society of America. Also includes comments on paper by G. Backus.
- D.69 "A European Physical Society?". *Bibliog.* 87, 1966.

Frank attended the European meeting on collaboration in physics organised by the Italian Physical Society, Pisa, 16-17 April 1966 (H.58, H.59). His report was published by the Institute of Physics.

12pp manuscript and 14pp typescript drafts; brief correspondence with Institute of Physics.

- D.70, D.71 "A further note on dilatancy in relation to seismic sources".
Bibliog. 88, 1966.
- D.70 10pp manuscript and 8pp typescript drafts; related
correspondence with American Geophysical Union.
- D.71 Material found in folder inscribed "Prof. Frank 'A further note
on dilatancy in relation to seismic sources' ". Includes
"Fault displacement and energy release in shallow-focus
earthquakes" by E. Orowan; miscellaneous manuscript notes and
references.
- D.72-D.77 "Reflections on Sadi Carnot". *Bibliog.* 89, 1966.

Frank's interest in Sadi Carnot, the founder of thermodynamics,
first found expression in his inaugural lecture as Professor
of Physics delivered 29 April 1955. This was published in 1966
in the first issue of *Physics Education*.

D.77 relates to a planned longer work on the scientific
contribution of Carnot to the study of thermodynamics (F.C.F.,
private communication, 9 September 1989).
- D.72 16pp typescript draft of lecture with manuscript additions and
corrections for publication; plates; related correspondence.
- D.73 Correspondence with Institute of Physics, 1964-66, re
publication of "Reflections ... "; correspondence arising.
- D.74 Correspondence with and background information from V.K. LaMer,
Professor of Chemistry, Columbia University, author of a number
of papers on Carnot, 1955. Includes reprints of four of his
papers.
- D.75 Background material, including information from L. Rosenfeld,
1954.
- D.76 Exercise book used from the front and from the back for notes
on Carnot. With loose manuscript notes interleaved.

- D.77 Hardback notebook intended for first draft of planned book, with first page headed "The elements of thermodynamics according to the methods of Sadi Carnot". Only "Chapter I: Glossary" has been written, space having been left for an Introduction to be added later. Loose manuscript notes inside front cover.
- D.78 Material re "Internal magnetic domain structure investigations in iron-silicon single crystals", by Frank, A.R. Lang, J. Kaczér and M. Polcarová. (*Bibliog.* 90).
- Frank's contribution to this paper arose from comments he made on a paper by Lang, Kaczér and Polcarová, "Investigation of internal magnetic domain structure of Fe-Si single crystals by x-ray diffraction topography".
- Includes "2nd draft" of "Investigation ...", Frank's comments, three photographs from envelope, inscribed "Newer (110) chevrons and lozenges", found with the material, etc.
- D.79 "Regelation: a supplementary note". *Bibliog.* 92, 1967.
- 15pp typescript.
- D.80, D.81 "On the theory of Hertzian fracture", with B.R. Lawn. *Bibliog.* 93, 1967.
- D.80 25pp typescript with photographs for figures and illustration.
- D.81 Manuscript notes and calculations found with the preceding.
- D.82 "Curvature of island arcs". *Bibliog.* 97, 1968.
- 2pp typescript; photocopy of *Times Science Report* for 30 October 1968 reporting Frank's theory of "why certain chains of islands lie on curves of a particular shape"; 4pp typescript draft "A hypothesis for the form of island arcs and arcuate mountain ranges", unpublished, latest bibliographical reference 1964.

- D.83 "Two-component flow model for convection in the Earth's upper mantle". *Bibliog.* 98, 1968.
8pp typescript.
- D.84 Brief correspondence from *Materials Research Bulletin*, 1969, 1970 re possible contribution to the August 1970 issue honouring Sir Nevill Mott on his 65th birthday.
Letter of 12 January 1970 is annotated "31 July Telephoned Prof. Hirsch ... Agreed to furnish chapter, written jointly with John Steeds". This refers to Frank's contribution to the "Mottschrift" edited by P.B. Hirsch (D.120).
- D.85 "On Lyttleton's extensions of Ramsey's theory of the nature of the core of the earth". *Bibliog.* 105, 1971.
7pp typescript with extensive manuscript correction; brief correspondence re referee's report.
- D.86 "On the capillary bonds between grains in moist sand". *Bibliog.* 106, 1971.
5pp manuscript draft; 4pp duplicated typescript proof with manuscript annotation and correction; related correspondence, chiefly with British Ceramic Society, 1970, 1971.
- D.87 "Polymer chain extension produced by impinging jets and its effect on polyethylene solution", with A. Keller and M.R. Mackley. *Bibliog.* 107, 1971.
Frank's 3pp manuscript draft annotated "For Mackley & Keller ... "
- D.88-D.93 "Biographical Memoir of Cecil Frank Powell 1903-1969", with D.H. Perkins. *Bibliog.* 108, 1971.
The Royal Society invited Frank and Perkins to write the memoir in December 1969. Frank had written tributes to Powell for *The Times* (11, 16 August 1971), *Scientific World* (*Bibliog.* 101) and *Science Today* (December 1969).
As joint author of the memoir Frank was asked in 1977 to write an entry on Powell for the *Dictionary of National Biography*.
- D.88 17pp manuscript draft for memoir; proof with manuscript correction.

- D.89 Appendix for memoir, by A.M. Tyndall, with related correspondence.

The appendix was Tyndall's "Early history of C.F. Powell's contribution to the study of nuclear processes by the photographic method", written following Powell's receipt of the 1950 Nobel Prize for Physics. Tyndall explained "It is probable that by the time an obituary of C.F. Powell is required, no-one will be living who watched from the beginning, as I did, the work which led to his Nobel Prize". Tyndall died in 1961.

- D.90 Correspondence, 1969-72, re memoir, including request to V.F. Weisskopf for information, and correspondence with colleagues to whom copies of the memoir were sent; background information and notes.

- D.91 Correspondence with Edizioni scientifiche e tecniche, publishers, 1972, 1973, who sought permission to reproduce a plate of a drawing by Powell.

- D.92 Correspondence with *Dictionary of National Biography*, 1977, 1978 re notice on Powell; requests for further information on Powell from Isobel Powell (widow), J. Rotblat etc; 5pp typescript draft of Frank's notice.

- D.93 "A history of the Department of Physics in Bristol, 1876-1948, with personal reminiscences", by A.M. Tyndall, August 1958, including brief account of Powell's work at Bristol leading to the Nobel Prize. 34pp duplicated typescript plus appendices.

- D.94 "R & D : the proper balance". Not listed in *Bibliog.* but dated 12 December 1971.

3pp manuscript and typescript drafts; manuscript notes and calculations. See also F.335.

"A commentary on 'Computer Models of Polyethylene Spherulites: Thornton & Predecki' ". Not listed in *Bibliog.* but dated 31 December 1971.

4pp typescript.

- D.95, D.96 Hardback notebook and material found loose at front and back.
- D.95 Notebook used from the front for "Ch.I Words, words, words", probably draft of first chapter of planned book on thermodynamics. The loose correspondence (D.96) is dated 1971 and the notebook has both decimal and pre-decimal prices inside front cover.
- D.96 Loose manuscript notes, and brief correspondence from F.R.N. Nabarro, February, April 1971.
- D.97 "On the kinematic theory of crystal growth and dissolution processes, II". *Bibliog.* 109, 1972.
- This paper, written for *Zeitschrift für Physikalische Chemie* on the occasion of I.N. Stranski's 75th birthday, was a sequel to a 1958 paper of the same title (*Bibliog.* 66).
- 19pp manuscript draft; proof with manuscript corrections; related correspondence; manuscript diagrams and notes.
- D.98 "An outline of nucleation theory". *Bibliog.* 110, 1972.
- 7pp manuscript draft and 5pp typescript proof with manuscript corrections.
- D.99 "The future of crystal growth". *Bibliog.* 111, 1972.
- 7pp manuscript draft and 5pp typescript proof with manuscript corrections.
- D.100 "Contributions to study of capillary bonds between grains in moist sand". *Bibliog.* 112, 1972.
- Following Frank's earlier paper on this subject (*Bibliog.* 106; D.86), G. Mason prepared a paper "Capillary bonds between grains in moist sand" sending a copy to Frank, who was also asked to referee it. Frank approved it for publication and wrote a short paper in response. Both were published in the same issue of *Transactions and Journal of the British Ceramic Society*.
- 2pp typescript draft of Frank's paper; copy of Mason's paper with covering letter; related correspondence.

- D.101, D.102 "A note on the reading of Kossel patterns". *Bibliog.* 113, 1972.
This was written for W.G. Burger's 75th birthday Festschrift.
- D.101 17pp manuscript draft; proof with manuscript corrections; manuscript notes.
- D.102 Related correspondence, chiefly with A.Q. Khan, editor of the volume, 1971-72.
- D.103-D.107 "On plate tectonics, the analogy with glacier flow, and isostasy". *Bibliog.* 114, 1972.
This was written for D.T. Grigg's 60th birthday Festschrift.
- D.103 14pp manuscript draft plus figures; 12pp typescript and manuscript draft plus figures.
- D.104 Editorial correspondence, 1971-72.
- D.105, D.106 Manuscript notes.
2 folders.
- D.107 17 slides illustrating aspects of plate tectonics.
- D.108 "Dislocation models for fault creep processes". *Bibliog.* 115, 1973.
2pp typescript synopsis; 5pp typescript with manuscript correction. See F.335.
- D.109 "The equilibrium shape of gas-filled voids in a solid". *Bibliog.* 119, 1973.
4pp typescript proof with manuscript corrections.

- D.110 "On the meaning of 'the direction of the molecules', or 'the director' in liquid crystals", with appendix by M.V. Berry. Not listed in *Bibliog.* but found in folder inscribed "On the meaning of ... molecules etc. 1973".
- This is related to the lecture Frank gave at the International Conference on Liquid Crystals, Bangalore, 3-8 December 1978, "What is the director of a liquid crystal?" (H.126).
- 15pp manuscript draft, with 6pp manuscript appendix by Berry; 1p manuscript ?summary.
- D.111 "Earthquakes and the Chandler Wobble". Not listed in *Bibliog.* but published in *Nature* 245 (1973).
- Frank was asked by *Nature* in July 1973 to prepare a short editorial for its "News and Views" section on the importance of two papers by D. Pines and J. Shaham on the subject of elastic energy in the Earth. Reading through the papers Frank raised a number of objections which delayed publication of the second article, and of the editorial, until 14 September.
- 2pp typescript; proof; correspondence with *Nature*, Pines and Shaham.
- D.112 "Descartes' observations on the Amsterdam snowfalls of 4, 5, 6 and 9 February 1635". *Bibliog.* 122, 1974.
- 8pp typescript; manuscript notes; transparencies.
- D.113 "The meniscus in Czochralski growth", with W. Bardsley, G.W. Green and D.T.J. Hurle. *Bibliog.* 125, 1974.
- 8pp typescript "Amended version" plus figure; correspondence, chiefly with Hurle; manuscript notes.
- D.114 "Nucleation-controlled growth on a one-dimensional growth front of finite length". *Bibliog.* 126, 1974.
- 5pp typescript draft with 2pp appendix added following a referee's report; correspondence with J.I. Lauritzen Jr. (in response to whose paper Frank's article was written) and *Journal of Crystal Growth*.

- D.115 "On the formulation of microscopic rate equations", with D. Robertson. *Bibliog.* 128, 1974.
6pp typescript; editorial correspondence 1972-73.
- D.116, D.117 "A note on crystal growth by surface nucleation". Latest bibliographical reference, 1974.
- D.116 12pp manuscript draft; 7pp manuscript ?appendix.
- D.117 Manuscript notes and calculations found with the preceding.
- D.118, D.119 "Flow-induced extension of polymer molecules in solution using a four roll mill", with D.G. Crowley, M.R. Mackley, D.P. Pope and R.G. Stephenson. Not listed in *Bibliog.* but annotated "Submitted *J. Polym. Sci.* 10.7.75".
- D.118 22pp typescript.
- D.119 15pp figures.
- D.120 "Crystal dislocations", with J.W. Steeds. Not listed in *Bibliog.* but published as chapter two of the "Mottschrift" *The Physics of Metals : 2 Defects*, ed. P.B. Hirsch (Cambridge 1975). See D.84.
35pp typescript draft plus references and figures; correspondence with Hirsch 1969-73.
- D.121 "Localized flow birefringence of polyethylene oxide solutions in a two roll mill", with M.R. Mackley. *Bibliog.* 132, 1976.
13pp typescript plus figures; 9pp photocopied manuscript "Vortex stretching" dated April 1975 (not by Frank).

- D.122, D.123 "On Grüneisen's Gamma". Not listed in *Bibliog.*, submitted to *Nature*, September 1976.
- Frank spoke "On the significance of Grüneisen's Gamma" at a Royal Astronomical Society meeting in November 1976 (H.107).
- D.122 7pp manuscript draft; 6pp typescript; editorial correspondence.
- D.123 Manuscript notes, figures and calculations, and two transparencies.
- D.124 "Thermodynamics of smectic mixtures". *Bibliog.* 134, 1977.
- 3pp typescript with manuscript corrections, annotated "Jacques [?Friedel]: Any comments? I have put a copy on de Gennes' desk. ?Offer to J. de Physique Lettres?"
- "Crystal properties and crystal defects of magnetic domain structures". Not listed in *Bibliog.* but dated 24 March 1977.
- 13pp manuscript draft.
- D.125 "Sur une nouvelle classe de défauts dans les phases lamellaires", with M. Kléman. Not listed in *Bibliog.* but correspondence from Kléman is dated 1977-78.
- 19pp typescript draft plus figures; correspondence with Kléman; manuscript notes and calculations.
- D.126 "Airy functions in the air : a simple way with stress problems". *Bibliog.* 135, 1978.
- 20pp manuscript draft, draft of covering letter with letter of acceptance.
- D.127 "Nullius in Verba". Contents of an envelope so inscribed.
- Drafts, correspondence, manuscript notes etc. on the motto of the Royal Society and its coat of arms, for possible publication in the Royal Society's *Notes and Records*. 1978.

- D.128 "The liquidus temperature and growth-dissolution kinetics of garnet liquid phase epitaxy", with E.A. Giess and M.M. Faktor. Not listed in *Bibliog.* but published in *Journal of Crystal Growth* 46 (1979).
- 4pp photocopied manuscript draft plus figures; correspondence with Giess; manuscript notes. Acknowledgements on p.4 of draft note that "This work was performed while ... Prof. Sir Charles Frank was a consultant at the I.B.M. T.J. Watson Res. Center" (G.117, G.118).
- Request for short piece on "Otto Hahn's experiment re atomic fission" for East German journal, 12 February 1979. With Frank's 2pp typescript contribution.
- D.129, D.130 "On definitions of supersaturation". Not listed in *Bibliog.* but draft inscribed "Rec'd 25th Sept 79".
- This was originally submitted to *Journal of Crystal Growth* in September 1979 but returned for revision in view of referee's reports and not resubmitted. "Definitions of supersaturation" was delivered as a lecture during Frank's 1980 visit to USA (G.119, H.140-H.142).
- D.129 15pp typescript; referee's reports; 3pp manuscript draft appendix.
- D.130 Manuscript notes.
- D.131 "On the possible effect of growth-layering on optical symmetry in cubic crystals". *Bibliog.* 137, 1980.
- Proof copy with manuscript correction; brief editorial correspondence.
- D.132 "Evidence of a tilted columnar structure for mesomorphic phases of benzene-hexa-n-alkanoates", with S. Chandrasekhar. *Bibliog.* 138, 1980.
- 13pp typescript plus figures; editorial correspondence, including referees' reports and amendment to paper.
- D.133 "Can knotted configurations (textures) exist as stable defects of a nematic?" Not listed in *Bibliog.* but "Sent 15 Aug 80 to Dr. M. Kléman ... I propose to send it to J. de Phys. Lettres".
- 10pp manuscript draft.

- D.134, D.135 "The Frank-Read Source". Not listed in *Bibliog.* but published in *Proc. Roy. Soc. Lond. A* 371 (1980).
- This was Frank's contribution to a Royal Society meeting 30 April - 2 May 1979 on "The beginnings of solid state physics". The contributions were edited for publication by N.F. Mott.
- D.134 Correspondence, chiefly with Mott, 1978-80. Includes 5pp typescript of Frank's contribution.
- D.135 Copies of other contributions.
- D.136 Brief editorial correspondence, June 1980, re acceptance of "Edge dislocations as crystal growth sources" (*Bibliog.* 139) for publication.
- D.137, D.138 "Foreword" to *Morphology of Crystals*, ed. I. Sunagawa (Tokyo and Dordrecht, ?1982). Not listed in *Bibliog.*
- D.137 6pp manuscript draft; correspondence with Sunagawa.
- D.138 Information on morphology from D.M. Sadler; manuscript notes.
- D.139 "M. Moiré?". Not listed in *Bibliog.* but published as letter in *Phys. Bull.* 34 (1983).
- 2pp typescript copy; background information; correspondence arising.
- D.140 "The icosahedral orientation manifold as a model for icosahedral close-packing". *Bibliog.* 143, 1986.
- Incomplete 10pp photocopied manuscript draft with manuscript abstract; 4pp typescript with manuscript corrections; manuscript notes and calculations.

- D.141-D.158 "Prince Rupert's Drops", with L. Brodsley and J.W. Steeds. *Bibliog.* 144, 1986.
- Frank lectured on "Prince Rupert's Drops - a long chapter in the history of Materials Science" to Bristol University Convocation and Association of Alumni, 7 March 1978. He delivered this lecture a number of times thereafter, in India (H.130, H.132) and to visiting students from Indiana State University (D.143).
- Frank's interest in this subject led to collaboration with a Bristol colleague, J.W. Steeds, and L. Brodsley, then Visiting Lecturer in the Department of English, University of California Los Angeles, who had written to the Royal Society 28 January 1983 offering an article on Prince Rupert's Drops for publication in *Notes and Records*. Sir William Paton, editor, suggested to Frank (who had also been planning an article for *Notes and Records*) that a joint paper might be in order.
- D.141-D.143 *Lecture.*
- D.141 15pp typescript and manuscript draft of 1978 lecture.
- D.142 Correspondence re lecture, January-March 1978; notice of lecture; transparencies; photographs of Drops.
- D.143 Brief correspondence from C.C. Sartain, 1979, 1981 re lecture on Drops to Indiana State University History of Physics in Great Britain class, 26 June 1979.
- D.144-D.158 *Publication.*
- D.144 47pp typescript final draft.
- D.145 Typescript and manuscript draft sections of the paper with Frank's manuscript annotation and correction.
- D.146 Brodsley's 34pp typescript first draft with Frank's manuscript corrections and 2pp manuscript comments.

- D.147-D.151 Correspondence, 1978, 1979, 1983-86. That 1983-86 is chiefly with co-authors.
- 5 folders.
- | | | | |
|-------|-------------------------|-------|------------|
| D.147 | 1978 January, February | D.150 | 1984 |
| D.148 | 1978 March, April; 1979 | D.151 | 1985, 1986 |
| D.149 | 1983 | | |
- D.152-D.155 Frank's manuscript notes.
- 4 folders.
- D.156 Photographs of pages of the 1662 and 1676 editions of Marci's *Philosophia Vetus Restituta*, and of Prince Rupert's Drops.
- D.157 Unidentified photographs; figures.
- D.158 Background material.
- 1 box.
- D.159, D.160 "Spontaneous breaking of chiral symmetry in the growth of crystal whiskers: an origin for giant screw dislocations". *Bibliog.* 145, 1987.
- D.159 15pp manuscript.
- D.160 Manuscript notes and computer printouts found with the preceding.
- D.161 "Two-fluid phase separation: modified by a glass transition". *Bibliog.* 148, 1988.
- 7pp manuscript draft plus figures.

- D.162, D.163 "The abundance and origin of the elements". Nd.
- D.162 "I. The equilibrium theory", 23pp manuscript and 22pp typescript drafts.
- D.163 "II. The formation of the heavier nuclei", 27pp manuscript and 26pp typescript drafts.
- D.164 "On the orientation dependence of the cleavage energy of quartz", with J.W. Heavens. Nd.
10pp manuscript draft; manuscript notes.
- D.165 "Phase changes with change of thickness in nematic films which have different anchoring laws at their two surfaces". Nd.
7pp manuscript draft.
- D.166 Untitled 7pp manuscript draft beginning "We start this chapter with a small digression in order to introduce the mathematical concept of orthogonal systems". Nd.
- D.167-D.170 Manuscript drafts on "The phenomena ... which occur at the solidification surface in such processes as the growth of a single crystal at a slow controlled rate from a melt". A covering note to [K.F.] Hulme identifies the material as being for a single paper. Nd.
- D.167 "Solidification fronts in a pure melt".
- D.168 "Solidification fronts in impure melts".
- D.169 "Oscillatory deposition".
- D.170 "Summary of functions, manuscript notes and calculations.

EDITORIAL CORRESPONDENCE

- Academic Press 1971
- D.171 Request for comments on plans to publish work on "The mechanical properties of metals", expressing the hope Frank "will be able to write or edit such a work", 1 March 1971.
- Acta Crystallographica* Various dates 1955-81
- D.172 Chiefly re refereeing.
- Acta Metallurgica* 1971
- D.173 Refereeing.
- Adam Hilger Ltd. 1981
- D.174 Request for report on book on dolomite formation with a view to its possible UK publication, and Frank's report.
- Annual Review of Materials Science* 1979
- D.175 Request to write "a prefatory chapter for volume 11, which is to be published in the summer of 1981" (declined).
- Applied Materials Research* 1964
- D.176 Request for advice on the journal.
- Butterworth & Co. (Publishers) Ltd. Various dates 1949-75
- D.177 Chiefly 1971, 1974 and 1975 letters covering payments of quarterly honoraria and travelling expenses to Frank as a member of the company's Scientific Advisory Board. Letter of 27 June 1975 is on the discontinuation of the Board following "a review of our Scientific Publishing".

- Cambridge Philosophical Society 1971
- D.178 Refereeing for Society's *Proceedings*.
- Canadian Journal of Physics* 1975
- D.179 Refereeing.
- Clarendon Press, Oxford 1967, 1973
- D.180 Re Clarendon Press series Monographs on the Physics and Chemistry of Materials. Sir Nevill Mott sought Frank's advice on a proposed book on structure and properties of polymers, 1967. H. Fröhlich invited Frank to write for the series, 1973, but Frank replied "My retirement is due in 1976. I don't know whether I will write any book, but I am sure I won't before then."
- Commission des Publications Françaises de Physique 1968-83
- Frank was invited to become a member of the Commission, run jointly by the Société Française de Physique and the Centre National de la Recherche Scientifique, in June 1971. The role of the Commission, established 1967, was to uphold the quality of papers published by the *Journal de Physique* and the *Revue de Physique Appliquée*. In addition to refereeing papers for the Commission, Frank attended many of its meetings in Paris at which wider issues, such as the integration of European physics journals, were discussed.
- D.181-D.190 General correspondence and papers, and papers for Commission meetings 1971-77.
- D.181 1971. Includes invitation to join Commission, 23 June, and acceptance, 1 December.
- D.182 1972 January. Includes material re the formulation of common scientific symbols and abbreviations in European physics journals.
- D.183 1972 May-December. Frank attended the meetings on 5 June and 27 November.

- D.184 1973.
- D.185 1974 February-June. Frank attended the 25 February meeting.
- D.186 1974 September, October. Frank attended the 14 October meeting.
- D.187 1975 February, March. Frank attended the 11 March meeting. Includes letter, 17 March, re "the problems of *any* journal in Applied Physics". Frank concluded "there is room in Europe for one, and only one, journal of general applied physics".
- D.188 1975 September, October. Frank attended the 10 November meeting at which a proposal to create a section of applied physics was considered.
- D.189 1976.
- D.190 1977. Frank attended his last Commission meeting 7 March. He was replaced from September by R.S. Pease.
- D.191-D.194 Correspondence re refereeing.
4 folders.
- | | | | |
|-------|---------|-------|-----------------|
| D.191 | 1968-71 | D.193 | 1976-80 |
| D.192 | 1972-75 | D.194 | 1982, 1983, nd. |

Contemporary Physics

1978-85

Frank was invited to join the Editorial Board of *Contemporary Physics* as a consultant editor in May 1978. Owing to the pressure of other commitments Frank felt unable to join the Board until February 1979.

The material is chiefly papers for Board meetings and correspondence re papers offered for publication.

- D.195 General editorial correspondence including initial invitation to join Editorial Board 19 May 1978 and letter welcoming Frank to Board 13 March 1979. Also signed dinner menu for "twenty-first birthday of *Contemporary Physics* and tribute to the editor, G.R. Noakes", 1 April 1980. Signatories include Frank, Noakes, B.R. Coles, H.B.G. Casimir, J.A. Lee, J. Bentley, G.W. Series, Sir Nevill Mott and Sir Arthur Vick.
- D.196-D.201 Papers for Board meetings.
- 6 folders.
- | | | | | | |
|-------|------|------------|-------|------|-----------|
| D.196 | 1979 | 3 May | D.199 | 1980 | 2 October |
| D.197 | 1979 | 11 October | D.200 | 1981 | |
| D.198 | 1980 | 1 April | D.201 | 1985 | |
- D.202-D.206 Correspondence re papers submitted to *Contemporary Physics*. Includes correspondence re refereeing by Frank.
- 5 folders.
- | | | | | |
|-------|------------|---------------|-------|--------------|
| D.202 | 1979, 1980 | D.205 | 1981 | May-November |
| D.203 | 1980 | December | D.206 | 1982-86 |
| D.204 | 1981 | January-April | | |
- Éditions de Physique 1977-78
- The Advisory Board of the Société Française de Physique established a committee to oversee the launch of a series of monographs on fundamental and applied physics to be published by Editions de Physique. Frank was invited to join the committee on 9 December 1977. The project was abandoned, owing to financial difficulties, in October 1978.
- D.207 Includes correspondence re proposed monograph reviewing synchrotron radiations, and papers for committee meetings 1978.
- Dirasat 1982
- D.208 Refereeing.
- Egyptian Journal of Physics* 1977, 1978
- D.209 Refereeing.

Electronics Letters 1973, 1974

D.210 Refereeing.

Endeavour 1978

D.211 Request to review book (declined).

Engineering Synopses 1976-78

Frank was invited to serve as Royal Society representative on a British Library funded Bath University Library Advisory Committee for "the evaluation of an experiment in synoptic publishing" by the Institution of Mechanical Engineers. The Project Head was J.H. Lambie. The committee met from 1976-78, and a Final Report was produced in 1979.

D.212 Invitation to serve, 5 August 1976; preliminary correspondence.

D.213 Copy of original proposal as sent to the British Library in support of the application for a grant.

D.214-D.218 Correspondence and papers, including papers for Advisory Committee meetings.

Much of the material is concerned with the form and content of the evaluation questionnaire and assessment of the information gathered therefrom.

5 folders.

D.214	1977 (1)	D.217	1978 (2)
D.215	1977 (2)	D.218	1978 (3)
D.216	1978 (1)		

Industrial Diamond Review ?1979D.219 2pp typescript and proof copies of Frank's review of *The Properties of Diamond* by J.E. Field.

Institute of Physics Publishing Division 1978, 1979

D.220 Invitation to act "as compiler for the title 'Dislocations' " for a series Keynote Reprints in Physics to be published in association with Adam Hilger Ltd., 10 August 1978, and correspondence arising.

Frank agreed to act as joint compiler with J.D. Eshelby but the project was abandoned in 1979.

International Journal of Fracture Mechanics 1972

D.221 Refereeing.

International journal on the texture of crystalline solids 1971, 1972

D.222 Brief correspondence re the launch of the proposed journal including invitation to Frank to join the Editorial Advisory Board as an honorary member (accepted).

IPC Science and Technology Press Ltd. 1971

D.223 1p typescript of Frank's review of *Liquid Crystals and Their Applications*, ed. T. Kallard.

Journal of Chemical Physics 1969-74

D.224 Refereeing.

Journal of Computational Physics 1981

D.225 Refereeing.

Journal of Glaciology 1969, 1971

D.226 Correspondence re Frank's review of *Physics of Ice*, ed. N. Riehl et al.

Journal of Materials Science

1965-86

Frank became an Advisory Editor in 1967, a year after its launch.

- D.227, D.228 General correspondence, chiefly with R.W. Cahn, Chairman of Editorial Board, and W. Bonfield, Executive Editor. Includes minutes of Board meetings sent to Advisory Editors.

2 folders.

- D.229 Refereeing.

Journal of Mechanics and Physics of Solids

1955, 1969-74

- D.230 1955 letter is request for Frank to review *Physical Properties of Solid Materials* by C. Zwikker. 1969-74 correspondence is re refereeing.

Journal of Molecular Structure

1980

- D.231 Request for Frank to review *The Solid-Liquid Interface* by D.P. Woodruff (declined).

(International) Journal of Physics and Chemistry of Solids

Various dates 1972-87

- D.232 1986 correspondence is re Frank's contribution to the 30th Anniversary Issue in honour of Harvey Brooks. Includes 2pp typescript copy of Frank's tribute.

Journal of Polymer Science

1974

- D.233 Refereeing.

Journal of Statistical Physics

1982

- D.234 Circular letters from R. Landauer re "guest column section" for the Journal.

- Macromolecular Reviews* 1971
- D.235 Request for Frank to write a review article "on the theory of liquid crystals".
- Mineralogical Society 1976
- D.236 Refereeing for Society's Magazine.
- Nature* Various dates 1948-85
- D.237 General correspondence. Includes request to review *Crystal Defects and Crystalline Interfaces* by W. Bollmann, 28 April 1971; proof copy of Frank's review of *The Molten State of Matter : Melting and Crystal Structure* by A.R.J.P. Ubbelohde; photocopy of "News and Views" section of *Nature* 306, 3 November 1983, p.13, referring to "the late F.C. Franck (who died last year)".
- D.238-D.242 Refereeing.
- 5 folders.
- | | | | |
|-------|----------|-------|------------------|
| D.238 | 1967-72 | D.241 | 1974 (2) |
| D.239 | 1973 | D.242 | 1975, 1976, 1981 |
| D.240 | 1974 (1) | | |
- New Scientist* 1965
- D.243 Request for article "about your ideas on materials and earthquakes".
- Nuovo Cimento* 1968
- D.244 Refereeing.
- Oxford University Press 1957, 1961
- D.245 Material re The Oxford Library of the Physical Sciences series.

Philosophical Magazine

Various dates 1956-86

D.246-D.248 Refereeing.

3 folders.

D.246 1956, 1968, 1969

D.247 1972-76

D.248 1983, 1985, 1986

Physical Review Letters

1973

D.249 Refereeing.

Physics Letters A

1975

D.250 Refereeing.

Physics of the Earth and Planetary Interiors

1977, 1978, 1983

D.251 Refereeing.

Physics Today

1982

D.252 Request for Frank to write on "solitons" (declined).

Polymer

1980, 1982

D.253 Refereeing.

Research

1951

D.254 Re request for Frank to write "review article on crystal growth".

Royal Astronomical Society

1975-77, 1985

D.255 Refereeing.

Royal Meteorological Society

1949

D.256 Refereeing for Society's *Quarterly Journal*.

Science 1977

D.257 Refereeing.

Society of Chemical Industry Nd.

D.258 Refereeing.

Solid State Physics 1955

D.259 Request to contribute.

Solid State Science Reports 1978, 1979

D.260 Correspondence with M.B. Gordon of Gordon & Breach, J.B. Goodenough, J. Friedel and G.J. Dienes re *Solid State Science Reports*, a series of review monographs on materials science. Frank agreed to act as joint editor.

Surface Science 1973

D.261 Refereeing.

Tectonophysics 1971

D.262 Refereeing.

Times Newspapers Ltd. Various dates 1971-85 and nd.

Material in D.263 and D.264 relates to letters to the editor of *The Times* from Frank on a variety of scientific and non-scientific subjects.

D.263 23 June 1971, "Four letter words".

15 April 1972, "Aubrieta".

31 July 1975, nuclear emulsion techniques.

PUBLISHED PAPERS

- D.271 Published papers 1935-86. Not a complete set. Includes a few items not listed in Frank's List of Publications.
- 1 box.

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.
- | | | | |
|------|------|------|------|
| 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 Societ  Franaise 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 Czechoslovakia".
- 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 lieu de la 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.

SECTION F

SOCIETIES AND ORGANISATIONS

F.1-F.380

The material is presented in an alphabetical sequence and covers both British and overseas organisations.

While some entries are relatively slight, dealing with membership, invitations to meetings and the like, others are more substantial both in their time-span and in the matters covered. Of particular importance is the material on the Institute of Physics, the International Organisation of Crystal Growth, the Pugwash Conferences on Science and World Affairs, the Royal Society and the Science Research Council.

Also of interest is the material on Bristol institutions with which Frank was involved, including Badminton School, the Bristol Municipal Charities and Queen Elizabeth's Hospital School.

ACADEMIC COUNCIL FOR PEACE AND FREEDOM (ACPF)	F.1-F.3
ATOMIC SCIENTISTS ASSOCIATION	F.4-F.7
BADMINTON SCHOOL BRISTOL	F.8-F.21
BRISTOL MUNICIPAL CHARITIES	F.22-F.35
BRISTOL NUCLEAR FREEZE COUNCIL	F.36
BRITISH ASSOCIATION FOR CRYSTAL GROWTH (BACG)	F.37-F.44
CHELSEA COLLEGE LONDON	F.45-F.47
CHEMICAL SOCIETY (see FARADAY SOCIETY)	
COMITÉ DE DIRECTION DU LABORATOIRE DE PHYSIQUE DES SOLIDES, UNIVERSITÉ DE PARIS-SUD	F.48-F.53
DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH	F.54
ELECTRONICS RESEARCH COUNCIL	F.55
ENGLISH-SPEAKING UNION	F.56
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION (ESSA)	F.57, F.58
EUROPEAN PHYSICAL SOCIETY	F.59

FARADAY SOCIETY/CHEMICAL SOCIETY	F.60-F.72
FOREIGN OFFICE	F.73, F.74
GOVERNING BODIES ASSOCIATION	F.75
GREENLAND CLUB	F.76
GREENPEACE	F.77
HOME OFFICE	F.78
INSTITUTE OF METALS/METALS SOCIETY	F.79-F.85
INSTITUTE OF PHYSICS	F.86-F.115
INTERNATIONAL ORGANISATION OF CRYSTAL GROWTH (IOCG)	F.116-F.175
INTERNATIONAL UNION OF GEODESY AND GEOPHYSICS (IUGG)	F.176, F.177
INTERNATIONAL UNION OF PURE AND APPLIED PHYSICS (IUPAP)	F.178-F.184
KING'S COLLEGE LONDON	F.185
MATERIALS SCIENCE CLUB	F.186, F.187
METALS SOCIETY (see INSTITUTE OF METALS)	
MINISTRY OF DEFENCE	F.188-F.191
MINISTRY OF SUPPLY	F.192
MOLECULAR CRYSTALS DISCUSSION GROUP	F.193
NATIONAL ACADEMY OF ENGINEERING	F.194
NATIONAL PHYSICAL LABORATORY	F.195-F.203
PHYSICAL SOCIETY	F.204
PUGWASH CONFERENCES ON SCIENCE AND WORLD AFFAIRS	F.205-F.250
QUEEN ELIZABETH'S HOSPITAL BRISTOL	F.251-F.296
RED MAIDS SCHOOL BRISTOL	F.297
ROYAL RADAR ESTABLISHMENT MALVERN	F.298
ROYAL SOCIETY	F.299-F.343
ROYAL SOCIETY OF ARTS	F.344
SCIENCE RESEARCH COUNCIL (SRC)	F.345-F.375
STANDING CONFERENCE OF PROFESSORS OF PHYSICS	F.376-F.378
WEST OF ENGLAND METALS AND MATERIALS ASSOCIATION	F.379, F.380

F.1-F.3 ACADEMIC COUNCIL FOR PEACE AND FREEDOM (ACPF) 1983-84

The Council was established to support and publicise the case for NATO and to counter unilateralist arguments in institutions of higher education.

Most of the material relates to an ACPF sponsored "Open Letter" published in *THES* 21 October 1983 declaring opposition to CND signed by 48 Bristol academics including Frank, and the response which this letter produced.

F.1 Correspondence re meeting in House of Lords, 4 May 1983, chaired by Lord Chalfont following which the ACPF was launched.

F.2 Material re the "Open Letter", including a copy, and correspondence arising.

F.3 Newspaper cuttings and other background information on NATO and nuclear weapons.

F.4-F.7 ATOMIC SCIENTISTS ASSOCIATION 1948-50

The Atomic Scientists Association existed to promote the controlled peaceful use of Atomic Energy. Frank was Honorary Secretary of his area branch.

F.4 General correspondence and papers, 1948-50. Includes note from F.R.N. Nabarro inviting Frank to become branch secretary.

F.5 Article "Need We Drift to War?" *Port Talbot Express*, 31 March 1950 by Miss A.J. Greenwood. With accompanying letter inviting the Association to send a speaker to a meeting of the Port Talbot Peace Movement.

The material was passed on to Frank as area branch secretary.

F.6 Index cards of members of Frank's branch of the Association.

F.7 "Safety" film "Atomic Energy and the United Nations" dated 24 September 1948.

F.22-F.35 BRISTOL MUNICIPAL CHARITIES 1973, 1982-87

The Trustees of the Bristol Municipal Charities administer charitable funds acquired from Bristol City Corporation following the Municipal Law Reform Act of 1836. The Trustees own Queen Elizabeth's Hospital (of which Frank was a Governor from 1961, and Chairman of Governors 1982-1984), Bristol Grammar School and Red Maids School.

F.22 Note recording Frank's appointment as Trustee for 6 years expiring 21 December 1979.

Letter of appointment as a Trustee, with papers sent with it, 26 February 1982.

F.23 Miscellaneous correspondence, 1982-87.

F.24-F.35 Agenda, papers and minutes of meetings of Trustees, 1982-83, 1986-87.

12 folders.

F.24	1982 (1)	F.30	1986 (1)
F.25	1982 (2)	F.31	1986 (2)
F.26	1982 (3)	F.32	1986 (3)
F.27	1983 (1)	F.33	1987 (1)
F.28	1983 (2)	F.34	1987 (2)
F.29	1983 (3)	F.35	1987 (3)

F.36 BRISTOL NUCLEAR FREEZE COUNCIL 1986

Letter inviting Frank to support the Freeze campaign, with information on the campaign and its patrons. The letter is annotated by Frank "sent cheque for £10 and said I could be registered as a FREEZE member".

- F.37-F.44 BRITISH ASSOCIATION FOR CRYSTAL GROWTH (BACG) 1970-85
- The BACG was founded at the 1968 Birmingham International conference on Crystal Growth (F.135-F.141). Frank was Honorary President 1981-86.
- See also International Organisation of Crystal Growth (F.116-F.175).
- F.37 General correspondence, 1971, 1981.
- F.38 Correspondence and papers re 1970 Conference on Crystal Growth, Bristol University, 9-11 September. Frank helped organise the conference.
- F.39 Correspondence and papers re 1984 BACG Annual Conference, Lancaster University, 18-21 September. Frank presented a paper on "Growth kinetics of dislocation-free crystals".
- F.40 Material re other BACG meetings, various dates 1970-85.
- Includes brief correspondence re 1983 Annual Conference, Chester, at which Frank planned to give a lecture on "The kinetics of crystal growth without dislocations". Owing to illness Frank withdrew and delivered his lecture under a new title at the 1984 Conference instead (see F.39).
- F.41-F.44 BACG Newsletters July 1978 - May 1985. Not a complete sequence.
- 4 folders.
- F.45-F.47 CHELSEA COLLEGE LONDON 1981, 1982
- Faced with the threat of closure Chelsea College approached a number of academics and asked them to produce independent assessments of the various departments of the college. Frank agreed to validate the Physics Department, making a visit on 2 November 1981.
- F.45 Correspondence re arrangements and background material on Physics Department.

- F.46 Manuscript and typescript copies of report on Physics Department with covering letters.
- F.47 Correspondence arising, including correspondence with De Beers, November, December 1981, re "technique for registering the absorption spectrum of powders" for which the Chelsea College Physics Department required diamond dust.
- F.48-F.53 COMITÉ DE DIRECTION DU LABORATOIRE DE 1973-78, 1983
PHYSIQUE DES SOLIDES, UNIVERSITE DE PARIS-SUD
- The Comité de Direction was established in 1973 by the Université de Paris-Sud and the Centre National de la Recherche Scientifique to coordinate the scientific control of the laboratory. Frank was invited to become a member in March 1973 and served until December 1977. In 1983 Frank rejoined the Comité for a further two years.
- F.48 Invitation to join Comité de Direction; correspondence and papers re meeting, 4 June 1973; Frank's manuscript notes of proceedings.
- F.49 Correspondence and papers re meeting, 22 May 1974.
- F.50 Report on scientific activity at the laboratory, 1 July 1973 - 1 May 1974.
- F.51 Report of the Comité for 1974.
- F.52 Correspondence and papers re meeting, 22-23 April 1976.
- F.53 Letter re expiry of terms of service of Comité members, 6 December 1978.
- Correspondence and papers re meeting, 8-9 March 1983. Includes confirmation of renewal of Frank's membership of Comité to December 1985.

F.54 DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH 1962

Contents of a folder imprinted "This folder contains all papers relating to item 4 on the agenda for the meeting of the Metallurgy and Materials Sub-Committee held at State House on Tuesday 4th December at 10.30 A.M.". The papers relate to brittle fracture and the use of non-metallic materials in engineering.

F.55 ELECTRONICS RESEARCH COUNCIL 1964, 1966, 1968

Frank served on the Council 1965-68.

Miscellaneous material. Includes invitation to serve and "Notes of a meeting held at the Ministry of Technology ... 20th October 1966 to discuss a proposal to set up a Single Crystal Production Unit at [Royal Radar Establishment] Malvern", with related correspondence.

F.56 ENGLISH-SPEAKING UNION 1964

Letter informing Frank that he and his wife have been elected to membership of the Union.

F.57, F.58 ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION 1966, 1967
(ESSA)

F.57 Correspondence re possibility of Frank visiting ESSA's Institute for Earth Sciences, Boulder, CO, Summer 1966 "to review the part geodetic methods should play in the earthquake prediction problem". Frank declined.

F.58 Correspondence and notes re visit to Institutes for Environmental Research, Boulder. Frank visited the Institutes on an ESSA contract with the Colorado School of Mines, Golden, mid-July - mid-September 1967.

F.59 EUROPEAN PHYSICAL SOCIETY 1976

Brief correspondence with W.J. Merz, chairman of Condensed Matter Division, re the need for "a European coordinated program for meetings, discussions etc." on the area of "Liquids/Liquid Crystals/Glasses/Amorphous Materials" which Merz felt the Division was neglecting.

Further material relating to the European Physical Society may be found at H.59, H.66 and H.72, and at D.69.

F.60-F.72 FARADAY SOCIETY/CHEMICAL SOCIETY 1938, 1946-85

On 1 January 1972 the Faraday Society amalgamated with the Chemical Society, the Royal Institute of Chemistry and the Society for Analytical Chemistry to form a new Chemical Society. The Faraday Division covered the field of physical chemistry within the amalgamated society, publishing the *Faraday Transactions* (formerly *Transactions of the Faraday Society*) and organising symposia and discussions.

The material is arranged as follows:

F.60, F.61	General correspondence and papers
F.62, F.63	<i>Faraday Transactions</i>
F.64-F.72	Symposia and discussion meetings.

General correspondence and papers

F.60 Various dates 1938-71. 1969-71 correspondence is re the future of the Faraday Society.

F.61 1972-73, 1977.

Faraday Transactions

F.62 Editorial correspondence, 1948, 1949, 1965-71.

F.63 Editorial correspondence, 1971-74.

Symposia and discussion meetings

- F.64 Typescript and manuscript drafts of Frank's contributions to Faraday Society symposium, 1946. With letter from E.M. Wright and notes re the printing of scientific symbols.
- F.65 Correspondence re Faraday Society Symposium on Crystal Growth, Bristol, Easter 1949. Frank helped organise the symposium.
- F.66 Letter from G.L. Kington re "Possible Faraday Society discussion on physico-chemical aspects of composite materials", 19 June 1970.
- Programme, order of papers, list of participants for Faraday Society Symposium on Liquid Crystals, Royal Institution, 13-14 December 1971.
- F.67-F.70 Faraday Discussion on Organisation of Macromolecules in the Condensed Phase, Cambridge, 25-27 September 1979. Frank gave the Introduction.
- F.67 Invitation; correspondence re arrangements; programmes; list of participants; etc.
- F.68 Correspondence re papers and discussion remarks with participants and Faraday Division.
- F.69 Papers sent to Frank by A. Keller for comment.
- F.70 16pp manuscript draft of Frank's "General Introduction", with related manuscript notes. *Bibliog.* 136.
- F.71, F.72 Faraday Discussion on Polymer Liquid Crystals, Cambridge, 1-3 April 1985. Frank was the guest of the Faraday Division at the discussion dinner.
- F.71 Invitations; programmes; abstracts; list of participants etc.
- F.72 Correspondence re papers and discussion remarks with participants and *Faraday Transactions*.
- Manuscript notes on "Lines of confluence"; manuscript drafts of Frank's discussion remarks.

F.73, F.74 FOREIGN OFFICE 1950, 1951

In October 1950 Frank and A.C. Menzies visited Germany on behalf of the German General Economic Department of the Foreign Office's German Section to consider changes in the administration of laws governing scientific research in occupied Germany.

F.73 S.O. notepad taken on visit. First 7 pages used, 1p loose manuscript notes.

F.74 Correspondence arising from visit with R.V. Jones, Menzies and others; copies of the laws.

F.75 GOVERNING BODIES ASSOCIATION 1982

Papers re the threat to independent schools posed by the Labour Party. As Chairman of Governors of Queen Elizabeth's Hospital Frank attended a special meeting of the Association, London, 14 October.

F.76 GREENLAND CLUB 1978-83

The Greenland Club "exists to foster the spirit of exploration in Greenland and the offshore continental shelf".

Invitation to Frank to become an Honorary Member of the Bristol Greenland Club; notices of annual dinners 1978-80, 1983.

F.77 GREENPEACE 1981

Appeal to Frank to support the campaign opposing the testing of nuclear weapons. The letter requests that Frank add his signature to a "statement of concern" and is annotated "sent 9 Nov. 81".

- F.78 HOME OFFICE 1959-72
- Frank served as a Regional Scientific Adviser in the South West Civil Defence Region until 1972.
- Miscellaneous correspondence and papers, including HMSO Exercise Book with notes on proceedings of Conference of Regional Scientific Advisers for Civil Defence, Civil Defence Staff College, Sunningdale, Berks., 12-14 May 1964.
- F.79-F.85 INSTITUTE OF METALS/METAL SOCIETY 1951-85
- The Institute of Metals merged with the Iron and Steel Institute to form the Metals Society on 1 January 1974.
- F.79 Metal Physics Committee papers and correspondence 1951-53. Frank joined the committee in 1951.
- F.80 Agenda for Spring Meeting, London, 29 March - 1 April 1955. Frank delivered the May Lecture on "The nature of the real crystal" (E.9, E.10). *Bibliog.* 60.
- F.81 "Timetable and abstracts of contributions" for discussion on the metallurgy of high-field superconductors, Institute of Metals, 17-18 March 1964.
- F.82 General correspondence and papers 1964-70. Includes 1p typescript "Discussion: the relation between grain section and grain size", submitted to the *J. Inst. Metals* as a reply to contributions by J.H. Hensler 12 June 1968.
- F.83 Programme and notepad with Frank's notes on proceedings of Institute of Metals Conference on Modern Metallography in Metallurgy, Bristol University, 23-25 September 1969. Frank welcomed the conference.
- F.84 Correspondence and papers, 1971, 1972, chiefly re proposed merger with the Iron and Steel Institute.
- F.85 Metals Society correspondence and papers, 1971-83.

F.86-F.115 INSTITUTE OF PHYSICS 1964-87

F.86 -F.94 Editorial Boards
 F.95 -F.110 Conferences
 F.111 Awards
 F.112-F.115 Groups

Editorial Boards

F.86 Correspondence, November, December 1965, arising from complaint made by Frank "about the lack of information in the *British Journal of Applied Physics* about the coverage of the journal".

Correspondence and papers re IUPAP/UNESCO conference for editors of primary journals in physics, Paris, 10-12 May 1967. Frank attended on behalf of the *British Journal of Applied Physics*.

F.87 Editorial correspondence with *Journal of Physics D: Applied Physics* and *C: Solid State Physics*, various dates 1975-85.

Includes manuscript draft of letter Frank sent to the Editorial Board of *D* outlining areas of growth in applied physics.

F.88-F.93 *Reports on Progress in Physics*

F.88 Invitations to join the Editorial Board 1977, and remain on it for a further year 1979; information on *Reports on Progress in Physics*.

F.89-F.92 Papers for meetings of the Editorial Board of *Reports on Progress in Physics*.

4 folders.

F.89 1977
 F.90 1978

F.91 1979
 F.92 1980

F.93 Correspondence re review articles for *Reports on Progress in Physics*, 1977-80, including Frank's comments on article outlines sent to him for consideration.

Invitation to write a *Report on Progress* article on "Ideas in crystal growth", September 1985. Frank declined, stating he was insufficiently knowledgeable of recent work in the area.

- F.94 Correspondence with *Physics Bulletin*, 1978-1986. Includes Frank's 2pp review of R.V. Jones's *Most Secret War*, and other reviews.

Conferences

- F.95 Solid-State Physics Conference, Bristol University, 1-4 January 1964. Frank was invited to chair a session.
Invitation; lists of participants and provisional session chairmen; conference handbook.
- F.96 4th Annual Solid-State Physics Conference, Manchester University, 4-7 January 1967. Frank spoke on "Current trends in polymer physics".
Correspondence; notice.
- F.97-F.106 International Conference on Thermodynamics, University College Cardiff, 1-4 April. Frank served on the organising committee and chaired the first session.
- F.97 Correspondence with P.T. Landsberg re suggested conference on thermodynamics, December 1966.
"A refresher course in thermodynamics", undated 7pp manuscript draft by Frank found with the preceding.
- F.98-F.103 Agenda, papers and minutes of organising committee meetings.
- | | | | |
|-------|--------------------|-------|--------------------|
| F.98 | 11 November 1968 | F.101 | 3 October 1969 (2) |
| F.99 | 28 April 1969 | F.102 | 29 November 1969 |
| F.100 | 3 October 1969 (1) | F.103 | 28 February 1970 |
- F.104 "The Einstein-Podolsky-Rosen class of paradoxes as an illustration of time symmetry in elementary processes" by O. Costa de Beauregard, sent to Frank for possible inclusion in the conference.
- F.105 Conference handbook; list of participants; letter from N. Kurti asking Frank to "say a few words of welcome as a IUPAP delegate".

- F.106 "Provocative statements to give focus" to discussions.
Photocopies of letters of Lord Kelvin, with covering letter from D.J. Morgan. Copies of Lord Kelvin's correspondence were made for the conference.
- F.107 9th Annual Solid-State Physics Conference, UMIST, 4-6 January 1972. Frank spoke on "Strength and stiffness of polymers" (see *Bibliog.* 103).
Invitation; conference handbook; list of participants; itinerary for 3-7 January (includes 7 January British Association for the Advancement of Science meeting).
- F.108, F.109 10th Annual Solid-State Physics Conference, Manchester University, 3-5 January 1973.
- F.108 Notices; general information; list of participants.
- F.109 Conference handbook.
- F.110 Solid-State Physics Conference, December 1984.
Invitation to Frank to give "a light-hearted after-dinner talk" on the history of dislocations.

Awards

- F.111 Various dates 1979-87.

Groups

- F.112 History of Physics Group.
Includes material re formation of Group, 1984, and first AGM, 3 July 1986.

F.113, F.114 Polymer Physics Group.

The Polymer Physics Group was jointly sponsored by the Institute of Physics and the Royal Society of Chemistry (previously the Chemical Society). The Institute handled the Group's administration.

Material re biennial meetings, various dates 1971-85.

2 folders.

F.115 Tuning Fork Group.

Notice for "Tuning Fork Group".

F.116-F.175 INTERNATIONAL ORGANISATION OF CRYSTAL GROWTH (IOCG) 1967-86

The IOCG was established following the 1st International Conference on Crystal Growth (ICCG) held in Boston, MA, in 1966. The advisory committee of the conference became a permanent Comité International de la Croissance Cristalline (CICC), which was renamed IOCG at ICCG-3, Marseilles, 1971. IOCG was formed principally to organise and sponsor crystal growth conferences. It also took responsibility for sponsoring the *Journal of Crystal Growth* (JCG).

Frank was President of CICC 1968-71, succeeding W. Bardsley, and of IOCG 1971-74 and 1974-77. He served on the Executive Committee for six more years thereafter as Past President.

A short history of the IOCG to 1975 by M.M. Schieber, with a brief note by Frank, may be found at F.161.

The material is arranged as follows:

F.116-F.133	CICC/IOCG
F.134-F.166	Conferences
F.167-F.175	<i>Journal of Crystal Growth</i> .

CICC/IOCG

F.116 Correspondence 1967 re establishment of CICC.

Includes statement announcing foundation of "a new interdisciplinary and international organisation for crystal growth", brief correspondence re the Crystal Growth Committee of the International Union of Crystallography established at the same time, and copy of CICC's Charter in which Frank is named as a General Policy Advisor.

F.117 Correspondence and papers re meeting of CICC, Zürich, 25 September 1970, to consider the arrangements for ICCG-3 (Marseilles) and the proposed IOCG constitution (see below). Frank chaired this meeting, held during the Conference on Crystal Growth and Epitaxy from the Vapour Phase (see F.142).

F.118-F.121 Correspondence and papers re constitution of CICC/IOCG 1970-73.

In 1970 the CICC became divided over the question of a new constitution for the proposed IOCG. Two versions were produced, a European and a more complex American. It was decided to resolve the matter by ballot at ICCG-3, Marseilles, 1971, and at the conference the American version won more votes. So narrow was the margin of victory, however, and so sharply polarised the American and European views, that a compromise solution was sought. A Constitution Committee chaired by Frank was therefore established whilst an interim constitution remained in force. The Committee's version was placed before the membership of the IOCG in September 1973 and overwhelmingly approved.

The material is predominantly correspondence between officers of CICC/IOCG. There are also copies of the various constitutions including those proposed in 1971, the interim constitution and the Constitution Committee's final version.

4 folders.

F.118	1970	F.120	1972
F.119	1971	F.121	1973

F.122-F.125 Correspondence and papers re nominations and elections for IOCG offices and Council 1971-83.

4 folders.

F.122	1971	F.124	1974 (2)
F.123	1974 (1)	F.125	1977, 1980, 1983

F.126-F.130 Correspondence and papers re IOCG relations with the International Unions of Pure and Applied Chemistry (IUPAC), Pure and Applied Physics (IUPAP) and Crystallography (IUCr), 1972-80.

M.M. Schieber, Secretary of IOCG, in a letter of 3 December 1973, set out the four options open to IOCG: to press for full scientific Union status for IOCG, to become an InterUnion commission of IUPAC, IUPAP and IUCr, to create separate links with one or more of the Unions, or to remain without formal ties.

After considerable debate it was decided at the 1974 Tokyo IOCG to seek Associate Organisation status with each of the three Unions. IUPAC gave IOCG this status in September 1975, and IUCr elected it a Scientific Associate organisation August 1978.

5 folders.

F.126	1972	F.129	1975
F.127	1973	F.130	1976-78, 1980
F.128	1974		

F.131 Correspondence and papers re meetings of IOCG Executive Council, Tokyo, 26 and 29 March 1974, held during IOCG-4 (F.146-F.151).

F.132 Correspondence re amendments to IOCG constitution and by-laws 1972-78, 1983.

These amendments were made to allow Soviet colleagues interested in crystal growth "to formally adhere to IOCG". See also F.158.

F.133 Miscellaneous correspondence, 1969-77.

1973 correspondence chiefly concerns excess funds in the IOCG treasury.

Conferences

F.134 IOCG-1, Boston, MA, 20-24 June 1966. Frank was a member of the advisory committee and was invited to give a paper, but declined owing to prior commitments.

List of conference organisers; invitations; etc.

- F.135-F.141 ICCG-2, Birmingham, 15-19 July 1968. Frank was on the organising committee as chairman of the programme committee. He was also Editor-in-Chief of the Conference Proceedings to be published in JCG and wrote a preface to the Proceedings. At the conference Frank was elected President of CICC 1968-71.
- F.135, F.136 Correspondence and papers re meetings of organising committee, July 1966 - September 1969.
2 folders.
- F.137, F.138 Correspondence and papers re programme committee business, September 1966 - June 1968.
2 folders.
- F.139 Miscellaneous correspondence re arrangements.
- F.140 Information; programme; list of participants; typescript copy of minutes of ICCG Business Meeting.
- F.141 6pp manuscript draft and 3pp typescript copy of Frank's "Preface" to Conference Proceedings.
- F.142 1st Conference on Crystal Growth and Epitaxy from the Vapour Phase, Zürich, 23-25 September 1970. The CICC sponsored this conference, organised by the Crystal Growth Section of the Swiss Crystallographic Society, and held a plenary meeting of officers and advisors of CICC during the conference (see F.117).

Correspondence re CICC support for conference; invitation to Frank and correspondence re arrangements; abstracts; etc.

- F.143-F.145 ICCG-3, Marseilles, 5-9 July 1971. Frank sat on the consultative committee and gave papers on "Philosophy and future of crystal growth" (*Bibliog.* 111) and "About diamond".
- F.143, F.144 Correspondence re arrangements, November 1969 - July 1973.
2 folders.
- F.145 Brochure; information; manuscript lists of slides for Frank's second contribution; etc.

"Report on the Activities of the ICCG-3 General Assembly Marseilles and the IOCG", a News Item approved by Frank. This records the difficulties over the constitution (see F.119) and the election of Frank to the presidency of IOCG 1971-74.
- F.146-F.151 ICCG-4, Tokyo, 24-29 March 1974. Frank was a member of the advisory committee and spoke on "Japanese work on snow crystals" (*Bibliog.* 123).

A meeting of the Executive Committee of IOCG was held during this conference (F.151) and Frank was re-elected President.
- F.146-F.148 Correspondence re arrangements, December 1969 - May 1974 and nd.

3 folders.

F.146 1969-72 F.148 1974
F.147 1973
- F.149 Correspondence re Royal Society travel and study grants for the conference.
- F.150 Two different typescript copies of "Japanese work on snow crystals"; one 19pp photocopy, the other 5pp (incomplete) with extensive manuscript annotation and correction. With lists of slides, manuscript notes and photographs found with them.

2pp manuscript draft of brief address delivered by Frank at conclusion of conference.
- F.151 Brief correspondence re publication of Japanese translation of Frank's lecture in journal *Shizen*. With copy of *Shizen* '74-12 with Frank's contribution at pp.28-38.

F.152 2nd International Spring School on Crystal Growth (ISSCG-2), Fuji View Hotel, Mt. Fuji District, Japan, 31 March - 7 April 1974. Frank gave a special lecture "Comments on nucleation theory".

This School was linked to ICCG-4, held the week before.

Correspondence re arrangements and publication of proceedings; 4pp typescript draft of Frank's contribution; etc.

F.153-F.157 ICCG-5, Boston, MA, 17-22 July 1977. The executive of IOCG was faced by rival bids to hold ICCG-5 from Poland and the USA. Although the final vote was close, the unhappy events surrounding the 11th International Conference on the Physics of Semiconductors held in Warsaw in July 1972, decided the members in favour of the USA.

Correspondence and papers re arrangements, 1971-77. 1971-73 material relates to the debate on the best location for ICCG-5.

5 folders.

F.153	1971	F.156	1972 Nov-Dec, 1973
F.154	1972 Feb-May	F.157	1974-77
F.155	1972 Jun-Oct		

F.158, F.159 ICCG-6, Moscow, 10-16 September 1980. Frank was on the Advisory Committee but did not attend.

F.158 Correspondence and papers re arrangements, 1974-81. Includes brief correspondence re Soviet membership of IOCG (see also F.132). It was decided that the USSR did not need to join IOCG in order to be eligible to host ICCG-6.

F.159 List of participants.

F.160 ICCG-7, Stuttgart, 1983.

Proposals from Swiss and German Crystal Growth associations to host ICCG-7. The German bid was successful, the Swiss hosting the associated Crystal Growth summer school.

- F.161 ICGG-8, York, 13-18 July 1986. Frank felt unable to attend following a hip-operation.
- Invitation and notice. Send with the invitation was a 12pp typescript copy of "The various institutions for crystal growth. How did they all start?" by M.M. Schieber. With it are Frank's 2pp typescript corrections and 1p note "Early days of IOCG".
- F.162 ICGG-9, 1989.
- Offer from Japanese Association of Crystal Growth to host the conference.
- F.163-F.166 IOCG sponsored conferences.
- The material consists chiefly of correspondence with organisers of conferences.
- F.163, F.164 2nd International Conference on Vapour Growth and Epitaxy, Jerusalem, 21-25 May 1972.
- 2 folders.
- F.165 3rd International Conference on Vapour Growth and Epitaxy, Amsterdam, 18-21 August 1975.
- F.166 4th International Conference on Vapour Growth and Epitaxy, Nagoya, Japan, 10-13 July 1978.
- Summer School on Crystal Growth, Suzdal, USSR, 17-25 September 1980.
- International Meeting on Crystal Growth Processes in Sedimentary Environments, Madrid, January 1982.

Journal of Crystal Growth (JCG)

Frank was a co-founder of the JCG with B. Chalmers and N. Cabrera. He served as an editor from 1968 until 1980 and refereed many papers for the Journal both whilst an editor and thereafter.

- F.167-F.169 General editorial correspondence.
- 3 folders.
- | | | | |
|-------|---------------|-------|-----------------|
| F.167 | 1967, 1970-73 | F.169 | 1978-81 and nd. |
| F.168 | 1974-77 | | |

F.170, F.171 *Crystallization of Polymers*. Correspondence 1978-80 re special volume of JCG edited by B. Wunderlich. Frank helped reassess all the papers submitted.

2 folders.

F.172-F.175 Correspondence with editors and authors re papers submitted to JCG, with Frank's referee's reports.

4 folders.

F.172	1970-1974 April	F.174	1978, 1979
F.173	1974 May - 1977	F.175	1980-84

F.176, F.177 INTERNATIONAL UNION OF GEODESY AND GEOPHYSICS (IUGG) 1967

Correspondence between L.R. Alldredge, General Secretary of the International Association of Geomagnetism and Aeronomy, and those sending him papers for the Association's session of the 14th IUGG General Assembly, St. Gall, Switzerland, September, after the deadline had passed.

Allredge was Director of the Institute for Earth Services which Frank visited while working for the US Environmental Science Services Administration (F.58).

2 folders.

F.178-F.184 INTERNATIONAL UNION OF PURE AND APPLIED PHYSICS (IUPAP) 1959-69

Frank served as Royal Society representative on IUPAP's Solid State Commission for the period covered by the papers. In a private communication (9 September 1989) he writes "I served for one period ... nominally, but that period was totally inactive. The second period was somewhat active. I was invited to serve for a third period, but then told that was a mistake, because 3 periods of service were not permissible".

The material is chiefly correspondence and papers re IUPAP sponsorship of conferences.

7 folders.

F.178	1959-61	F.182	1966
F.179	1962	F.183	1967
F.180	1963-64	F.184	1968-69
F.181	1965		

F.185 KING'S COLLEGE LONDON 1975

Brief correspondence re "luncheon discussion on the future of the Physics Department at King's", March. Frank was approached by Sir Hermann Bondi to advise the working party (Bondi, V. Gold and M.H.F. Wilkins) of his views on the future of the department following the retirement of Professor W.C. Price.

F.186, F.187 MATERIALS SCIENCE CLUB 1967, 1971-73

F.186 Brief correspondence, programme of 1967 AGM and Conference on Materials in Archaeology, Banbury, 22-23 September. Frank was awarded the Club's A.A. Griffith Medal. With copy of Frank's speech.

Brief correspondence with J.W. White, Griffith Medallist for 1971, with copy of his speech.

F.187 Brief correspondence and papers, March 1972. Frank was a member of the Awards Sub-Committee which selected the Griffith medallist for 1972.

Correspondence, programme of 10th Anniversary meeting, Great Malvern, 24-26 October 1973.

F.188-F.191 MINISTRY OF DEFENCE 1956-58

Department of Scientific Intelligence translations of information re higher education and scientific and engineering research in the Soviet Union, with covering letters.

4 folders.

F.192 MINISTRY OF SUPPLY 1949-53

Offer of consultancy with Atomic Energy Research Establishment, Harwell, initially for one year from 21 February 1952. With copies of form "Estasecret" (for Official Secrets Act) and of memorandum re patents, initialled by Frank indicating acceptance.

Correspondence re visit to Division of Atomic Energy Metallurgical Laboratories, Culcheth, Lancs., 17 March 1953, to assist in a theoretical study of "the problem of diffusion of inert gases through certain metals".

Correspondence and papers re service on committees of the Advisory Council on Scientific Research and Technical Development, 1949 (Liquid Fuels Committee), 1952 (Propellants Committee), 1953 (High Explosives Committee).

F.193 MOLECULAR CRYSTALS DISCUSSION GROUP 1975-84

Circular re possibility of forming "a U.K. Discussion Group on Molecular Crystals" with photocopy of Frank's request for further information dated "17/10/75"; newsletters 3, 8, 9 and 14.

F.194 NATIONAL ACADEMY OF ENGINEERING 1982-86

Frank was elected a Foreign Associate Member of the US National Academy of Engineering in 1980. See A.27.

Correspondence re election of Foreign Associate Members 1982, 1984, and re London meetings of British Members 1983, 1986.

F.195-F.203 NATIONAL PHYSICAL LABORATORY (NPL) 1966-68

Frank was a member of the NPL's Morgan Committee, an advisory committee assisting the NPL Steering Committee, 1966-68. It was dissolved after its meeting on 5 December 1968 (F.200).

F.195-F.200 Correspondence and papers for Morgan Committee meetings 1968.
6 folders.

F.195	18 January (1)	F.198	4 July (1)
F.196	18 January (2)	F.199	4 July (2)
F.197	18 January (3)	F.200	5 December

- F.201 Correspondence and papers re Morgan Committee "Working Party to consider the future role of the Materials area of the NPL in the field of Plastics and Polymers".

Frank was a member of the Working Party which was chaired by G. Gee. It met on 16 November 1967 and reported to the fourth meeting of the Morgan Committee, 18 January 1968. Its final report is at F.195.

- F.202 Claims for fees and expenses, 1966-68.

- F.203 Miscellaneous later correspondence with NPL colleagues, 1969, 1970.

- F.204 PHYSICAL SOCIETY 1949-58

General and editorial correspondence. Includes notification of Frank's election to Fellowship, May 1949, and to Council, May 1956.

- F.205-F.250 PUGWASH CONFERENCES ON SCIENCE AND WORLD AFFAIRS 1968-86

The Pugwash Conferences on Science and World Affairs originated in a meeting of scientists held in Pugwash, Nova Scotia in 1957 following an appeal from Bertrand Russell and Albert Einstein against the further use of nuclear weapons. Although nuclear disarmament remained the Pugwash movement's main concern, Pugwash conferences were not devoted exclusively to this issue.

Initially the movement was organised by a Continuing Committee of representatives from each geo-political bloc, to which Frank was elected as a UK representative in 1974 succeeding R.E. (later Sir Rudolf) Peierls. In 1975 the Continuing Committee was replaced by the Pugwash Council on which Frank continued to serve.

In a letter of 10 December 1974 to the Executive Secretary of the Royal Society (F.244) Frank commented that prior to his election to the Continuing Committee Pugwash "was not ... one of my activities, though Cecil Powell got me to one previous full meeting of Pugwash, in 1968 [F.213-F.218]".

The material is arranged as follows:

F.205-F.212	Continuing Committee/Council
F.213-F.240	Pugwash conferences, symposia and workshops
F.241-F.244	British Pugwash Group
F.245-F.250	Miscellaneous material

Continuing Committee/Council

- F.205 1974 January-July. Includes letter, 22 April, from B.T. Feld, Pugwash Secretary-General, notifying Frank of his election to the Continuing Committee.
- F.206 1974 September-December. Includes material re the "de facto expulsion of Israel from UNESCO" which Frank condemned.
- F.207-F.209 1975 April. Papers for meeting of Continuing Committee, Budapest, 14-16 April, held prior to 23rd Symposium (F.223-F.225). 15 April was set aside to consider item 9 on the agenda, "The Future of Pugwash", and most of the material relates to this and to item 10 "UNESCO and Israel".

3 folders.
- F.210 1976 January, May.
- F.211 1976 August. Agenda and papers for meeting of Council, Mühlhausen, GDR, 24-25 August, held prior to 26th Conference (F.227, F.228).
- F.212 Various dates, 1977-82. Includes letter, 3 June 1977, from W.F. Gutteridge of the British Pugwash Group enquiring whether Frank was "interested in standing [for the Pugwash Council] for a further period."

Pugwash Conferences, Symposia and Workshops

- F.213-F.218 18th Pugwash Conference, Nice, 11-16 September 1968. Frank was a member of Working Group 4 "Scientific and Technological Man-Power Problems in Developing Countries".
- F.213 Programmes; list of participants; general information; background information on A. Sakharov.
- F.214 Agenda for and lists of members of Working Groups; annotated and final reports of Working Groups.

- F.215-F.218 Working Papers
4 folders.
- F.219 1st Pugwash Symposium on Control of the Peaceful Uses of Atomic Energy, London, April 1968.

Frank's manuscript notes on proceedings.
- F.220 20th Pugwash Symposium on the need for, and terms of reference of, an International Institution of World Energy Problems, Arcet-Senans, France, 4-8 July 1974.

Reports of symposia A and B; 2pp manuscript note by Frank beginning "The primary needs of mankind are water, food, shelter, communication and organizational control".
- F.221, F.222 24th Pugwash Conference on Disarmament, Energy Problems and International Collaboration, Baden, Austria, 28 August - 2 September 1974.
- F.221 Invitation; correspondence and notes re arrangements; list of participants; reports of Working Groups.
- F.222 Working Papers 1-6, 11, 12.
- F.223-F.225 23rd Pugwash Symposium on Scientific, Technological and Cultural Cooperation in Europe, Budapest, 17-20 April 1975.
- F.223 Brief correspondence re arrangements; programme; lists of invitees and lectures etc.
- F.224, F.225 Working Papers.
2 folders.
- F.226 25th Pugwash Conference on Development, Resources and World Security, Madras, 13-19 January 1976.

Statement from Pugwash Council; reports of Working Groups.

- F.227, F.228 26th Pugwash Conference on Disarmament, Security and Development, Mühlhausen, GDR, 26-31 August 1976. See also F.211
- F.227 Brief correspondence re arrangements; lists of participants and papers.
- F.228 Miscellaneous papers and reports, including reports of Working Groups.
- F.229 "Proceedings of the Thirtieth Pugwash Conference on Science and World Affairs" on Arms Limitations, Security and Development, Breukelen, Netherlands, 20-25 August 1980. Frank was a member of Working Group 4 "Changing Concepts of Security: Current Conflicts". He and Sir Rudolf Peierls submitted reports to the British Pugwash Group (F.244).
- F.230-F.238 31st Pugwash Conference on The Search for Peace in a World in Crisis, Banff, Canada, 28 August - 2 September 1981. Frank was in Working Group 2 on "Avoiding Conventional War". For group photograph of participants see A.97.
- F.230 Invitation; notes and correspondence re arrangements; programmes and circulars; lists of participants and papers.
- F.231 Frank's manuscript notes on proceedings; draft reports of Working Groups (Group 2 report annotated by Frank); *New York Times* report on conference.
- F.232 Miscellaneous papers, includes copy of "Salutation" delivered by G.F. Kennan on receipt of Einstein Peace Prize, 19 May and of "Opening Address" for Pugwash Conference by William Epstein.
- F.233-F.238 Working Papers.
6 folders.
- F.239 32nd Pugwash Conference, Warsaw, 26-31 August 1982.

Correspondence and papers. Much of the material relates to the opposition of the US Pugwash Committee to holding the Conference in Poland following the imposition of martial law on 13 December 1981.

- F.240 Material re other Pugwash Conferences, Symposia and Workshops, various dates, 1970-86.

British Pugwash Group (BPG)

Frank was invited to join the Executive Committee of BPG in January 1974 following his nomination as a UK representative to the Pugwash Continuing Committee (F.205).

- F.241, F.242 Papers for BPG Executive Committee meetings.
- F.241 1974, 1975.
- F.242 1976, 1979-81. Includes list of BPG members at January 1977.
- F.243 Papers for BPG annual meetings 1974-76, 1980-85.
- F.244 General correspondence and papers 1974-77, 1980-86. Includes 1974-77 correspondence re relations between BPG and the Royal Society.

Miscellaneous material

- F.245, F.246 Papers for AGMs of Pugwash Limited, various dates 1976-86. Chiefly Directors' Reports and Accounts.
- 2 folders.
- F.247-F.249 Miscellaneous correspondence and papers.
- 3 folders.
- | | | | |
|-------|------------|-------|------------------|
| F.247 | 1974, 1975 | F.249 | 1980, 1982, 1983 |
| F.248 | 1976 | | |
- F.250 *Pugwash Newsletters*. Vol 12 no 3 (1975); vol 18 nos 1-3 (1980-81); vol 19 nos 1,2 (1981); vol 20 nos 1,3 (1982-83); vol 22 no 4 (1985); vol 24 no 3 (1987).

F.251-F.296 QUEEN ELIZABETH'S HOSPITAL BRISTOL 1967-86

Frank was a governor of Queen Elizabeth's Hospital, an independent school for boys in Bristol, from December 1961. From 1982 he was Chairman of the Board of Governors for two years.

The material is chiefly papers for Board of Governors and School Committee meetings from 1971.

F.251-F.281 Agenda and papers for School Committee and Board meetings 1971-83, 1986.

31 folders.

F.251	1971	F.267	1979 (2)
F.252	1972 (1)	F.268	1979 (3)
F.253	1972 (2)	F.269	1979 (4)
F.254	1973 (1)	F.270	1980 (1)
F.255	1973 (2)	F.271	1980 (2)
F.256	1974 (1)	F.272	1981 (1)
F.257	1974 (2)	F.273	1981 (2)
F.258	1975 (1)	F.274	1982 (1)
F.259	1975 (2)	F.275	1982 (2)
F.260	1976 (1)	F.276	1983 (1)
F.261	1976 (2)	F.277	1983 (2)
F.262	1977 (1)	F.278	1983 (3)
F.263	1977 (2)	F.279	1986 (1)
F.264	1978 (1)	F.280	1986 (2)
F.265	1978 (2)	F.281	1986 (3)
F.266	1979 (1)		

F.282 Correspondence re membership of Board, various dates 1975-83.

Includes correspondence re offer of chairmanship to Frank and his acceptance, January-February 1982.

F.283-F.288 Correspondence re staffing (appointments, retirements etc.).

6 folders.

F.283	1967 (1)	F.286	1976-78
F.284	1967 (2)	F.287	1979, 1980
F.285	1967 (3)	F.288	1982, 1983, 1986

F.289 Correspondence with parents, 1982, 1983.

F.298 ROYAL RADAR ESTABLISHMENT MALVERN 1968

Correspondence and papers re visit to Royal Radar Establishment by Optics and Infra-Red Committee, 27 March, and re meeting of Gallium Arsenide and Gallium Phosphide working party, 18 November.

"The R.R.E. Electronic Materials Unit - An Interim Review", sent to Frank by D.H. Parkinson, c.1968.

F.299-F.343 ROYAL SOCIETY 1963-86

Frank was elected a Fellow in 1954. He served on the Council 1967-69 and was elected a Vice-President of the Royal Society at his first Council meeting. Frank delivered the Bakerian Lecture in 1973 (see E.33, E.34) and was awarded the Society's Royal Medal in 1979 (A.26).

The material is arranged as follows:

F.299-F.315	Council and Committees
F.316-F.323	Publications
F.324, F.325	Sectional Committee 2
F.326-F.332	Elections, research appointments and awards
F.333-F.340	Miscellaneous correspondence and papers
F.341-F.343	Royal Society Club

Council and Committees

For papers re the Paul Instrument Fund Committee, for which Frank served as an assessor 1970-72 and 1975-81, see J.129-J.143.

F.299 Council, 1967-69.

Miscellaneous correspondence and papers.

F.300 Armourers and Braziers' Company Research Fellowship Committee, 1971, 1975, 1984.

Chiefly papers for meeting 10 June 1975. Letter of 14 August 1984 is about the dissolution of the committee, which had been redundant since 1976 through lack of funds with which to finance the Fellowship.

- F.301-F.303 British National Committee for the History of Science, Medicine and Technology, 1975-77.
- Frank was a member of the committee for the period covered by the surviving papers.
- F.301 1975 correspondence re proposal for a biography of J.B. Hannay and related grant application.
- F.302 Agenda and papers for committee meeting, 12 December 1975.
- F.303 1976 correspondence and papers arising from request from the History of Science Division of the International Union for the History and Philosophy of Science for "a brief report on national activities".
- Minutes of Committee meeting, 19 December 1977.
- F.304 British National Committee for Physics, various dates 1970-76.
- Frank was a member of this committee for a period ending in 1973 and again 1976-81.
- Correspondence and papers. Includes 1973 "certificate" thanking Frank for his service on the committee.
- F.305 Symbols Joint Committee, various dates 1968-84.
- Frank was a member of this committee from 1975. It met infrequently, in 1974, 1980 and 1984, to consider amendments and additions to the Society's handbook *Quantities, Units and Symbols*.
- Miscellaneous correspondence and papers. 1979-80 material includes correspondence re "typographical question" whether the two letters designating a vector in the Thompson notation should be in bold print.

- F.306-F.315 Travelling Expenses Committee, 1968-84.
Frank was a member of the committee 1967-69.
- F.306-F.309 Committee papers and related correspondence, 1968-69.
4 folders.
- | | | | |
|-------|--------------------|-------|-------------------|
| F.306 | 1968 January-May | F.308 | 1969 March |
| F.307 | 1968 July-December | F.309 | 1969 July-October |
- F.310-F.312 Correspondence and papers re ad hoc committees to award travel grants for conferences.
3 folders.
- | | | | |
|-------|------|-------|---------|
| F.310 | 1968 | F.312 | 1971-74 |
| F.311 | 1969 | | |
- F.313, F.314 Correspondence and papers re applications for individual travel grants supported or assessed by Frank.
2 folders.
- | | | | |
|-------|---------|-------|---------------------|
| F.313 | 1968-74 | F.314 | 1975-77, 1980, 1984 |
|-------|---------|-------|---------------------|
- F.315 Correspondence and papers re Frank's applications for travel grants.

Publications

- F.316 Invitations to Frank to contribute to Royal Society publications, various dates 1975-86.
- F.317 Correspondence re Associate Editorship, 1976, 1977.
Frank was an Associate Editor for the mathematical and physical sciences 1973-77.

F.318-F.323 Correspondence and reports re papers submitted to the Royal Society communicated or refereed by Frank.

6 folders.

F.318	Various dates 1969-77	F.321	1978 (3)
F.319	1978 (1)	F.322	1979, 1980
F.320	1978 (2)	F.323	1981-87 and nd.

Sectional Committee 2

Frank was a member of Sectional Committee 2 (for Physics) for the period covered by the papers.

F.324, F.325 Correspondence and papers, 1970-72.

2 folders.

Elections, research appointments and awards

F.326-F.332 7 folders.

F.326	1963-65, 1968-70	F.330	1981
F.327	1972-75	F.331	1982
F.328	1976-79	F.332	1983-87
F.329	1980-81		

Miscellaneous correspondence and papers

F.333 1963. Material re Royal Society Discussion Meeting on New Materials, 6-7 June. Frank was an organiser and gave the "Introductory talk on strength of polymers", *Bibliog.* 82 (see D.60).

F.334 1967, 1969, 1970. Chiefly 1969-70 correspondence re Royal Society/Science Research Council (SRC) cooperation on science education in schools, arising from a suggestion made by Frank that financial support could be offered to the more ambitious school science projects.

- F.335 1971, 1972. Includes correspondence re Royal Society discussion on Green Paper Cmnd.4814 "A Framework for Government R. and D." (Dainton/Rothschild reports). Frank commented on the proposals in a letter of 31 December 1971. See also his draft at D.94, probably related to this. Folder also includes material re Royal Society Discussion Meeting on the measurement and interpretation of changes of strain in the Earth, 10-12 May 1972. Frank was a chairman and gave a paper on "Dislocation models for fault creep processes", *Bibliog.* 115 (D.108).
- F.336 1974, 1975. Chiefly correspondence re 1975 Royal Society Soirée at which Frank and K.H.G. Ashbee exhibited their "low temperature mechanical memory engine". (See J.2).
- F.337 1976. Includes correspondence re planned Royal Society discussion meetings on British participation in "Spacelab". Frank was approached "to suggest the name of a scientist ... whom we might approach to ask to help organize the scientific programme of the discussion meeting [on material behaviour in low gravity conditions]".
- F.338 1977-79. 1977 material is chiefly re report of the Committee on the Future of Broadcasting chaired by Lord Annan, including manuscript draft of Frank's letter commenting on the report. 1978 material is re visit of delegation from the Chinese Academy of Sciences.
- F.339 1980-83. 1982-83 material is re Royal Society Discussion Meeting on Thermotropic Liquid Crystals: physics, chemistry and applications, 27-28 October. Frank chaired the first session and gave the "Introduction", *Bibliog.* 141. Includes 7pp typescript draft of Frank's contribution with manuscript correction.
- F.340 1984, 1986.

Royal Society Club

Frank was elected a member of the Club in June 1973.

- F.341-F.343 Correspondence and papers for meetings.
3 folders.

F.341 1973, 1975-79
F.342 1980-82

F.343 1983-86

F.344 ROYAL SOCIETY OF ARTS 1970

Frank was elected a Fellow in December 1970.

Material re election. Includes copy of Frank's application form.

F.345-F.375 SCIENCE RESEARCH COUNCIL (SRC) 1967-79

Frank attended SRC meetings in 1968 as Royal Society assessor. He also served on the Liquid Crystals Panel of the Physics Committee and refereed grant applications for the SRC.

The material is presented as follows:

F.345-F.352	Council
F.353-F.360	Liquid Crystals Panel
F.361-F.371	Grant Applications
F.372-F.375	Miscellaneous correspondence and papers.

Council

Papers for meetings April-December 1968 in original covers, with related correspondence, notes and papers found with them.

8 folders.

F.345	17 April	F.349	27 September
F.346	15 May	F.350	16 October
F.347	19 June	F.351	20 November
F.348	17 July	F.352	18 December

Liquid Crystals Panel

The Liquid Crystals Panel of the SRC Physics Committee was established in 1973 after consultation with Frank. The Panel, of which Frank was a member, held its first meeting 22 June at which it was agreed to send out a letter of enquiry on research in the field of liquid crystals being undertaken by universities, commercial companies and individual researchers.

F.353 Correspondence 1972-73, principally with Sir Brian (later Lord) Flowers re establishment of Panel; invitation to serve.

F.354 Correspondence, notes and papers 1973, including 3pp typescript draft of Frank's "Introduction for liquid crystals report", with later 1p typescript amendment, February 1974.

- F.355 Draft reports on aspects of liquid crystal research prepared by Panel members.
- F.356-F.360 Papers for Panel meetings 1973-74. In original folders (except F.360).
5 folders.
- | | | | |
|-------|---------------------|-------|----------------------|
| F.356 | 22 June 1973 | F.359 | 12 February 1974 (1) |
| F.357 | 23 October 1973 (1) | F.360 | 12 February 1974 (2) |
| F.358 | 23 October 1973 (2) | | |

Grant Applications

11 folders.

F.361	1969-71	F.367	1975 (3)
F.362	1972	F.368	1975 (4)
F.363	1973-74	F.369	1975 (5)
F.364	1974	F.370	1976
F.365	1975 (1)	F.371	1977-79
F.366	1975 (2)		

Miscellaneous correspondence and papers

- F.372 1966, 1967, 1971-73.
- F.373 1973. Correspondence and papers re SRC Vacation Courses. Frank lectured on "Properties of dislocations and their role in equilibration" for the course on Perfect and Imperfect Crystals, Reading University, 10-28 September.
- F.374 1974. Includes correspondence re proposed regrouping of activities of SRC laboratories.
- F.375 1975, 1976.

F.376-F.378 STANDING CONFERENCE OF PROFESSORS OF PHYSICS 1974-76

Papers for meetings.

3 folders.

F.376 1974 Nov, 1975 Mar

F.377 1975 June

F.378 1975 Nov, 1976 Mar

F.379, F.380 WEST OF ENGLAND METALS AND MATERIALS ASSOCIATION 1973-74

Frank served as President of the Association 1973-74, giving the 1974 Presidential Address on "Crystals imperfect".

F.379 Correspondence 1973-74. Includes invitation to Frank to accept nomination for the Presidency and letter confirming his election.

F.380 Papers for Council meetings, 1973-74.