

THE ROYAL COMMISSION ON HISTORICAL MANUSCRIPTS

Report on the correspondence and papers of

GEOFFREY EMETT BLACKMAN, FRS (1903-1980)

agronomist

deposited in the

Bodleian Library, Oxford

Reproduced for the Contemporary Scientific Archives Centre

(CSAC 79/3/81)

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CONTEMPORARY SCIENTIFIC ARCHIVES CENTRE

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Catalogue of the papers and correspondence of

GEOFFREY EMETT BLACKMAN, FRS

(1903 - 1980)

Deposited in the Bodleian Library, Oxford

Compiled by: Jeannine Alton

Julia Latham-Jackson

1981

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INTRODUCTION

Blackman came from a family which has included several distinguished scientists; his father, Vernon Herbert Blackman, FRS, and his uncle, Frederick Frost Blackman, FRS, were both botanists, and his aunt, Dame Harriette Chick, was a well-known nutritionist. Blackman always felt pride in continuing this tradition, and often refers to the work of his father; a little material relating to the Blackman family can be found in Section A (see especially A.8 - A.14). Blackman's accounts of his own career and involvement in the study of factors stimulating and inhibiting plant growth can be found at A.3.

After graduating from Cambridge, Blackman worked briefly at Rothamsted Experimental Station and then from 1927 to 1933 as Head of Botany Section at the I.C.I. Research Station at Jealott's Hill, Bracknell, where Sir Frederick Keeble was Director; Blackman's main research was on grasses and on the use of sulphuric acid in weed control. In 1933 he moved to Imperial College, London, as Lecturer in Ecology in the Department of Botany, and remained there (under secondment to the Agricultural Research Council 1942 - 45) until 1945, when he moved to Oxford as Sibthorpe Professor of Rural Economy. Here he continued research on weed control, but also directed research teams on growth analysis.

During the Second World War, Blackman played an active part in initiating the Biology War Committee, of which he was Secretary throughout its existence (see D.1 - D.67 and the accompanying introductory note). The Committee advised on research projects and co-ordinated the results in reports on various aspects of improved sources and production of food, weed control, etc. One of these, on the distribution of the spindle tree, produced a wide public response, and the resulting correspondence and data provide a virtually nation-wide picture of the distribution of the species - arranged by the old counties of Britain (see D.44 - D.59).

Blackman's own primary research interest was in weed control, selective toxicity and herbicide techniques, and his international reputation in these areas led to his being invited in 1971 to serve on the National Academy of Sciences Committee on the Effects of Herbicides in Vietnam. This difficult and controversial assignment is well documented in D.99 - D.194 and is also referred to in the correspondence in A.17, A.18.

PROVENANCE

The material was assembled from Blackman's home, and from his former rooms at the Department of Forestry, Oxford, and the University Field Station at Wytham.

Several colleagues of Blackman have allowed items of biographical or personal interest to be included in Section A.

PUBLICATIONS

A set of publications is included at A.19.

ACKNOWLEDGEMENTS

We are glad to acknowledge expert help given by Dr. D.J. Osborne (Weed Research Organisation) and Mr. D.S. Porter (Bodleian Library, Oxford) in identifying and assessing material.

We thank Professor J.L. Harley and Mr. J.D. Fryer for their help in assembling recollections of Blackman, and those whose contributions are included in A.15 - A.18.

We are especially grateful to Mrs. Audrey Blackman for her enthusiastic encouragement of the work on the collection.

SUMMARY OF CAREER

- b.1903 (Son of Vernon Herbert Blackman, FRS)
- educ. King's College School, Wimbledon
- 1923 - 26 St. John's College, Cambridge (Natural Science Tripos)
Half-blue for rifle shooting 1923, 1924, 1925, 1926
- 1926 - 27 Department of Physics, Rothamsted Experimental Station
- 1927 - 35 Head of Botany Section, I.C.I. Research Station, Jealott's Hill, Bracknell, Berks.
- 1931 married Audrey Babette Seligman
- 1935 - 45 Lecturer in Ecology, Department of Botany, Imperial College of Science and Technology, London
- 1935 - 40 Assistant Scientific Editor, Gardeners' Chronicle
- 1942 - 46 Secretary, Biology War Committee
- 1945 - 70 Sibthorpe Professor of Rural Economy, Oxford University
- 1950 - 70 Director, Agricultural Research Council Unit of Experimental Agronomy, Oxford University
- 1959 Fellow of the Royal Society (Vice-President 1967 - 68)
- 1963 - 64 President, Institute of Biology
- 1971 - 74 Member, National Academy of Sciences Committee on the Effects of Herbicides in Vietnam

SECTION A

BIOGRAPHICAL AND PERSONAL, A.1 - A.19

A.1

Miscellaneous biographical information.

Includes: Autobiographical notes compiled by Blackman, probably for Royal Society.

Obituary notices, 1980.

Article, Oxford Times, 1961.

Introduction by Hoblyn to Blackman's Amos Memorial Lecture, East Malling, 1961.

Notes on Blackman's career, c 1970.

Citation for Blackman's Fellowship of the Imperial College, London, 1968.

A.2

School reports:

Leeds Girls' High School, 1910-11.

Rokeby, Wimbledon, 1911-17.

King's College School, Wimbledon, 1917-22.

A.3

'British Developments in Weed Control, 1930-45.'

Transcript of talk given by Blackman at Weed Research Organisation (W.R.O.), Oxford, 10 April 1970.

14 pp. uncorrected typescript.

This item is included by permission of Mr. J.D. Fryer, Director, Weed Research Organisation, and should not be quoted or reproduced without his agreement.

Mr. Fryer describes it as 'an unedited verbatim account which recaptures vividly his early career and is important in documenting some facts about the early days of weed research and the discovery of the first hormone weedkillers'.

'An Historical Survey of the Development of Herbicides.'

This is one of Blackman's contributions to the Working Papers of the Committee on the Effects of Herbicides in Vietnam. It refers in part to his own research and is included here for ease of reference. An additional copy remains with the Reports of the Committee in D.194.

See D.117, D.146, D.190 for further material and correspondence on the history of 2,4-D.

Biographical and Personal

- A.4 Visit to University of British Columbia, Vancouver, 1971.
Blackman held a Killam Senior Fellowship and was Visiting Professor at the University, January-May 1971.
Folder includes correspondence re award of Fellowship, arrangements for visit, 4 pp. typescript outline of lectures to be given by Blackman in the Faculty of Agricultural Sciences.
- A.5 'Conversation with Professor G.E. Blackman, Oxford University', 28 April 1971.
28 pp. typescript of discussion with M. Shaw (Dean, Faculty of Agricultural Sciences, University of British Columbia) on organisation and teaching of agricultural science, comparison of British and Canadian universities, etc., recorded during Blackman's visit.
- A.6 Correspondence and papers re Professorship of Forest Science, Oxford, 1975-76.
Blackman was Chairman of the Advisory Committee for Forestry until 1978, and responsible for collecting opinions and drafting submissions to the Secretary of Faculties.
Includes drafts and comments from colleagues and members of the Forestry Advisory Council.
- A.7 Miscellaneous papers relating to societies, companies and associations to which Blackman belonged, committees on which he served, etc.
There is no complete record of all such bodies, and these are intended only as token evidence of his very active public life.
- A.8 Miscellaneous correspondence and papers of biographical interest.
Includes: Letter to V.H. Blackman from Sir John Russell, 1948.
Letter from Sir Henry Tizard re special honorarium paid to Blackman for his wartime work, 1942.
Ms. note by Blackman '36 hours', chronicling two busy days, probably 1943; includes first reference to 'proposal to eradicate spindle tree'.
Letter of congratulation on FRS, 1959.
Birthday letters from sister-in-law, 1966, and 'Dad' 1967 (V.H. Blackman, who died in that year aged 95).
Letters exchanged with 'Aunt Harriet' (Dame Harriette Chick) on soya bean protein, 1942.

Biographical and Personal

- A.9 Miscellaneous items of biographical interest.
- Includes: Group photograph, 1969, with key, and early photograph, c 1934.
- Reminiscences by Blackman of his uncle (unnamed) including some autobiographical information. Written in 1947. 9 pp.
- A.10-A.14 Material relating to Vernon Herbert Blackman, FRS.
- A.10 Copy of Will, Executorship account, group photograph at Imperial College, London, 1949 (with key).
- A.11 Correspondence re Memorial Lecture for V.H. Blackman, given by E. Ashby on 2 May 1968 at Imperial College, 1967-68.
- A.12 Letters of sympathy received by Blackman on the death of his father.
- Correspondence re memorial notices in Annals of Botany, British Mycological Society's Transactions.
- A.13 Correspondence, mainly with H.K. Porter, re her Memoir of V.H. Blackman for the Royal Society. Includes some reminiscences of his father by Blackman. 1967-68.
- Later correspondence from H.K. Porter re her entry on V.H. Blackman for the Dictionary of National Biography, 1977
- Offprints of published obituaries.
- A.14 Miscellaneous documents and memorabilia relating to the Blackman family. Includes Apprenticeship Indenture of George Blackman 1863 and Freedom of City of London conferred on Frederick Blackman, 1883.

Biographical and personal

- A.15-A.18 Tributes to Blackman and his work, recollections and information, contributed by colleagues. Many of these were assembled by J. L. Harley for his Royal Society Memoir and were passed on for inclusion by him.
In alphabetical order.
- A.15 D.P. Bickmore (Blackman's contribution to cartography) 1980
J.N. Black (Blackman at Oxford) 1980
G.W. Cooke (Notes on Blackman's career, for Blackman lecture) 1979
L. Fowden (Blackman at Rothamsted) 1980
- A.16 J.D. Fryer 1980
H. Goodwin 1980
J. L. Harley (address at memorial service to Blackman, 1980)
- A.17 R.W.J. Keay (Blackman's work on cartography, and for International Biological Programme) 1981
A. Lang (Blackman's service on Herbicides in Vietnam Committee) 1980
D. J. Osborne (note on Blackman's career and work) 1980
- A.18 H.K. Porter (Blackman, V.H. Blackman and others at Imperial College) 1980-81
P.W. Richards (Blackman's services on Biology War Committee, Herbicides in Vietnam Committee) 1980
A. J. Rutter (Blackman at Imperial College) 1980

Biographical and personal

A.19

Published papers, 1926-78

1 box.

This includes a copy of each of the publications found at Blackman's home or among his papers.

Also included here is a list of reprints of his publications (1932-40) which are held at Jealott's Hill Research Station, Bracknell.

Research reports prepared by Blackman for the Agricultural Research Council and other bodies are included in:

C.17-C.23, C.28-C.33, C.37, C.39

D.10, D.19, D.22, D.37, D.40, D.78, D.96,
D.115, D.119, D.126, D.127, D.140

SECTION B

LECTURES, B.1 - B.7

- B.1 'Introduction to Crop Ecology.'
Notes, headings and narratives for a course of lectures, probably at Oxford University.
- B.2 'Physiology of Plant Growth.'
Notes, drafts, bibliographies for a series of lectures with this title. No date or place.
- B.3 Weed control.
Untitled notes or draft for talk on the subject. No date or place.
- B.4 'Plant Competition.'
2 sets of drafts and notes for lectures.
- B.5 Notes for lecture on plant nutrition.
- B.6, B.7 Lectures at Hong Kong, 1972-73.
Blackman was Royal Society Visiting Professor at Hong Kong September 1972-January 1973. He lectured at the University of Hong Kong and the Chinese University of Hong Kong on herbicides, growth analysis as a tool in ecology, and the analysis of yield.
- B.6 Timetable and programme of lectures at both universities.
Typescript text of general public lecture on 'The impact of herbicides on agricultural history in the past, present and future', 9 pp.
Set of diagrams, graphs, etc. used as teaching material in lectures.
- B.7 Correspondence with colleagues, university authorities and Royal Society, re visit, and re Blackman's report to the Society, a copy of which is included.
Includes photograph of Department of Botany, University of Hong Kong.

SECTION C NOTES, DRAFTS AND WORKING PAPERS, C.1 - C.46

This Section contains a full record of Blackman's early research on grasses, and of his classic work on the bluebell (C.2 - C.7).

There are also data, reports and correspondence relating to his two chief research responsibilities during the Second World War; these were the cultivation of oil seed crops (C.8 - C.25) and investigations in weed control (C.26 - C.38).

Much of Blackman's later research was collaborative. Examples have been retained of some of the significant projects which he directed or to which he contributed.

The help of Dr. D.J. Osborne in identifying material in this Section is very gratefully acknowledged.

Notes, drafts and working papers

- C.1 Work on grasses
- Carried out at Jealott's Hill Research Station. Blackman published a series of papers on the growth of grasses, some in collaboration with W.G. Templeman, in Annals of Botany, 1938-39.
- Folder contains experimental notes and calculations on effects of nitrogen, protein, temperature and other factors on growth of grasses, with draft for paper on the subject. Some of the analysis sheets are not in Blackman's hand. Various dates, 1933-36.
- C.2-C.7 Work on Bluebell (*Scilla non-scripta*)
- Data, graphs, drafts, correspondence (not all in Blackman's hand).
- Blackman wrote a series of articles with various collaborators, under the general title 'Physiological and Ecological Studies in the Analysis of Plant Environment', published in Annals of Botany, 1946-54. Those on *Scilla non-scripta* were in collaboration with A.J. Rutter.
- C.2 Data from Yattenden Common.
- Data from Slough, 1938-39.
- Enclosed here is correspondence, 1939, exchanged with M.S. Bartlett on the statistical analysis of the data.
- C.3 Data from unnamed site, some dated 1937.
- C.4 Comparative data on several sites, 1939-40, with 3 pp. draft for part of paper (not in Blackman's or Rutter's hand).
- C.5 Data, mainly on effects of light on plant distribution, various dates, 1937-40, and some on grass competition.
- Includes several undated letters re experiments and data from collaborator, A.J. Rutter.
- C.6 Correspondence, January-April 1942, with colleagues on the distribution of *Scilla non-scripta*, for an account which Blackman was preparing for 'Biological Flora of the British Isles' in J. Ecol.
- Blackman's notes and tables on the subject, and data sent by correspondents, are included.

Notes, drafts and working papers

C.7

Later notes and drawings on the distribution of scilla in UK and Europe. Perhaps for article Endymion nonscriptus by Blackman and Rutter, J. Ecol., 1954.

Includes a letter from Rutter, 1953.

Notes, drafts and working papers

- C.8-C.25 Work on Oil Seed Crops, 1940-45.
- C.8-C.12 Sunflower experiments.
- C.8 Oil seed data, 1941.
Experiment results and calculations on linseed and sunflowers, 1941, on various named sites, with a letter on the results, from A.J. Rutter.
- C.9 'Sunflowers Assimilation'
Data of experiments numbered I - XI, testing growth under varying conditions of light intensity.
Various dates, 1940-43.
- C.10 Sunflower data.
Experiments, numbered I - XI, on assimilation rates.
Various dates, 1940-43.
First page contains 'Summary of data', giving dates and duration of experiments, and tabulating results.
- C.11 Sunflower data, on the effect of light intensity on the growth of the sunflower.
Tables and calculations of experiments, mainly nos. I - II, VII - XI of a series of twenty.
The experiments were conducted at various times, 1940-43, but the tabulation was all done at a later date.
- C.12 Correspondence on sunflower and linseed experiments, mainly February-June 1943.
With farmers, suppliers and officials re arrangements for sowing, threshing and harvesting crop, supply and demonstration of strains and techniques, etc.
Not indexed.
- C.13 Work on flax, 1942-43.
Correspondence with growers and suppliers re experiments on weed control in flax, January-April 1943.
Not indexed.
Includes report on 'Flax Trials 1942-43' prepared by Ministry of Agriculture and Fisheries.
- C.14 Work on maize (especially flint maize), 1943.
Correspondence with growers and suppliers.
Not indexed.

Notes, drafts and working papers

- C.15, C.16 Work on soya, 1941-43 (mainly 1943).
- C.15 Correspondence with growers and farmers.
Not indexed.
- C.16 Correspondence re supplies of soya bean seed, mainly from Canada and USA.
Not indexed.
- C.17-C.23 Miscellaneous reports by Blackman on his oil seed research, 1941-45.
C.17-C.22 were prepared for the Agricultural Research Council; C.23 was probably prepared for Imperial College.
- C.17 'Progress Report on the 1941 Linseed Experiments.'
This is referred to, and numbered as, the third progress report but the previous two have not survived.
12 pp.
- C.18 'Preliminary Report on the 1943 Sunflowers Investigation.'
12 pp.
- C.19 'Progress Report on the 1943 Sunflower Experiments.'
A.R.C. 7278. 31.1.44.
25 pp.
- C.20 'Progress Report on the 1943 Soyabean Experiments.'
A.R.C. 7306. 31.1.44.
14 pp.
- C.21 'The Cultivation of Flint Maize. Progress Report on the 1943 Experiments.' A.R.C. 7169. 28.10.43.
9 pp.
- C.22 Agenda for A.R.C. Conference on the Cultivation of Oilseed Crops, 7 February 1945.
Includes several reports by Blackman on Sunflowers, Linseed and Maize.
- C.23 'Annual Report.' 2 pp. n.d.
Probably prepared for Imperial College, c 1944.
- C.23A Later report on oilseed crops (linseed, poppy) by Blackman, Woodford and Bunting, 1949 (A.R.C. 11582).

Notes, drafts and working papers

- C.24 Correspondence re various articles and advisory leaflets by Blackman on onions, sunflower seeds, weed control, etc., published in Agriculture (the journal of the Ministry of Agriculture), Poultry Farmer, etc.
Includes drafts. 1941, January-April 1943.
Not indexed.
- C.25 Miscellaneous correspondence re Blackman's research teams on oil seed crops and weed control, appointment of research assistants, equipment and supplies, financial estimates, etc. Mainly 1943.
Not indexed.

Notes, drafts and working papers

- C.26-C.38 Work on Weed Control, 1941-46.
- C.26 Work on onion spraying.
Data collected from various sites, 1941.
Blackman published a brief paper, 'The control of weeds in onions', in Annals of Applied Biology, 1942, and also an advisory leaflet 'The control of annual weeds in onions by sulphuric acid spraying', a draft for which is included in the folder.
- C.27 Correspondence on weed control experiments, some 1941 and 1942, but mainly 1943.
With farmers, suppliers and officials re arrangements for spraying crops, types of chemicals and equipment, etc. Includes arrangements for a talk to be given by Blackman on B.B.C. Home Service programme 'Farming Today: Spraying for Weeds', on 22 April 1943.
Not indexed.
- C.28-C.33 Miscellaneous reports and article by Blackman on his weed control research, 1944-45.
- C.28 'Alternatives to Sulphuric Acid for the Control of Annual Weeds in Cereal Crops.'
6 pp. draft for article published with slight changes of text and title in Agriculture, April 1944.
- C.29 Agricultural Improvement Council for England and Wales, Conference on Design of Spraying Machinery.
Draft Report of Technical Sub-Committee.
4 pp. typescript with ms. annotations by Blackman.
- C.30 'Investigations on the Control of Annual Weeds by Chemical Methods. Progress Report on the 1943 Experiments.'
A.R.C. 7277, 19.1.44.
18 pp.
- C.31 'Investigations on the Control of Annual Weeds by Chemical Methods. Progress Reports on the 1944 Experiments.'
20 pp. typescript draft, and tables, of report to A.R.C. (2 copies).
- C.32 'Destruction of Vegetation by Chemicals for Tactical Purposes.'
4 pp. draft report, 22 October 1944 (2 copies).

Notes, drafts and working papers

- C.33 'Investigations on the Control of Weeds by Chemical Methods. Progress Reports on the 1945 Experiments.' A.R.C. 8491, 11.3.46.
18 pp.
- C.34-C.37 Miscellaneous related reports and papers.
- C.34 Minutes of Technical Development Committee Meeting, Ministry of Agriculture and Fisheries, 21 January 1943 (on weed control).
- C.35 'The Control of Annual Weeds in Flax', 1945 (Ministry of Supply note).
- C.36 'The differential effect of plant-growth substances on plant species', by Templeman et al, 1945. (on weed control experiments at Jealott's Hill).
- C.37 'Use of Oil Sprays for weed control.' (Background paper sent to Blackman, February 1945).
Included here is a later report on 1948 experiments in weed control, by Blackman to A.R.C. (no.10648).
- C.38 Correspondence on crop destruction arising from weed control experiments, 1944-45.

Notes, drafts and working papers

- C.39 'Effects of density on growth and on photosynthetic efficiency.'
- Extensive notes, tabulated data and graphs, many annotated by Blackman and by E.G. Brittain, 1958-60.
- The material covers experiments on artichoke, sunflower, snowdrop, scilla, bluebell, radish, white mustard, nasturtium, French bean, cauliflower, etc., and includes weather record for the period of the experiments. Pages are numbered 1-91; there are several additional loose pages of notes and calculations by Blackman which have been left in place.
- Also included is a paper or report by Blackman, 'The Application of the Concepts of Growth Analysis to the Assessment of Productivity,' which refers to E.G. Brittain's work.
12 pp. typescript, n.d.
- C.40-C.42 Work on Pisum, 1960-67.
- C.40 'Pisum.'
- Tabulated results of experiment on uptake of various growth substances, September 1960 (not in Blackman's hand).
- C.41 'Pisum experiment.'
- Tabulated data on series of experiments on peas grown in various conditions of light and feeding, some with comments and queries by Blackman.
- Various dates, January 1961-February 1962.
- C.42 Folder of material inscribed 'For Prof. G.E. Blackman' of 'Data and graphs for all the experiments done (on pea-seedlings) to note the effect of various hydroxylated and chlorinated derivatives of phenoxyacetic acid on the growth of epicotyl tissue.' July-September 1967.
(Record of work by Mrs. J. Nath.)
- C.43 'The effect of light and darkness on the uptake of C¹⁴ 2,4 Dichlorophenoxyacetic acid (2,4D) by Lemna Minor' (duckweed).
- Notes and experiment observations dated September 1963.
- Draft for paper on the subject, 23 pp. typescript (not by Blackman).

Notes, drafts and working papers

C.44, C.45

Work on growth analysis.

This formed part of the International Biological Programme Level I experiment on seasonal changes in the growth of selected species. In the UK programme, 1965-70, investigations were undertaken at Oxford and at the Scottish Horticultural Research Institute, Invergowrie, into Helianthus annuus L., Phaseolus Vulgaris L., and Zea mays L. An account of the work, and of the programme as a whole, is given in 'Photosynthesis and solar energy conversion', by Blackman and J.P. Cooper, Phil. Trans. Roy. Soc. Lond. B, 274, 1976.

See also D.88-D.98.

C.44

'IBP Section PP - Level I Experiments, Wytham, 1968-69.'

20 pp. typescript account, with ms. comments and annotations by Blackman.

C.45

Data 1968-70, with comparative tables for Oxford, Dundee, Sierra Leone and Rhodesia, and some correspondence with collaborators and colleagues.

C.46

Miscellaneous reprints, either association copies, or with significant annotations and comments by Blackman.

Blackman often used his own or others' published papers as the basis for future series of experiments, and also made extensive notes on the text and covers of the paper rather than in a separate notebook. These are retained as specimens of his working methods.

SECTION D

COMMITTEES AND CONSULTANCIES, D.1 - D.202

- | | |
|-------------|---|
| D.1-D.67 | Biology War Committee
(With an introductory note) |
| D.68-D.86 | Commonwealth Development Corporation |
| D.87 | East Malling Research Station |
| D.88-D.98 | International Biological Programme
Section P.P.-P., D.88-D.92
Joint Subcommittee on Productivity Studies of
Lowland Malayan Forest, D.93-D.98
(With introductory notes) |
| D.99-D.194 | National Academy of Sciences National Research
Council Committee on the Effects of Herbicides
in Vietnam
(With an introductory note) |
| D.195-D.201 | Rubber Research Institute of Malaya
(With an introductory note) |
| D.202 | UNESCO Man and the Biosphere Programme |

Committees and Consultancies

D.1-D.67 BIOLOGY WAR COMMITTEE

This arose from discussions during 1940 by the British Ecological Society, the Association of Applied Biologists and the Society for Experimental Biology, who formed a joint committee to enquire into wartime problems with reference to biologists and the biological sciences. After discussions with the Joint Committee of government research organisations (Agricultural Research Council, Department of Scientific and Industrial Research and Medical Research Council) the Biology War Committee was set up in 1941 to channel information and ideas for research between government and biological scientists, and to prepare reports or memoranda on 'any aspect of the War which is essentially biological or which has biological implications'. An account of the history, membership and scope of the Committee was published in Nature, 149, February 1942; a similar, revised note appeared in Nature, 154, December 1944. Copies of these are included in D.22 as well as in the set of publications in A.15. Early papers, reports and correspondence relating to the negotiations leading up to the formation of the Committee, which held its first meeting on 30 October 1941, can be found in D.1-D.8.

The Committee owed much of its original impetus to Blackman, who was its Secretary throughout its existence; see A.3 for his own references to its formation and work.

Blackman's own research interests and responsibilities, undertaken at this time by teams funded by A.R.C., were for oil seed crops and for weed control. His work early in the War on weed control in onions (C.26) led to his observation and later development of 'pre-emergence spraying', and in 1943 he made a major contribution to research on 2,4 - dichlorophenoxyacetic acid (2,4-D) (C.27-C.33).

As Secretary to the Committee, however, many other research projects and suggestions passed through his hands; not all of these were adopted or developed, but papers relating to them are kept in an alphabetical sequence D.26-D.67. Most of the material and research relates to Britain, and the production of human and animal foodstuffs, but see D.30-D.33, D.61-D.63 for projects dealing with tropical theatres of war.

Committees and Consultancies

- D.1-D.25 Origins and history of Biology War Committee, 1940-45
- D.1 Letters to W.P.K. Findlay (Secretary, Association of Applied Biologists) from scientists and colleagues re their wartime projects proposed or in hand.

Includes correspondence with A.V. Hill on wartime use of biologists. December 1940-February 1941.
- D.2 Correspondence, January-March 1941.

Re meeting of joint representatives at Maidenhead, 31 January 1941.

Includes a paper 'Applications of Biology in War', another version of which appears in D.6.
- D.3 Correspondence, February-March 1941.

Re meetings of biological societies, and an informal discussion on general purpose of proposed committee, held on 3 March.
- D.4 Correspondence and notes, March 1941.

Re membership of proposed Joint Committee of biological societies.
- D.5 Correspondence, March 1941.

Includes Blackman's letter to E.H.E. Havelock (A.R.C.) setting forth the purpose and proposed membership of Joint Committee (15 March), which formed the basis for discussion to set up the Biology War Committee.
- D.6 Miscellaneous memoranda from zoological and biological societies on the use of scientists in wartime.

 'On the Utilisation of Biological Scientists in Wartime', April 1940.

 'Applications of Biology in War' (account of January 1941 meeting, by Findlay).

 'On the use of biologists in the nation's war effort', (by C.H. Waddington, February 1941).

 From the Association of British Zoologists (with a letter from H.R. Hewer, February 1941).

 'Memorandum on the present position of biological research', by O.W. Richards, March 1941, presented jointly by the three biological societies.

Committees and Consultancies

- D.7 Correspondence and notes re meeting of Joint Committee, 24 March 1941, with various drafts by Blackman for memoranda on the 'Joint Biological War Committee', 'The Utilization of Biologists in Wartime', 'Government Grants for Biological Research', etc.
- D.8 Correspondence and papers, May-August 1941.
Mainly re relations of Joint Committee with Agricultural Research Council, and meeting of its representatives with Joint Committee of Medical Research Council, Department of Scientific and Industrial Research and Agricultural Research Council, 11 July.
Includes relevant section of official Minutes of meeting, and also Minutes of meeting of British Ecological Society, 12 August, which discussed the B.W.C.
- D.9 Correspondence and memoranda, July-November 1941, re first meeting of 'Biological War Committee', 30 October 1941.
Includes agenda, signed list of those attending, correspondence re membership, invitations to serve, and re Blackman's draft memorandum on the Committee's origin and function.
- D.10 Agenda and ms. Minutes of meeting of Executive Committee, 13 November 1941.
Agenda and Minutes of second meeting of Committee, 4 December 1941.
Includes 'Summary of present activities', outlining history of committee and projects examined in 1941.
- D.11 Correspondence re membership and representation, and proposed projects, October-December 1941.
- D.12 Correspondence and papers, January 1942.
Mainly re Executive Committee meeting on 14 January, at which the draft of the statement for publication in Nature was discussed.
Includes Minutes of meeting and drafts of the statement with suggestions and emendations by various committee members.
- D.13 Correspondence and papers, January-February 1942.
Mainly re membership, and attendance at meeting on 5 February 1942 (agenda included).
Includes letter from H. Godwin, 30 January, proposing various projects for action by committee, and Minutes of Executive Committee meeting, 11 February 1942.

Committees and Consultancies

- D.14 Correspondence, March-May 1942.
Re Meeting of Committee on 2 April, and projects proposed or in hand.
- D.15 Correspondence, June 1942.
Re Committee meeting on 18 June; Blackman's ms. notes of the discussion are included.
Also included are the Minutes of the meeting of the Executive Committee on 26 November.
- D.16 Correspondence, July-August 1943.
Mainly re membership.
Includes agenda for meeting of Executive Committee on 16 February 1943.
- D.17 Correspondence, September-December 1943.
Mainly re membership and representatives, and re meetings of Executive Committee on 6 October (Agenda included), and of Committee on 8 December (Minutes included).
- D.18 Correspondence, January-February 1944.
Re Meetings and projects.
- D.19 Miscellaneous reports, etc., 1944.
Minutes of meeting on 3 July 1944, with drafts of proposed notice to be published in Nature with various comments and corrections.
Blackman's 'Report on Activities during 1944'.
- D.20 Correspondence, January-September 1945.
Mainly re meetings.
Includes Agenda for meeting on 31 January.
- D.21 Correspondence, October-November 1945.
Re Executive Committee meeting on 24 October, and Committee meeting on 20 November, at which the future role of the committee was discussed.
Includes agenda and papers.

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- D.22 Miscellaneous papers on organisation of postwar agricultural science, 1945.
- Carbon of Blackman's letter on postwar farming, 9 pp., March 1945 (no addressee given).
- Note by Blackman on afforestation, perhaps for contribution to a discussion meeting, c 1945.
- Proposal for the founding of an Institute of Biology, by J.F. Danielli, heavily annotated by Blackman.
- Memorandum on 'Wild Life Conservation and Ecological Research from the National Standpoint', n.d. and probably not by Blackman, but annotated by him.
- Also included here are copies of the reports on the Biology War Committee published in Nature, 1942 and 1944.
- D.23 Financial correspondence, November 1941-February 1942.
- Mainly re request to the Royal Society for financial support for the Biology War Committee. (A grant of £100 was made.)
- D.24 Miscellaneous financial correspondence, July 1943-March 1944.
- Mainly re financial support from Agricultural Research Council, payment of expenses, etc., chiefly with the Committee Treasurer, J. Hammond.
- Includes a table of meetings held and those attending.
- D.25 Correspondence and papers, January-June 1942.
- Mainly with heads of university departments, and with officials, re recruitment of biologists and zoologists for various surveys and projects.

Committees and Consultancies

D.26-D.67 Projects investigated or reported on by the Biology War Committee

These are presented, for ease of reference, in an alphabetical sequence. The material varies from a brief exchange of correspondence to a more extensive project (including reports, committee papers, etc.) such as those on 'Living in the Jungle' (D.30-D.33), the survey of Rhamnus frangula (D.40, D.41) and of the Spindle Tree (D.44-D.59), and swimming in tropical waters (D.61-D.63).

Some of the correspondence contains references to other war-time projects on which Blackman or his colleagues were involved.

- | | | |
|-----------|--|---------|
| D.26 | Aerodrome turfing and camouflage.
Correspondence, brief reports. | 1941-42 |
| D.27 | Agar, and agar substitutes from sea-weed.
Extended correspondence, surveys, reports, committee papers.
See also Vegetable Drugs, D.64. | 1940-43 |
| D.28 | Horse chestnuts (for production of aesculin).
Correspondence. | 1941-42 |
| D.29 | Juniper,
Brief correspondence. | 1942 |
| D.30-D.33 | 'Living in the Jungle',
This was a Service Manual, produced by the Biology War Committee; its history is described by Blackman in his 'Report on Activities during 1944' (D.19) as follows: | 1944 |

"Service Manual 'Living in the Jungle'. During most of 1943 the Committee endeavoured without success to interest a number of Service Departments in the usefulness of a pocket size booklet giving information on how 'to live in the country' on the South East Asia front. It was considered that such a booklet would be of especial use to both air crews making forced landings and troops operating behind the enemies' lines.

It was not however until contact was established with the Inter Services Research Bureau at the beginning of 1944 that plans were made for the immediate production of the booklet.

Continued

Committees and Consultancies

- D.30-D.33 (continued) Subsequently discussion also took place with the Director of Army Hygiene (A.M.D.5) and the final form of the booklet agreed.

For the preparation of the booklet a sub-committee was set up to collect and collate information on a wide range of subjects including the fauna, the flora (particularly the common edible wild and cultivated plants and principal poisonous plants), insects, pests, diseases, native customs, methods of food preparation and jungle craft. Besides consulting individual biologists, foresters and doctors with an expert knowledge of the area, contact was also made with travellers and serving officers with personal experience of local conditions. In addition collateral information on the New Guinea front was obtained from the Australian Army Staff at Australia House.

The final draft of the booklet was completed by July and in consultation with the Royal Botanic Gardens, Kew, special drawings were prepared to illustrate the chief food and poisonous plants. The native names of these species were provided by the School of Oriental Languages.

The booklet, as produced by the War Office Section of the Stationery Office, consists of 50 pages (7" x 4.25") and 44 text figures. On the basis of information obtained by the Committee from the Ministry of Supply, it was printed on long fibre paper of the type specified for use in the field under tropical conditions."

- D.30 Miscellaneous drafts and corrected proofs of booklet, all with ms. corrections by Blackman.

Copy of booklet as published.

- D.31 Correspondence re booklet, 1944-45.

W.H. Burkill

P.A. Buxton

H.G. Champion

A.W. Darnell (illustrator, re drawings for booklet)

- D.32

C. Elton

W.P.K. Findlay (includes comments on booklet)

J.S. Huxley (Blackman's carbon only)

J.W. Munn

D.M. Newitt (congratulations on booklet)

Committees and Consultancies

D.42	Rooks. Correspondence.	1942
D.43	Rose hips. Correspondence and reports.	1941, 1945
D.44-D.59	The Spindle Tree (<u>Euonymus europaeus</u>).	1944-45

This project is described by Blackman in his 'Report on Activities during 1944' (D.19) as follows:

"The Distribution of the Spindle Tree (Euonymus europaeus) in Great Britain. At the request of the Agricultural Research Council the Committee agreed to formulate plans to obtain further information on the distribution and ecology of the spindle tree in Great Britain. The final proposals, sanctioned by the Council, included two main projects (a) to institute a general enquiry of biologists asking for observations and records of distribution (b) to arrange through university botanical departments for random transects to be examined in detail by teams of trained observers.

For the general survey, a questionnaire was drawn up and printed and some 1000 copies were sent out to the botanical members of the Association of Applied Biologists, the British Ecological Society, the Botanical Exchange Club and the Linnaean Society. The response to the appeal was extremely gratifying but the four hundred answers have required much sifting since replies were also received from laymen and school-boys due to unwanted and unauthorized press and B.B.C. publicity.

In drawing up a scheme for detailed random transects the Statistical Section of the Ministry of Supply Timber Control was consulted in view of the survey that had already been undertaken to estimate hedgerow timber by random sampling. In consequence a narrow random transect (1000 x 50 yds.) was adopted as standard running due North and South along the long axis; the position of the transect being chosen at random on ordnance maps before reaching the area. Altogether some 93 such transects were examined by teams from Imperial College, Portsmouth, Cardiff and Swansea. The distribution of the transects covered only two main areas - South Wales and the counties of Berks, Bucks and Hants.

By the end of 1944 a final report on the survey had not been completed owing to the amount of work involved in collating and correlating the large but diffuse volume of information."

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- D.44 Drafts and text of proposal for the survey, and of a questionnaire for wide circulation among members of botanical societies, describing the purpose and methods of the survey.
Draft letter to professors and heads of departments of botany, requesting co-operation.
2 pp. note of methods and procedure to be followed in conducting trial sample. June 1944.
- D.45 Draft of 'Report on Spindle survey in Middle Thames Valley, Western Chilterns, Berkshire Downs, Vale of White Horse, Cotswolds and Salisbury Plain areas' by L.E. Hawker.
4 pp. typescript + 20 pp. ms.
Brief correspondence re report, 1945.
- D.46-D.59 Correspondence, data and diagrams on the distribution of the spindle tree, received from professional and amateur botanists, members of local natural history societies, schools, and from the general public. The information varies in quantity and in sophistication of detail.
Not indexed.
- D.46 Bedfordshire
Berkshire
Buckinghamshire
- D.47 Cambridgeshire
Cheshire
Cornwall
- D.48 Derbyshire
Devon
Dorset
- D.49 Essex
Gloucestershire
Hampshire
- D.50 Herefordshire
Hertfordshire
Isle of Wight
Kent

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- D.51 Lancashire
Lincolnshire
London Counties
- D.52 Norfolk
Northamptonshire
Northern Counties (Cumberland, Durham, Northumberland,
Westmorland)
Nottinghamshire
- D.53 Oxfordshire
Salop
Somerset
- D.54 Suffolk
Surrey
Sussex
- D.55 Warwickshire
Wiltshire
Worcestershire
Yorkshire
- D.56 Information on two or more areas
- D.57 Ireland
- D.58 Scotland
- D.59 Wales

D.60 Storage of Tomatoes.
Correspondence.

1941

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D.61-D.63 'The Dangers of Swimming in Tropical Waters.'

1944-45

This project is described by Blackman in his 'Report on Activities during 1944' (D.19) as follows:

"Memorandum on the Dangers of Swimming in Tropical Waters.
The Committee was asked by the Inter Services Research Bureau to provide information on the potential dangers likely to be encountered by midget submarine crews and swimmers on operational missions in tropical waters, i.e. in an area stretching from the Indian Ocean through the East Indies to Australian seas.

As the matter was considered highly secret, enquiries were handled by the Executive Committee. The same procedure was adopted as in the case of the 'jungle' booklet. The principal marine biologists with knowledge or experience of tropical and subtropical waters, resident in Great Britain, were consulted, together with other biologists and doctors who had a first hand knowledge of these regions. The main sources of information included several departments of the Natural History Museum, University Departments at Aberdeen, Aberystwyth, Cambridge, Glasgow, Imperial College and Manchester Universities, the Marine Biological Station, Plymouth and the Australian Army Staff.

As a result of the enquiries it was possible to classify in the subsequent memorandum the main dangers into (a) attack by sharks and other predatory fishes, (e.g. barracoutar), moray eels and gropers, (b) crocodiles, (c) poisonous stings from species of (i) jelly fish, (ii) stone fish, (iii) cone shells, (iv) corals and (d) being trapped by giant clams. For some of the risks it was also possible (a) to assess the degree of danger, (b) to indicate the distribution of the various species and (c) to define the areas or conditions where or when the potential dangers were greatest.

In addition recommendations were made as to the equipment of the 'swimmers' (e.g. type of footwear, etc.), the treatment of wounds and poisonous stings, and possible means of minimising shark attack apart from the 'repellants' developed by the Americans and tested in the Caribbean."

No copy of the Memorandum survives with the manuscripts or in the set of Blackman's publications. The folders below contain correspondence with colleagues and advisers on various matters to be included, information and recollections, comments on the draft and published versions, etc.

Committees and Consultancies

- D.61 F.B.R. Brown
W.H. Burkill
P.A. Buxton
H. Godwin (Blackman's carbon only)
A.C. Hardy
E. Hindle
- D.62 F. Wood Jones
S. Kemp
O. Lowenstein
F.A. Mitchell-Hedges
C.F.A. Pantin
P. Richards
E.S. Russell
- D.63 R.B. Seymour Sewell
M. Smith
T.A. Stephenson
J.R. le B. Tomlin
G.M. Vevers
E.B. Worthington
C.M. Yonge
- D.64 Vegetable drugs. 1941-45
Correspondence, official circulars and pamphlets, notes and data, drafts and comments for Biology War Committee's 'Memorandum on the Production of Medicinal Plants in Great Britain', and on other research on the subject.
Includes some Minutes of Meetings of Vegetable Drugs Committee of the Ministries of Health and Supply, 1943-45.
- D.65 Warble fly (Derris substitutes). 1941-42
Correspondence.
- D.66 Wireworms. 1941
Correspondence and papers.
- D.67 Shorter enquiries and general correspondence re Biology War Committee. 1941, 1942
Not indexed.

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D.68-D.86 COMMONWEALTH DEVELOPMENT CORPORATION, 1969-77

Blackman served as Chairman of the Panel of Scientific Advisers.

Photocopies of papers, reports and correspondence sent to Blackman for information, and formal covering letters from secretaries or officials, are not indexed.

- D.68 28th Meeting, 3 July 1969.
Annotated Minutes, correspondence with Secretary re rice growing.
- D.69 29th Meeting, 6 July 1970.
Agenda, Chairman's briefing notes, Minutes.
- D.70 Background papers for 29th Meeting, all annotated by Blackman.
- D.71 30th Meeting, 1 July 1971.
Agenda, Chairman's briefing notes, Minutes and correspondence arising.
- D.72 Background papers for 30th Meeting, all annotated by Blackman.
- D.73 Correspondence on oil palm yields, November-December 1971, comment by Blackman on report by E.A. Rosenquist on oil palm yields.
- D.74 31st Meeting, 28 September 1972.
Agenda, Minutes, correspondence. (The Meeting was chaired by E.W. Russell in Blackman's absence.)
- D.75 Background papers for 31st Meeting.
- D.76 32nd Meeting, 26 July 1973.
Agenda, Chairman's briefing notes, Minutes.
- D.77 Background papers for 32nd Meeting, all heavily annotated by Blackman.

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- D.78 33rd Meeting, 7 August 1974.
Agenda, Chairman's briefing notes, draft and final version of Minutes incorporating Blackman's revisions.
Included here are 'Notes on Agricultural Projects 1973-74' and ms. and typescript versions of Blackman's report on 'Points of interest arising from VA visits' which was paper 236/74 at Meeting.
- D.79 Correspondence and reports on growth rates of pines in Swaziland, 1970-75 (discussed at meeting).
- D.80 Background papers for 33rd Meeting, many annotated by Blackman.
- D.81 34th Meeting, 2 July 1975.
Agenda, Chairman's briefing notes, draft and finalised Minutes incorporating Blackman's revisions, correspondence re pine growth.
- D.82 Background papers for 34th Meeting, many annotated by Blackman.
- D.83 35th Meeting, 21 July 1976.
Agenda, Chairman's briefing notes, heavily annotated Minutes.
Correspondence, 1976-77 on various projects proposed or under way.
- D.84 Background papers for 35th Meeting, most heavily annotated by Blackman.
- D.85 36th Meeting, 20 July 1977.
Agenda, Chairman's briefing notes, Minutes of Meeting.
- D.86 Background papers for 36th Meeting, most annotated by Blackman.

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D.87 EAST MALLING RESEARCH STATION, KENT

Blackman served for many years as Oxford University representative on the Governing Body; he resigned in November 1977.

The folder relates mainly to the appointment of a Director to succeed Professor A.F. Posnette (Blackman served on the Appointment Panel 1977-78); it also includes correspondence re his resignation from the Governing Body, and a set of Minutes of the Executive Committee for 8 March 1978 at which he took the Chair.

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D.88-D.98 INTERNATIONAL BIOLOGICAL PROGRAMME (I.B.P.)

The International Biological Programme was established by the International Council of Scientific Unions in 1964; the Programme, which was co-ordinated through a series of seven sections, terminated in June 1974. A series of synthesis volumes incorporating the results of national and international activities was published by Cambridge University Press.

The I.B.P. Adhering Organisation in Britain was the Royal Society; the Chairman of the British National Committee for I.B.P. was A.R. Clapham. Blackman was Chairman of Section P.P. (Production Processes), which was subdivided into P.P.-P. (Photosynthetic Activity and Solar Energy Conversion) and P.P.-N. (Biological Fixation of Nitrogen).

D.88 - D.92 refer to correspondence and final report on Section P.P.-P.

See C.44, C.45 for material related to the 'Level I' experiment on seasonal changes conducted under Section P.P.-P.

In addition to his Sectional Chairmanship, Blackman sat on various Subcommittees and ad hoc Committees set up to deal with specific aspects of the I.B.P. Programme, notably the Joint Subcommittee on Productivity Studies of Lowland Malayan Forest.

D.93 - D.98 refer to this project.

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D.88-D.92 Section P.P.-P.

At its meeting on 15 February 1974, The British National Committee for I.B.P. recommended that a two-day Discussion Meeting should be held at the Royal Society devoted to 'A Review of the U.K. contribution to I.B.P.', and that in addition to the publication of the Discussion Meeting papers in the Society's Proceedings or Transactions the possibility should be explored of publishing a paperback book giving an account of U.K. projects and achievements for I.B.P. The proposed paperback would contain chapters on the seven sections for I.B.P. and the overseas projects; this proposal was not completed, and the preparation of papers and accompanying bibliographies for the Discussion Meeting, which was held on 21-22 May 1975, became the main concern of those involved.

At the Discussion Meeting, Blackman presented a joint paper on 'Photosynthesis and Solar Energy Conversion' subsequently published in Phil.Tans.Roy.Soc.Lond, B. 274 (1976); his co-author, J.P. Cooper, was Chief Editor of the corresponding synthesis volume in the published series.

The material includes correspondence with colleagues and with the Royal Society re the assembling of data, the writing and presentation of the paper at the Discussion Meeting, and also various drafts and amendments, references to work in progress and/or undertaken for I.B.P., the compilation of bibliographies, etc. It includes some information about research, etc. which had to be omitted from the highly-condensed joint paper.

- D.88 Correspondence with colleagues, January-July 1974.
- D.89 Correspondence with colleagues, October 1974-June 1975.
- D.90 Miscellaneous drafts, bibliographies, etc. for paper.
Minutes of Meetings of I.B.P. committees during the period when the Discussion Meeting and publication were recommended.
Report of U.K. contribution to I.B.P. 1970 (Section P.P. heavily annotated by Blackman and used as a basis for 1975 paper).

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- D.91 Miscellaneous drafts and final version of Blackman's report on Production Processes research in UK, 1970-72.
- D.92 Correspondence, 1971, re I.B.P. conferences and meetings.
Minutes of Production Processes Subcommittee, December 1971 (annotated by Blackman).

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D.93-D.98 Joint Subcommittee on Productivity Studies of Lowland
Malayan Forest

Blackman was a member of the Subcommittee, which was set up on 7 March 1966.

It was eventually agreed to implement a research project in Pasoh Forest Reserve 'to determine rates of energy flow and biogeochemical cycles against a background of biomass evaluations together with an investigation of the water economy, and to establish a frame of reference in terms of gross climatic measurement and pedological studies'. (See D.97 for a fuller description of the project.)

Those participating were the Royal Society (for U.K. I.B.P.), the University of Malaya and the Malaysian Government, and the Japanese Society for the Promotion of Science. Blackman visited Japan and Malaya in December 1969 to assist in completing the research plans and agreement (D 96).

The Director (part-time) was J.A. Bullock (Head, Ecology Unit, School of Biological Sciences, University of Malaya); T. Kira (Professor of Biology, Osaka City University) led the Japanese team; the field survey was initiated by P.S. Ashton (Department of Botany, Aberdeen University).

The correspondence (D.95, D.97) refers to meetings, appointments, research projects, equipment, reports, and sometimes includes photocopied material and letters circulated by the Royal Society to Subcommittee members and other interested parties. Many of the letters bear notes or comments by Blackman.

A final synthesis meeting was held at Kuala Lumpur, 12-18 August 1974, at which reports on the project were presented (D.98).

D.93 Minutes of meeting of British National Committee's Subcommittee on Productivity Studies of Lowland Malayan Forest, 15 March 1967.

Papers include various research proposals, all heavily annotated by Blackman.

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- D.94 Draft proposals for research in Pasoh Forest Reserve, very heavily annotated and with several loose pages of notes and comments by Blackman.
- D.95 Correspondence with colleagues, September-December 1969.
- D.96 Blackman's visit to Tokyo and Kuala Lumpur, December 1969.
Includes programme of visit, note on Japanese I.B.P. research projects in Southeast Asia, draft co-operative agreement (both annotated by Blackman), extensive ms. notes by Blackman on discussions, projects and agreements, and an annotated copy of Blackman's report (1 January 1970) on his visit, as submitted to the Subcommittee.
- D.97 Correspondence and papers, January-September 1970.
Includes Minutes of Subcommittee, 4 January 1970, which give a useful summary of the project to date, and at which Blackman's report was received and discussed; a report on the project as at August 1970 by P.S. Ashton, and schedules of visits by Blackman in August and September 1970.
Also included is a copy of a note on the study for publication in The Biosphere, July 1970.
- D.98 Reports on research projects in Pasoh Forest Reserve, presented at I.B.P. Synthesis Meeting held at Kuala Lumpur, 12-18 August 1974.

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D.99-D.194 NATIONAL ACADEMY OF SCIENCES

National Research Council Committee on the Effects
of Herbicides in Vietnam, 1971-74

Outline Summary of contents

D.99 - D.103 Background information and schedules
Bibliographies

D.104 - D.190 Correspondence, data and reports,
1971-74

D.191 - D.194 Published Reports and Working Papers

The Committee was appointed by the National Academy of Sciences (N.A.S.) under contract from the Department of Defense, 'to conduct a comprehensive study and investigation to determine A the ecological and physiological dangers inherent in the use of herbicides, and B the ecological and physiological effects of the defoliation programme carried out by the Department of Defense in South Vietnam'.

A 17-member committee, with additional professional staff and 30 consultants, carried out the study, which included field, laboratory and library research; some 1500 man-days were spent in South Vietnam during the course of the study. The Chairman of the committee was Anton Lang, and the Staff Officer (Organising Secretary) was Philip Ross. The committee's Summary Report was transmitted by N.A.S. to the Department and to Congress in February 1974.

Blackman was appointed to the committee in July 1971 (D.107); his main responsibilities, in collaboration with J.D. Fryer, were to study the persistence of herbicides in soils and their effects on soil fertility, and the effects of herbicides on vegetation with emphasis on the inland and mangrove forests. Blackman also contributed to the report a section on the history of herbicides. The material listed here therefore relates primarily only to those aspects of the committee's work.

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In addition to the Summary Report, 'The Effects of Herbicides in South Vietnam, Part A - Summary and Conclusions', the committee published as Part B a series of Working Papers as documentation. These include 'An Historical Survey of the Development of Herbicides', by Blackman, 'Use of Herbicides in Tropics and Subtropics', by J.D. Fryer, and 'Persistence and Disappearance of Herbicides in Tropical Soils', by Blackman, Fryer, Lang and Newton.

The work of the committee, and the presentation of its interim and final reports and working papers, involved much correspondence and circulation of drafts, comments, revisions and amendments among members of the committee and its secretariat and with the Report Review Panel. D.102, D.103 contain useful background information, including various schedules for sections of the report, their authors and reviewers. Blackman was among the reviewers of several sections or chapters and the material includes his comments and annotations on them.

The main body of the material is a chronological sequence (D.104-D.190) which includes correspondence, data, drafts, reports, comments, notes of meetings, etc. The material for 1971 concerns 'Phase I', the planning of experiments and projects; in 1972 the main experimental work was conducted, results assembled and draft papers compiled; 1973 and early 1974 were dominated by drafts, comments and revisions for various sections of the final report and working papers. The latter have been left in sequence and convey the cumulative urgency of the committee's work. It should be noted that some of the letters are carbon or photocopies sent to or received from colleagues involved in the various sections.

The later stages of the Committee's work were scarred by episodes reflecting the disquiet and public concern which had prompted Congress to authorise its appointment in the first place. Questions and allegations of bias were raised; certain of the committee's findings - notably the appraisal of damage to inland forests - were challenged by some members of the committee and by the Report Review Panel and were the subject of intensive discussions, re-checking and inspections, and three members of the committee added 'statements of exception' to the final report; selected material from the report was

Committees and Consultancies

'leaked' and became the subject of a news story and public discussion before its formal release by Congress. The News Report of the National Academy of Sciences, March-April 1974, which is included in D.103 and is largely devoted to the committee's work and report, contains a summary of its findings, an editorial comment on the 'wrenching criticism' to which it was subject, and a 'Statement' from the President of N.A.S. which 'tenders a sincere apology to the Committee, and their associates in this endeavor. It is deeply regretted that their scientific accomplishments have been improperly denigrated and that their contribution to the commonweal has been unfortunately lessened thereby'.

D.99-D.103 Background Information

D.99 Bibliography. One box.

Includes: Ring-back volume of 'Reference Collection' issued October 1971.

Miscellaneous additional lists of items to be added to Reference Collection, or copies of documents circulated to members of committee.

Volume of computerised data showing soils, areas, spray frequencies, etc. in Vietnam.

D.100 Bibliography. One box.

Includes: Volume of reports and information of an N.A.S./N.R.C. Conference held at the Dow Chemical Company, Michigan, 6 October 1972.

Miscellaneous reports, articles, newspaper stories sent as background information.

D.101 Reports, articles, etc. annotated by Blackman.

D.102 Background information re the Committee, its history, objectives, schedule of activities, nomenclature of vegetation types and Vietnamese provinces, names of consultants, etc. Mainly 1971.

D.103 Background information re the Committee, schedules of authors, revisers, timetable for production of final report, etc. Mainly 1973.

Included here is a copy of the News Report of the N.A.S. March-April 1974, which is largely devoted to the work and report of the Committee.

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- D.104-D.190 Correspondence, data and reports, 1971-74
- D.104-
D.106 Preliminary Surveys and Reports, written for or drawn upon by the committee.
- D.104 'Report of the Advisory Committee on 2,4,5-T', by J.G. Wilson, 7 May 1971.
- D.105 'Baselines and questions', by A. Lang and P. Ross, n.d.
'An Outline of Studies for the Committee of the National Academy of Sciences', by P. Kunstader, n.d.
'Research Recommendations for Committee on the Effects of Herbicides in Vietnam', by J. Ewel, 10 July 1971.
- D.106 'Synopsis Based on Committee Meeting in July', 1971.
- D.107 Correspondence, March-September 1971.
With Chairman, President, N.A.S. and others, re invitation to Blackman to serve on Planning of Phase I Committee (to formulate plan of study) and on later stages of Committee's work, and re meeting at Washington, 4-6 August 1971.
- D.108 Report on Phase I of Committee, 8 December 1970-31 August 1971, prepared on the basis of the August meeting, by P. Ross, dated 26 August 1971. With ms. annotations by Blackman.
The report schedules visits by the Committee to Thailand (29 September-3 October) and Vietnam (4 October-1 November); folders D.109-D.118 deal with background information and arrangements for these visits, leading up to the meeting of the Committee at Puerto Rico, 19-21 November (D.119).
- D.109 Correspondence re arrangements for bringing soil samples from Vietnam for Blackman's and Fryer's project on residual herbicides. This gives full details of the number, depth and types of the proposed samples. August-September 1971.
- D.110 Correspondence and data re residual effects of herbicide spraying in Malaya during the Emergency (1950s). August 1971.
- D.111 Letter, and reports on herbicide trials on mangrove in Sierra Leone (1957), sent to P. Ross by Blackman after August meeting. 31 August 1971.

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- D.112 Correspondence and notes on defoliation of Hevea in Malaya, August-September 1978.
- D.113 Miscellaneous correspondence with colleagues re pesticides and rehabilitation, August-September 1971.
- D.114 Blackman's ms. notes (5 pp.), mainly on mangrove sites seen on visit to Vietnam, and typescript itinerary of field trip to Rung Sat Special Zone, October 1971.
- D.115 'Herbicide residues in soil. Visit to Thailand and Vietnam - September 28th to October 13th 1971.'
Report by Fryer on visit, prepared for the Agricultural Research Council, November 1971, with a contribution 'Visit to forest sites' by Blackman, and a ms. note by Blackman on the cover 'Initial Report - Herbicide Persistency'.
- D.116 2 typescript reports on Vietnam, no author.
'Agricultural Studies', 3 pp., November 1971.
'The persistency of herbicides under agricultural conditions in South Vietnam', 4 pp., with ms. annotations by Blackman.
- D.117 Correspondence and papers re history of discovery and development of 2,4-D, October 1971.
Includes photographs and report of defoliation tests in Thailand, 1964-65, sent to Blackman by C.E. Minarik, November 1971.
See A.3, D.146, D.190 for further material on the history and development of 2,4-D.
- D.118 Correspondence with J. Turner re defoliation of eucalyptus, November 1971.
- D.119 Meeting of Committee, Puerto Rico, 19-21 November 1971.
Programme of work, background papers, including Blackman's paper 'Phase I. Visit of Committee to Vietnam', October 1971.
- D.120 Interim Report, December 1970-December 1971, by A. Lang and P. Ross.

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- D.121 'Proposed Plan for Plant Pathological Research'.
Prepared by E.A. Curl for M.S. Meselson (Chairman, A.A.A.S. Herbicide Assessment Commission), and circulated for comment; with 4 pp. typescript report on plan (unfavourable) by Blackman, and correspondence (Blackman's carbons only), December 1971.
- D.122 Correspondence re possible effects of herbicides on births in Vietnam, December 1971-February 1972.
- D.123 Correspondence re supplies of herbicide for experiments, and re field trip scheduled for January 1972, December 1971.
- D.124 Miscellaneous letters by Blackman re possible co-operative projects for research on herbicides in mangrove plantations. These projects were superseded by later plans and did not develop. January-February 1972.
(Blackman's carbons only.)
- D.125 'Plans and Accomplishments of Reconnaissance Stage.'
Brief report to committee members, by P. Ross.
- D.126 Planning of research project on herbicide residues for agents 'Orange' and 'White' in forest and mangrove soil.
January-February 1972.
3 research studies:
 'Preliminary record of an experiment at Los Banos, Philippines', by J.D. Fryer, January 1972.
 'Preliminary proposals for studies on the persistence of herbicides in forest and mangrove soil', by Fryer and Blackman, with ms. annotations, n.d.
 'Experimental procedures for sampling and determination of residues', by Blackman, with ms. annotations, February 1972.

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- D.127 Correspondence and reports, February 1972.
Re planning and time-tabling of project and especially
re testing of samples.
Includes: Report by R.J. Hance on choice of institute
for residue analyses. The work was undertaken
by the Huntingdon Research Institute, Huntingdon,
England.
Blackman's report of his visit to CORDS (Civil
Operations and Revolutionary Development Support)
on 29 January, 4 pp. typescript.
Correspondence re 'Potential Sources of Bias',
February 1972. See also D.148.
- D.128 Instructions, data and correspondence on experimental
sprayed plots for upland crops and rice paddies in the
Philippines, February-June 1972.
(Other correspondence on this project occurs elsewhere
in the chronological sequence.)
- D.129 Correspondence and estimates re analyses of herbicide
residues to be undertaken by Huntingdon Research Institute;
includes notes on costs and conditions, methods of shipping,
etc. March-April 1972.
- D.130 Letter to Blackman from A. Lang re projects, with attached
plans and charts showing sites and samplings of mangroves,
and map of area with sites marked, 30 March 1972.
With later ms. notes and data by Blackman.
(Copies of these notes and maps are often included as guides
with later data on experiments.)
- D.131 'Work plan' for forest defoliation study, n.d.
Memorandum and data on 'Evaluation of crops planted for
bioassay of herbicides', by M. Newton, 10 March 1972.
Report on mangrove ground spray, at Vung Tau, by M. Newton,
17 March 1972.
Report on aerial spray, Vung Tau, by F.H. Tschirley,
19 March 1972.
- D.132 Correspondence and papers, April 1972.
Includes report and letter by P-H. Hô, circulated to committee
members.
Also included here is a 4 pp. ms. draft report by Blackman
on 'Mangrove Expts. April 6-7'.

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- D.133 Ring-binder of reports, mainly on forested areas of Vietnam, by:
- | | |
|----------------|---|
| B. Flamm, | April 1968 and June 1970 |
| W.B. Drew | March 1972 |
| P-H. Hô | March 1972 |
| P.W. Richards | April 1972 |
| F.H. Tschirley | April 1972, with comments by Blackman and W.B. Drew |
- All these reports bear extensive ms. notes and under-scoring by Blackman.
- See D.135 for further correspondence with F.H. Tschirley.
- D.134 Correspondence and papers, May 1972.
- Includes draft plans for 'human effects' studies; two copies, each differently annotated, of letter from M. Newton, 19 May, reporting on progress on projects in Vietnam and the Philippines.
- D.135 'Investigations in VN Upland Forests.'
- Report by F.H. Tschirley, heavily annotated by Blackman, with copy of his 'Comments on Report', and correspondence May-June 1972 on effects of defoliation on tree flowering and fruiting and on fire hazard in forests.
- See D.133.
- D.136 Correspondence and papers, June 1972.
- Includes data, lists of samples at different dates, comments on research in progress and projected.
- D.137 Correspondence and papers, July 1972.
- Includes lists of samples, and report by Blackman on proposals for research projects by P. Kunstadter and R.S. Desowitz (on mangroves).
- Blackman's letter to P. Richards of 24 July refers to his having laid down some additional 'micro plots' for testing earlier experimental results which suggested little difference in establishment of mangroves between sprayed and control plots. This 'micro plot' experiment is frequently referred to in subsequent correspondence.
- D.138 Correspondence and papers, August 1972.
- Includes lists of samples.

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- D.139 Correspondence and papers, September 1972.
Includes data.
- D.140 Correspondence and papers, October 1972.
Includes data and report by Blackman on 'Survival of planted mangrove seedlings in the cleared mangrove experiment at Chilinh, Vung Tau'.
- D.141 'Report to the Committee on the Effects of Herbicides in Vietnam', by H.T. Odum.
Presented at the meeting of the Committee at Seattle, 7-9 September 1972; with requests by Odum for additional data and information.
Heavily annotated by Blackman, and with a copy of his letter to Odum on the subject, and on the 'micro plot' experiment at Vung Tau, 31 October 1972.
- D.142 Correspondence and papers, November 1972.
Includes report on 'Observation of Micro plots', 15 November, no author, heavily annotated by Blackman. (Probably by Hô.)
- D.143 Correspondence and papers, December 1972.
Includes some discussion of content, presentation and reviewing of sections of the final report.
- D.144 Data sheets, experimental results, etc., relating to cleared mangrove experiment at Chilinh, Vung Tau, and especially to the 'micro plot' experiment. Various dates, 1972-73.
Includes Blackman's note on state of experiment, October 1972, a further report, January 1973, and notes for other reports.
Most of the data are in Blackman's hand, but there are also notes and reports by Lang and Hô.
- D.145 Correspondence and papers, January 1973.
Includes first draft of J.D. Fryer's chapter 'Uses of Herbicides in Tropics and Sub-Tropics', with ms. annotations by Blackman, Lang's outline of Chapter III, 'Herbicide Persistence and Disappearance in Tropical Soils', correspondence and data on soil analyses.
Included here is a draft of a paper on the disappearance of toxicity in tropical soils, heavily annotated by Blackman, n.d.

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- D.146 Correspondence, January-February 1973.
With various colleagues, on the history of herbicides, and especially work on 2,4-D in Britain and America in Second World War.
See also A.3, D.117, D.190.
- D.147 'Residues of Picloram and 2,4,5-T in Asian soil sprayed with agents White or Orange.'
Draft report prepared for committee by Huntingdon Research Centre, and dated 3 January 1973.
With many ms. annotations by Blackman.
Includes a letter enclosing corrected pages, April 1973.
A copy of the final report is included with the reports and working papers in D.194.
- D.148 Correspondence and papers, February 1973.
Includes correspondence with the President, National Academy of Sciences requesting further information on 'potential sources of bias'.
See also D.127.
Correspondence and data on soil analyses.
Arrangements for meeting at Miami to review Final Report.
- D.149 Correspondence and papers, February 1973.
Re draft paper on acrostichum by W.B. Drew.
Includes various earlier reports and correspondence by Drew (July-September 1972), but not the draft or Blackman's annotations.
- D.150 Drafts of Blackman's section, 'A Historical Survey of the Development of Herbicides'.
First draft with ms. comments by J.D. Fryer.
1 p. letter of comment from F.H. Tschirley.
Second draft sent to P. Ross, 26 February 1973.
- D.151 Correspondence and papers, February 1973.
Re draft paper, 'Research Relating to Military Tactical Use of Herbicides', by F.H. Tschirley.
Includes photocopy of paper, heavily annotated by Blackman.

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- D.152 Correspondence and papers, February-April 1973.
Re draft paper, 'Biotic Effects', by G.D. Murfin.
Includes photocopy of paper, heavily annotated and revised by Blackman, and a copy of his report of his visit to CORDS (Civil Operations and Revolutionary Development Support) in January 1972 to which he refers in the correspondence with Murfin. Another copy is included in D.127.
- D.153 Correspondence and data, March 1973.
Continuing correspondence on sampling data for herbicide residues in Vietnam and Thailand sites.
Includes tables of findings, and reports.
- D.154 Correspondence and papers, March 1973.
Includes final draft of Fryer's paper 'Uses of Herbicides in Tropics and Sub-Tropics', with two letters of comment by Blackman, and second draft of Fryer's paper, 'Biological, physical and chemical characteristics of herbicides used in Vietnam', with a few ms. annotations by Blackman.
- D.155 Correspondence and papers, March 1973.
Re draft paper 'Effects on Vegetation' by P. Ross.
Includes photocopy of paper, heavily annotated by Blackman.
- D.156 Correspondence and papers, March 1973.
Re draft paper 'Successional trends' by P.W. Richards.
Includes copy of draft.
- D.157 Correspondence and papers, March 1973.
Re draft paper, 'Military Herbicide Operational Procedures and Policies in the Republic of Vietnam', by P. Ross.
Includes comments on above paper by J.D. Fryer and a photocopy of the paper, heavily annotated by Blackman.
- D.158 Correspondence and papers, March 1973.
Re draft paper, 'The Ecological Role of Bamboos in Relation to the Military Use of Herbicides on Forests of the Republic of Vietnam', by W.B. Drew.
Includes photocopy of paper, annotated by Blackman.

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- D.159 Correspondence and papers, March 1973.
Re memorandum, 'Airphoto Studies of the Rung Sat', by C.P. Weatherspoon and A.E. Krusinger.
Includes copy of memorandum.
- D.160 Photocopy of revised version of paper, 'Biological, Physical and Chemical Characteristics of Herbicides used in Vietnam', by J.D. Fryer, incorporating comments, 11 April 1973.
- D.161 Correspondence and papers, April 1973.
Continuing correspondence on data for micro-plot mangrove experiment and survival rate of mangroves.
Includes copies of 3 letters on subject from Blackman to Lang, and ms. notes and calculations by Blackman.
- D.162 Correspondence and papers, May 1973.
Includes continuing correspondence and data on micro-plot experiment; miscellaneous data and results of soil analyses; comments on Blackman's paper, 'Historical Survey of the Development of Herbicides', by P. Kunstadter; photocopy of letter and comment by P-H. Hô.
- D.163-D.169 Meeting in Washington, 9-11 June 1973.
At this meeting the draft Report was discussed, in relation to comments by committee members and by members of the Report Review Panel.
Material assembled for the meeting, one box, as follows:
- D.163 Bound volume of 'Review Comments' by members of committee and by members of Report Review Panel.
- D.164 Photocopy of Blackman's ms. notes on the draft report.
- D.165 Comments by P. Kunstadter on draft report (additional to those included in bound volume above).
- D.166 Comments by P-H. Hô on Effects of Defoliation in Inland Forest (very critical of draft report).
- D.167 Sections of draft report, bound or tagged together, all with comments by Blackman.
- D.168, D.169 Revised drafts of Chapter VII, 'Effects on humans'. with a note 'Revised June 9/73'.

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- D.170 Correspondence and papers, June 1973.
Includes two papers by P. Kunstadter, 'Chemical Analyses of Samples from Mangrove Communities' and 'Recommendations for action' (annotated by Blackman); comments by J.D. Fryer and Blackman on paper, 'General considerations of the disappearance of herbicides applied to the soil in Vietnam and similar environments', by A. Lang, with a photocopy of the paper with some annotations by Blackman.
- D.171 Correspondence and papers, June-July 1973.
Includes comments on remarks by Review Panel, by F.C. Fraser, correspondence and drafts by Blackman on mangrove damage, etc.
(A meeting to discuss a revised draft of the final report was held in Washington, 11-12 July.)
- D.172 Papers, July 1973.
Almost all relate to herbicide damage in inland forests; the committee's findings had been challenged by the Report Review Panel and by others.
Includes papers or reports by J.S. Bethell and K.J. Turnbull; C.E. Olson (2); M. Meselson; P. Kunstadter; T.R. Dashiell; unsigned (heavily annotated by Blackman); copy of letter by Blackman to Lang, re delays in publication of report.
Also included is a report, 'Observations and beliefs ... by Vietnamese villagers', by J.M. Carrier.
- D.173 Correspondence and papers, August 1973.
Includes: Blackman's annotated comments on the revised draft report; 'Further Observations' on the report by the Report Review Panel (annotated by Blackman); copy of detailed comments by the Review Panel, heavily annotated by Blackman, and of his letter to A. Lang with replies to the comments.
- D.174 Correspondence and papers, September 1973.
Mainly with colleagues re various matters in question in report, toxicity, inland forests, mangrove experiments, etc.

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- D.175 Correspondence and papers, October 1973.
Re drafts, revisions, etc.
(The third and last meeting to agree the committee's report was held in Washington 19-21 November.)
- D.176 Correspondence, November 1973.
- D.177 Papers for meeting in Washington, 11-12 November 1973.
Drafts for 'Summary' and 'Recommendations', all with different annotations and amendments.
Copies of other sections of report, with ms. corrections by Blackman.
Blackman's reply to comments of Review Panel on his 'Historical Survey'.

Note: A complete copy of the draft discussed at this meeting, with Blackman's annotations, appears in D.193. Only those sections with multiple revisions have been retained in this item.
- D.178 Papers, etc., November 1973.
Mainly comments, and answers to comments, arising from the 11-12 November meeting.
Includes: Review Panel's comments on 'Quantitative Assessment on Inland Forest'.
Review Panel's comments on Chapter VIII (and author's reply).
Chairman's response to Panel's comments, and Panel's 'Final Review'.
- D.179 Draft 'Summary of the Committee's report', by P. Kunstadter, 7 and 12 December, very heavily annotated by Blackman.
Photocopy of Blackman's comments on the report, 9 pp. ms., n.d.
- D.180-
D.186 Correspondence and papers, January-February 1974.
These deal with final revisions, queries and corrections to the final draft, exchanged with colleagues and with A. Lang as Chairman, and conducted at great pressure as the deadline (already deferred) for submission approached.
- D.180 Copies of letters by J.D. Fryer and P. Kunstadter re corrections to draft.
Ms. and typescript comments by Blackman.

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- D.181 Extensive list of 'suggested corrections and a few questions regarding the December 14 version ...' by P. Kunstadter, heavily annotated by Blackman, and copy of his reply to A. Lang.
- D.182 'Comments on draft summary of the report on herbicides in Vietnam', sent by Blackman to P. Ross.
Correspondence with J.S. Bethell (on Inland Forests).
- D.183 Comments and correspondence by Blackman on 'Inland Forests' section of the report.
- D.184 Comments by Fryer (18 January) and Blackman (21 January) on the final draft.
- D.185 Memorandum from A. Lang to accompany concluding section (VIII) of report. (See D.186 below).
Enclosed here is a ms. draft, 'VIII. Attempt at an Overview', heavily annotated by Blackman. No date or author, and perhaps an earlier version.
- D.186 Correspondence and papers, February 1974.
Further comments on final drafts of report.
Includes memorandum by A. Lang explaining the exclusion of Section VIII (see D.185 above) in response to pressure, and Blackman's reply.
- D.187 Correspondence and papers, February 1974.
Letters of thanks, and of apology for premature press release of the report, from A. Lang and from President, National Academy of Sciences.
Includes photocopies of extensive press comment on the report.
- D.188 Correspondence and papers, March-May 1974.
Includes further press-cuttings re report and letter from A. Lang on the press 'leak' and matters arising.
- D.189 Folder of miscellaneous travel claims, expenses, visas, bills, etc. relating to Blackman's travel on behalf of committee. Various dates, 1971-72.
(Not sorted or indexed.)

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D.190 Miscellaneous correspondence arising from work on committee.

C. Kirby (history of 2,4-D) 1971-73

See also A.3, D.117, D.146

B.B.C. Czechoslovak Section 1973

Sunday Times 1973

A. Lang 1977

D.191-D.194 Published Reports and Working Papers

D.191-D.193 Drafts for Part A of Report.

D.191 11-12 June 1973

D.192 24 July 1973

D.193 8 November 1973

All annotated by Blackman with comments, revisions, queries, etc.

D.194 Published Reports.

Includes: Part A, Summary and conclusions.

Part B, Working papers.

Report 'The Determination of Residues of 245-T and Picloram in soils sprayed with Agent Orange and Agent White', by the Huntingdon Research Centre, England.

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D.195-D.201 RUBBER RESEARCH INSTITUTE OF MALAYA (R.R.I.M.)

Blackman's connection with rubber research began in 1954, when he was approached by the Malayan Government to act as Chairman of the Advisory Committee enquiring into 'Production, Development and Consumption Research in the Natural Rubber Industry'.

Research was pursued by the Rubber Research Institute of Malaya (R.R.I.M.), by Blackman's A.R.C. Unit of Experimental Agronomy at Oxford, and by the Natural Rubber Producers' Research Association (N.R.P.R.A.) at Welwyn Garden City. The authority in Malaya was the Malayan Rubber Fund Board (M.R.F.B.).

A speech by Blackman, undated but probably delivered in 1977 to the Rubber Research Institute, gives an account of his connection with the Institute, research projects and results. It is included as a separate item as D.195.

The surviving correspondence covers the period 1964-76. It concerns meetings and conferences in U.K. and in Kuala Lumpur, Minutes of meetings and discussions, research investigations and results, consultancy honoraria, etc.

D.195 Speech by Blackman recalling his connections with R.R.I.M. and research projects undertaken, n.d. c.1977.

D.196 Correspondence, 1964-67.

D.197 Correspondence, 1968-76.

Blackman's letter of August 1969 contains an important account of experiments with ethylene in latex flow. His letter of February 1970 refers to the I.B.P. Rain Forest project.

D.198 Correspondence and data on 'Testing for Activity in the Promotion of Latex Flow', sent from R.R.I.M., with ms. notes and calculations by Blackman.

1970

D.199-D.201 Committee meetings and visits of 1975, 1976.

Coordinating Advisory Committee (C.A.C.).

D.199 C.A.C. Meeting, 24 January 1975.

Papers, heavily annotated by Blackman, and Minutes.

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- D.200 C.A.C. Meetings and Visits, Kuala Lumpur, 27 October-6 November 1975.
Programme of arrangements, list of members.
- D.201 C.A.C. Meetings, Kuala Lumpur, November 1976.
Lists of papers and members, Minutes of meeting, annotated by Blackman.
- D.202 UNESCO Man and the Biosphere Programme (MAB).

Material relating to MAB Project I, 'Ecological effects of increasing human activities on tropical and subtropical forest ecosystems'.

Blackman attended a meeting of an international MAB working party on the project, held at Rio de Janeiro, 11-15 February 1974. The folder includes the report of the meeting, heavily annotated by Blackman, ms. and typescript versions of his letter of comment to the Secretary, and an undated letter on the problems of the project.

<u>SECTION E</u>	<u>CORRESPONDENCE, E.1 - E.12</u>	
E.1	Brown, D.A.LI. (Cocoa agronomy in Ghana)	1970
E.2	Ellison, L. (and others, 1941, 1943, <u>re</u> Blackman's paper 'Dispersion as a factor in the study of changes in plant populations').	1942
E.3	Eze, J.M.O. (I.B.P. Experiments)	1971
	McDonald, I. (I.B.P. Experiments)	1971
	Monteith, J.L.	1978
E.4	National Research Development Corporation	1967-70
	Miscellaneous correspondence on research projects; includes report on senescence by D.J. Osborne.	
E.5	Poore, M.E.D.	1972
E.6	Rajan, A.J.	1971-74
E.7-E.12	References.	
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