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Catalogue of the papers and correspondence of

Arthur John Willis

(1922 - 2006)

by Simon Coleman and Peter Harper

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GENERAL INTRODUCTION

PROVENANCE

The papers were received for cataloguing from the University of Sheffield, February 2008.

OUTLINE OF THE CAREER OF ARTHUR JOHN WILLIS

Willis was born in Sherborne, Dorset, in 1922. He was brought up on a farm and his fascination with plants began at an early age and flourished during his years at Sexey's School, Bruton, Somerset. At Bristol University he graduated with a first class degree in Botany (1947) and stayed there to take his doctorate under E.W. Yemm. After completing his PhD, which was concerned with nitrogen metabolism in barley, Willis's research interests rapidly branched out from early studies of plant physiology to venture into fields such as ecology and palaeobotany.

During the 1950s he investigated pollen, mosses and liverworts as well as an unidentified filamentous organism from Wookey Hole caves, Somerset. He devised a new method for studying plant fossils that is still in use. His 1954 paper with Yemm on the 'anthrone' method for estimation of carbohydrates had accumulated 876 citations on the ISI database by July 2006. As his career progressed, Willis became best known for his contributions to ecology. His *Journal of Ecology* paper (in two parts) on the sand dunes of Branton Burrows, North Devon (1959), has been profoundly influential in the study of coastal vegetation, a subject that became one of his principal interests during the rest of his life. He authored further papers specifically on Branton Burrows and continued to be associated with studies at the site until the end of his life.

Long-term fieldwork investigations involved Willis and Bristol University teams at a number of sites in south-west England. He took full advantage of his department's close proximity to the botanical 'Mecca' of the Avon Gorge, acquiring expert knowledge of its rare plants and carrying out many surveys and studies involving application of mineral nutrients. At Bibury in Gloucestershire he investigated the long-term effect of herbicides on roadside vegetation, recording treated and control plots for nearly half a century. The study has assumed a significance far beyond its original purpose, as the data from the control plots has become invaluable to research into global climate change. Willis also carried out a series of investigations at Berrow salt marsh, Somerset, studying both its vegetation and topographical changes over 85 years, with the help of historical records and photographs. In the course of work at Berrow he discovered a plant new to Britain, *Juncus subulatus*.

The other main strand of Willis's career was editorial work. His remarkable contribution to *Biological Flora of the British Isles*, a special adjunct to *The Journal of Ecology*, began in 1968 when he joined its Editorial Board. In 2004 he completed a 15 year term as its Editor. Willis also edited the *Journal of Ecology* itself 1969-1975, the *Contemporary Biology* series of books for the publishers Edward Arnold and the *Bulletin of the Bristol Naturalists' Society*. Of his own publications, a notable work was his extensive revision (published in 1973) of Sir Arthur Tansley's *Introduction to Plant Ecology* which amounted to a new book. He collaborated with M. Zahran of Mansoura University, Egypt, to produce *The Vegetation of Egypt* (1992), followed by *Plant Life in the River Nile in Egypt* (2003). Willis's long preoccupation with coastal vegetation and ecology was eventually distilled into a major book with John Packham, *Ecology of Dunes, Salt Marsh and Shingle* (1997).

Willis was appointed Professor of Botany and Head of Department at Sheffield University in 1969, remaining there until his retirement in 1987. An excellent administrator, he served as Dean of the Faculty of Pure Science and, as Emeritus, continued working in the Botany Department for most of his retirement.

Willis's professional affiliations include the British Ecological Society of which he was Vice-President (in addition to his editorial commitments already mentioned), the Linnean Society (Fellow), the Botanical Society of the British Isles and the International Association for Plant Taxonomy. He acted as advisor to organisations such as the Nature Conservancy Council, English Nature, County Naturalists' Trusts, Sheffield Children's Hospital (identifying poisonous plants ingested) and, on one occasion, to the police as a forensic botanist.

Willis married Dorothy Bees in 1948; they had two daughters. He died on 20 June 2006.

DESCRIPTION OF THE COLLECTION

The material is presented in the order given in the list of contents and covers the period 1899-2006.

Section A, Biographical, includes a significant collection of undergraduate notes and marked essays and examination scripts, most within original binder files. Some notes relating to botany fieldwork at various named sites are also found among this material. One item only survives from Willis's school days: a prize-winning botany essay (1940) with plant specimens attached, submitted the summer before he started at Bristol University. There are a few letters and papers relating to his career, such as letters of appointment (Bristol) and letters of congratulation on his appointment to the Chair at Sheffield University. A small group of correspondence (1973) concerns a proposal to put Willis up for election to the Royal Society. A number of photographs, dating from the 1950s to his last years at Sheffield, feature Willis, including one taken at a British Association meeting in Bristol (1955), a

number showing him at work in his office at Sheffield shortly before his retirement, and a few family photographs from his later years.

Section B, University of Bristol, is slight and consists of lecture notes and course papers etc relating to the teaching of undergraduate botany courses (c.1955-1969). This material was selected from a larger group of Willis's teaching material soon after his death; most of it was discarded. The lecture notes are in Willis's hand and are paginated; parts of lecture series appear to exist though it is difficult to date many of the lectures accurately.

Section C, University of Sheffield, is slight but includes a few undergraduate lecture notes, some dated to the beginning of his career at Sheffield. In addition there are committee and administrative papers for the Faculty of Pure Science and the Department of Botany.

Section D, Research, comprises papers, notebooks, drafts and correspondence from all periods of Willis's career, with a large quantity of experimental records in his hand and many photographs. The material reflects the meticulous field investigations undertaken by Willis, some covering several decades at a particular site, and the breadth of his research interests. A series of laboratory notebooks, 1946-1956 (chiefly 1946-1951), covers undergraduate, postgraduate and subsequent research on nitrogen metabolism in barley. There are also a manuscript fair copy account of this undergraduate research and a typescript of his PhD thesis. A long sequence of papers documenting Willis's fieldwork at seven separate sites forms the bulk of the Research section. Avon Gorge material dates from 1954 to 1993 and includes surveys of flora (1954) and many records (with photographs) of studies involving the application of mineral nutrients at various locations. Berrow salt marsh papers include manuscript data on *Juncus subulatus* (see above) and photographs of the site in the 1920s. By far the largest group of specific site material relates to Braunton Burrows sand dunes, North Devon. The inclusion of earlier scientific correspondence of F.R. Elliston-Wright, a local expert on Braunton Burrows, takes the record of investigations there back to 1932; Willis's records of transpiration studies begin in 1951. There are drafts of Willis's seminal 1959 *Journal of Ecology* paper, 'Braunton Burrows: the dune system and its vegetation', one an early manuscript draft. Over fifty photographs and several slides, dating from 1947 to the late 1960s, are included among the Braunton Burrows material. A number feature Willis, sometimes as part of a Bristol University group; others show vegetation in established 'microquadrats' or areas of dunes. Later material (from 1997) relates to a grazing trials project in connection with the site's loss of National Nature Reserve status. Willis's huge investigation of roadside vegetation and chemical control at Bibury, Gloucestershire, is also well represented, the documentation covering the first two decades, 1952-1973. There are also papers covering vegetation studies at Catcott Heath and Gordano Valley and investigations of the unusual organism found in Wookey Hole caves (all in Somerset). The section is completed by a small group of records of stomata studies (1950s).

Section E, Publications, covers the period 1951 to 2006. Willis's drafts date from the early 1960s: included are drafts of two of his 'Bristol Botany' articles for *Proceedings of the Bristol Naturalists' Society* (1966 and 1970) and material (mostly correspondence) relating to his revised edition of Tansley's *Introduction to Plant Ecology*. There are also drafts, with related correspondence, of obituaries of A.R. Clapham (*Biographical Memoirs of Fellows of the Royal Society*, Vol.39, 1994) and P.M. Richards (*Journal of Ecology* 84, 1996). Editorial correspondence consists principally of a selection of material from what was originally a substantial collection of papers documenting his work for *Biological Flora of the British Isles*. This selection was made in line with Willis's advice after his death to provide examples of his editorial work and dates from 1988 to 2005. It comprises his correspondence with authors and referees, with his notes on texts, and drafts of the papers submitted. There is also correspondence from his association with *The Vegetation of Egypt* by M.A. Zahran and concerning his visit to Mansoura, Egypt, in 1990. His association with the *Journal of Ecology* (excluding *Biological Flora*) is represented by a notebook in his hand recording the editorial history of submitted papers, 1971-1977. In addition, there is correspondence relating to a proposed 'Journal of Biogeography' and a set of reprints of Willis's papers.

Section F, Lectures and broadcasts, is slight. Included are notes for related talks by Willis to the Geological Section of the British Naturalists' Society (1961) and to the Geographical Association (Bristol Branch) (1962), and correspondence concerning his Botanical Society of Edinburgh Lectures, February 1972. The only broadcast for which there is documentation is a programme for the BBC television series 'Look'.

Section G, Visits and conferences, covers the period 1960-1986. The earliest material dates from Willis's visit to Sweden and Denmark, May 1960, which was principally to spend a few days at the University of Lund. The bulk of the papers in this section document Willis's participation in conferences on weed control, especially in connection with road verges. Examples of these are the 8th British Weed Control Conference (Brighton 1966), an international conference on 'Roads in the Landscape' (University of Keele 1967) and a symposium on Scottish road verges held in Edinburgh (1970). At all of these conferences Willis was able to draw on his many years of research on the chemical spraying of vegetation carried out at Bibury (see Section D).

Section H, Societies and organisations, presents documentation of only a few organisations with which Willis was associated. These include the Bristol Naturalists' Society, the British Ecological Society and the National Trust (Regional Committee for the East Midlands).

Section J, Correspondence, presents chiefly Willis's botanical correspondence 1953-2003, though there is correspondence of others from earlier decades. Unsurprisingly, there is a distinct emphasis on flora of the Bristol and Somerset region and Willis's correspondents are amateurs with extensive local knowledge as well as academic scientists. One sequence of correspondence (1956-1969)

relates almost entirely to Bristol and Somerset: correspondents here include N.Y. Sandwith and D. Munro-Smith. Another more general sequence (1953-2003) has correspondents such as A.R. Clapham, H. Godwin, J.H. Hope-Simpson and F.R. Elliston Wright; topics include Braunton Burrows and other sites. A small quantity of refereeing correspondence dates from Willis's Sheffield and retirement years. The section is completed by a group of botanical correspondence of N.Y. Sandwith (1945-1965), botanist at the Royal Botanic Gardens, Kew, and that of his mother C.I. Sandwith (1917-1956), both experts in flora of the Bristol region and authors of numerous 'Bristol Botany' articles for *Proceedings of the Bristol Naturalists' Society*. Willis appears to have acquired this correspondence sometime after N.Y. Sandwith's death in 1965.

Section K, Non-textual material, principally consists of outsize graphs, maps and figures associated with studies at various sites: Gordano Valley, Berrow salt marsh and Bibury are those which could be identified. There are also photographs of various sites, but only those of Braunton Burrows (also showing plant species) are dated (1921). The other items are two boxes of slides of named plant species and an album of plant specimens titled 'Flora Alpina'.

There is also an index of correspondents.

ACKNOWLEDGEMENTS

We are very grateful to Professor John Lee, a former colleague of Professor Willis at Sheffield, for his initial assessment of the papers.

Simon Coleman
Peter Harper
Bath, November 2008

SECTION A	BIOGRAPHICAL, A.1-A.34	1937-2006
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- A.1 OBITUARIES
- A.2-A.21 SCHOOL AND UNDERGRADUATE
- A.22-A.25 CAREER
- A.26-A.31 PHOTOGRAPHS
- A.32-A.34 MISCELLANEOUS BIOGRAPHICAL
 ITEMS

A.1	OBITUARIES	2006
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- A.1 *The Independent*, 15 July 2006, by D.H. Lewis
- Journal of Ecology* 94 (2006), by A.J. Davy

A.2-A.21	SCHOOL AND UNDERGRADUATE	1937-1947, nd
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A.2	Sexey's School, Bruton, Somerset	1937-1940, nd
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Essay by Willis entitled 'Geraniaceae and Orchidaceae', with other papers, contents of a softback binder inscribed 'Prize Essay' on cover. Inside the back cover is the inscription 'Examined 8.7.40'.

The essay includes numerous plant specimens taped onto pages, with captions giving name, place where found etc.

Also found in the binder after the essay are the following: marked scripts for Botany examinations Christmas 1937-February 1940, with question papers; a group of notes on various topics, such as 'Pinus', 'Algae' etc, which are in an unidentified hand and undated; (at back) some loose pages of manuscript notes by Willis of a later date, most headed 'Orchidaceae'.

Biographical

A.3-A.21	Undergraduate work, University of Bristol	1940-1947
	<p>Notes, diagrams, examination scripts, exercises, course papers etc, nearly all in Willis's hand with a few typescript papers. Most of the material is contained in original binders or files; there is one notebook and a quantity of loose papers.</p> <p>Inscriptions on file covers, where they exist, are reproduced in the descriptions below. In some cases the subject matter of the file contents does not always correspond to the inscription on the cover.</p>	
A.3	Small leather-backed binder	1940-1942
	<p>Notes on the following principal topics: botany fieldwork (with data) at various sites such as the New Forest (near Portbury, Bristol) and 'Cleeve ash woods', including an ecology report for the New Forest (November 1940); 'the Seas' (paginated 1-26); 'the Bryophyta' (paginated 1-22).</p> <p>A few typescript pages are included.</p>	
A.4	Softback binder inscribed 'Zoology' on cover	1941-1942
	<p>Notes on botany (pollination and systematic botany) and genetics with data and calculations headed 'Practical genetics'. Included are various typescript handouts of course papers and questions, some loose at the front. Some manuscript pages are also loose at the front.</p>	
A.5	Softback exercise book	c.1941-1944
	<p>Workings and answers to mathematical problems from past examination papers. An index of these past papers is inscribed inside the front cover. Paginated 1-92.</p> <p>A few loose pages are found at the front; some appear to be copies (in Willis's hand) of arithmetic question papers from his school years.</p> <p>2pp notes headed 'Egypt and the Nile' are found between p.56. and p.57.</p>	
A.6	Softback binder inscribed 'Sexey's School, Bruton' but re-used for undergraduate studies	1942

/...

Biographical

/...	First page headed 'Practical Animal Physiology'. Notes and data on named animal physiology experiments. A few pages of data are intercalated.	
A.7-A.8	Contents of a file inscribed 'Mosses'.	c.1940-1947
A.7	'Mycology', contents of a folded piece of paper so entitled 35pp notes from lectures.	1947
A.8	Two marked essays (21pp and 16pp) entitled 'The Origin of the Rusts' and 'Discuss the adaptation of the Oomycetes to life on land'	c.1940-1947
A.9	Notes, diagrams and typescript handouts for course in plant anatomy, contents of a file inscribed 'Chemistry'	c.1940-1947
A.10	Notes, with a few typescript papers, headed 'The history of plant form, with special reference to the problem of primitive Angiosperm character', contents of a file inscribed 'Zoology' Manuscript pages paginated 1-15.	c.1940-1947
A.11	Contents of a folded piece of paper inscribed 'Morphology', found inside a file inscribed 'Physics' Notes, the bulk being on 'Systematic Botany' (paginated 1-27); other topics include 'Origin of the British flora'.	c.1940-1947
A.12	Contents of a file inscribed 'Botany' on cover 8pp typescript draft entitled 'Mycorrhiza', with manuscript revisions, and list of slides attached; further notes, mostly manuscript, on the same topic.	c.1940-1947
A.13-A.14	Marked examination scripts for Botany and Zoology, with lecture notes and other course notes Topics of notes include 'Vitamin C' and 'Lichens'. 2 folders.	1940-c.1945

Biographical

A.15-A.16	<p>Various lecture notes, other course notes and marked essays, contents of an untitled file</p> <p>Topics of lecture notes include 'Microbiology'; essay titles include 'A critical discussion of the classification of the Ascomycetes'.</p> <p>The year 1946 is inscribed at the top of two sets of notes.</p> <p>2 folders.</p>	c.1946
A.17-A.20	<p>Notes on various topics</p> <p>These notes were found together but not contained in a file. They were kept in perfect order in separately paginated groups relating to particular topics, and together form a distinct set. They are all written on exercise book style paper, with headings, sub-headings and key words underlined in red ink in identical fashion. Titles of the topics are reproduced.</p>	c.1940-1947
A.17	'Water relations of plants'; 'Biochemistry of carbohydrates'; 'Fats'; 'Pollination'	
A.18	'Enzymes'; 'Respiration'; 'Plant pigments'	
A.19	'Growth'; 'Plant movements'	
A.20	Nitrogen metabolism'; 'Conduction of organic matter'; 'Mycology'	
A.21	Question papers chiefly for botany practical work or examinations	
A.22-A.25	CAREER	1949-1973
A.22	Letters of appointment: University of Bristol	1949-1953

Biographical

A.23	DSc, University of Bristol, 1966 Notification only.	1966
A.24	Appointment to the Chair of Botany, University of Sheffield, 1969 Letters of congratulation.	1968-1969
A.25	Brief correspondence with A.R. Clapham and Sir Harry Godwin <i>re</i> a proposal to put Willis's name forward for election to the Royal Society Willis's cv and list of publications are included.	1973
A.26-A.31	PHOTOGRAPHS Black and white unless otherwise stated.	c.1955-1980s or later]
A.26	Group photograph (rolled up) featuring Willis inscribed 'British Association Botany and Forestry [Section], Bristol Meeting 1955'	1955
A.27	2 similar mounted portraits of Willis	[?1960s]
A.28	2 small portraits of Willis	[?1960s]
A.29	6 photographs of Willis standing in garden with his wife and / or [?one of his daughters]	1980s or later
A.30	10 colour photographs featuring Willis, probably taken at the Botany Department, University of Sheffield Most of them show Willis at work in his office or standing in front of shelves perusing a book. They were possibly taken shortly before his retirement in 1987.	1980s or later

Biographical

A.31	Photograph of a group, not featuring Willis	[?1950s]
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A.32-A.34	MISCELLANEOUS BIOGRAPHICAL ITEMS	1959-2004, nd
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A.32	Christmas cards and invitations	1959-1969, nd
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A.33	Pocket address book	Nd
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The book appears to have been used for a considerable part of Willis's life. Additional pieces of paper are intercalated.

A.34	Photocopied manuscript notes by Willis relating to his personal archives	2000, 2004
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These comprise a box list of papers 'in store' (2000) and a list (by topic) of 'Possible material for archives' (2004).

SECTION B

UNIVERSITY OF BRISTOL, B.1-B.7

c.1955-1969

Teaching material, contents of a box file inscribed 'Examples of undergraduate exercises & lectures U of Bristol'.

Lecture notes in Willis's hand and other material relating to undergraduate courses in Botany. Most of the lecture notes are paginated. It appears that there are occasions where a series of lectures was given a single continuous pagination but these series are incomplete. The inscription on the box indicates that this material was selected from a larger body of papers.

Among the lecture notes are a few pages listing lecture titles for a particular year; the notes themselves have headings but most of these do not correspond with the listed titles. Occasional pencil notes such as 'Lecture 7', sometimes with a year, have been added above particular headings. Some sections of notes appear to have been re-used for lectures of a later date.

B.1

Notes for a series of lectures, found inside a large folded sheet of paper inscribed 'Ecology Lectures 1969' followed by a list of titles

1955-?1969

Paginated; additional unpaginated pages intercalated. The first page of notes is headed 'Hons Lectures in Ecology & Physiological Ecology', with an added pencil note: '8 lectures 1955 in first 3 weeks of Spring term. 1956 lectures numbered thus 1, 2...' Dates inscribed on some pages range from 1957 to 1963.

Included are 3 pages listing 'Physiol. Ecology' lecture titles for the years 1957-1962.

B.2

Notes for lectures, probably a series

c.1955-1965

A few dates, in the range 1955-1965, have been added in pencil.

Headings or lecture titles include 'Anatomy and Physiology of Leaf' and 'Phototropism'.

B.3

Notes for lectures, probably a series

c.1967-1969

A few dates, in the range 1967-1969, have been added in pencil.

/...

University of Bristol

- /... Included is a page listing the titles of 'Honours Lectures in Ecology 1968'.
- B.4 Notes, some typescript, chiefly on published literature for use in lectures c.1955-1965
- B.5 'Own odd lectures and debate speeches', contents of a file so inscribed nd
17pp manuscript lecture notes headed 'Uses of Hormones' on first page.
- B.6-B.7 Typescript material, some draft or annotated, relating to undergraduate courses including exam question papers, bibliographies for essay questions, papers for practical work etc c.1955-1967
2 folders.

SECTION C	UNIVERSITY OF SHEFFIELD, C.1-C.6	1969-c.1990
C.1-C.3	General Department of Botany and University business	1971-c.1990
C.1	Meeting of the Faculty Board, Faculty of Pure Science, 1 May 1971. 2 typescript papers presented to the Meeting, co-authored by Willis: 'Proposals for course in Environmental Sciences with Landscape Architecture' and 'Proposals for a Special Honours degree in Natural Environmental Science'.	1971
C.2	Various papers relating to the running of the Department of Botany and its research policy.	1985-c.1990
C.3	Letter from Willis to the University Fundraising and Sponsorship Office with copy of his completed form for the 'Register of Specialists'.	1990
C.4-C.5	Teaching	1969-1970, nd
C.4	'Sheffield First Year Integrated Biology', contents of a file so inscribed. 6pp manuscript lecture notes by Willis, headed 'Plant Biology...Physiology of green plants', with typescript course synopsis dated '1969/70'; photocopied manuscript lecture notes in another's hand.	1969-1970
C.5	5pp manuscript notes/synopsis for lectures; photocopies manuscript lecture notes in another's hand (same as that found in C.4).	nd
C.6	Staff	1985-1986
	Correspondence etc re proposed staff promotions, career matters etc and PhD award in the Department of Botany. Includes cv s.	1985-1986

SECTION D	RESEARCH, D.1-D.209	1921-2006
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D.1-D.18	LABORATORY NOTEBOOKS
D.18A-D.22	ACCOUNT OF RESEARCH AND THESIS
D.23-D.205	FIELDWORK
D.206-D.208	'STOMATA'
D.209	MISCELLANEOUS PAPERS

D.1-D.18	LABORATORY NOTEBOOKS	1946-1956, nd
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A series of laboratory notebooks in Willis's hand recording a group of related experiments. Some have inscriptions on the cover; those in D.1-D.8 also have numbers (Roman numerals) inscribed on the cover.

Experimental notes and data recorded daily for named (and numbered) experiments; often there are very detailed accounts of the various stages. Additional pages of data etc are intercalated. Accounts of some experiments extend over more than one notebook.

Most of the experiments covered by these notebooks appear to have been part of both Willis's undergraduate work and PhD thesis (see D.19-D.22).

D.1	Paperback notebook, cover inscribed 'Physiology Experiment I'
-----	---

21 October 1946 - 3 February 1947

Titles of experiments include 'To Determine the Effect of Lack of N and Supplied N on CO₂ prodn in Germinating Barley Seedlings'.

D.2	Paperback notebook, cover inscribed 'Physiology Expt II'
-----	--

6 February - 2 April 1947

Titles of experiments include 'Respiration in Roots'.

A few intercalated pages are included.

Research

- D.3 Paperback notebook, cover inscribed 'Physiology Research III'

15 September 1947 - 29 October 1947

From front: titles of experiments include 'To determine the effect of NH_4 salts on the respiration rate of N-deficient excised roots'. From back: one experiment entitled 'The Respiration of Discs of Red Beet'.

- D.4 Paperback notebook, cover inscribed 'Physiology Research IV'

2 November - 15 December 1947

Titles of experiments include 'The effect of different cations and anions on the respiration rate of N-deficient excised barley roots'.

- D.5 Paperback notebook, cover inscribed 'Physiology Research V'

22 December 1947 - 3 April 1948

Titles of experiments include 'The effects of NaCl and NaNO_3 on respn rates of excised roots, and changes in sugars and various N constituents'.

- D.6 Paperback notebook, cover inscribed 'Physiology Research VI'

3 -13 April 1948

Titles of experiments include 'Effect of $\text{M}/200 \text{ NH}_4\text{H}_2\text{PO}_4$ on CO_2 production of excised roots and changes in nitrogenous and other constituents'.

- D.7 Softback exercise book, cover inscribed 'Physiology Research VII'

1 June - 16 September 1948

Titles of experiments include 'The effect of $\text{M}/200 \text{ NaNO}_3$, NaNO_2 , $\text{NH}_4\text{H}_2\text{PO}_4$ and Hydroxylamine on CO_2 output of excised roots from seedlings grown in frame: NH_3 uptake also'.

Research

D.8 Hardback notebook, cover inscribed 'Physiology Research VIII'

21 September 1948 - 11 May 1949, October 1949

From front: titles of experiments include 'Effect of M/200 NaNO_3 on CO_2 output (9 1/2 hr.) and growth of 3 initial samples (under fluorescent light bank): analyses of nitrate uptake from extl. soln'. From back: notes under the title 'Preparation of Casein Digest (Hydrolysate)'.

D.9 Hardback notebook, no cover inscription

28 June 1949 - 29 March 1950

Titles of experiments include 'Effect of M/200 $\text{NH}_4\text{H}_2\text{PO}_4$ on CO_2 output of excised roots: 3 samples after 6 1/2 hr., 3 samples after 12 1/2 hr. Effect of M/50 glutamic acid soln and glutamine on shoot respiration'.

D.10 Softback exercise book, no cover inscription

1 - 8 December 1949

Titles of experiments include 'Identification of Glutamine'.

D.11 Softback exercise book, no cover inscription

14 December 1949 - 6 January 1950

Titles of experiments include 'Hydrolysis of Casein'.

D.12 Softback exercise book, no cover inscription

26 - 31 January 1950

Headings include 'Analysis of residue after ninhydrin treatment'.

D.13 Thin hardback notebook, no cover inscription

1 April - 30 June 1950

From front: titles of experiments include 'Total insol. N estimations'. From back: one experiment entitled

/...

Research

/... 'Investigation of effect of position in bath on thermobarometer'.

Several loose pages; some appear to be out of sequence chronologically.

D.14 Softback exercise book, no cover inscription

5 April 1950 - 25 January 1952, December 1955 - January 1956

Titles of experiments include 'Growth of barley roots for use in Warburg expts' (May 1950) and 'Barley seedlings for nitrate reductase' (December 1955).

From back are a few undated notes.

D.15 Softback exercise book, no cover inscription

14 - 22 April 1950

Titles of experiments include 'Effects of substrates in presence and absence of $\text{NH}_4\text{H}_2\text{PO}_4$ '.

D.16 Softback exercise book, cover inscribed 'Warburg Expts'

4 March - 20 April 1950

D.17 Softback exercise book, cover inscribed 'Warburg R.Q. NaCl Succinate α -ketoglutarate'

11 - 13 July 1950, February - May 1951

From February 1951 titles of experiments include 'Effect of Dinitrophenol and thionine blue on roots of barley'.

D.18 3pp loose experimental notes probably from one of the notebooks in D.1-D.17.

Nd

Research

D.18A-D.22	ACCOUNT OF RESEARCH AND THESIS	1947-1950
	Undergraduate and postgraduate research at the University of Bristol.	
D.18A-D.19	'Nitrogen Assimilation and Respiration of Barley Seedlings', Willis's account of a series of experiments which formed part of his BSc degree	May 1947
	The following manuscript and typescript versions are both dated 'May 1947'.	
	On p.5 of Willis's PhD thesis (see D.20-D.22) is a note explaining that the experiments described in this account formed the basis of his postgraduate work; the data from the undergraduate experiments is given in Section II ('Preliminary experiments with intact seedlings & root systems') of the PhD thesis.	
D.18A	Manuscript fair copy with manuscript and typescript tables of data	
D.19	Soft card-bound volume containing typescript version with manuscript tables of data and figures	May 1947
	One photograph of apparatus is included.	
D.20-D.22	'Nitrogen Respiration and Assimilation in Barley', Willis's PhD thesis	October 1950
	Unbound 176pp typescript with bibliography etc.	
	3 folders.	

Research

D.23-D.205	FIELDWORK	1921-2006, nd
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The following material was found in box files inscribed with the name of the particular site investigated. It has been arranged alphabetically by site, as follows:

D.23-D.55	Avon Gorge, Bristol
D.56-D.71	Berrow (North Somerset)
D.72-D.92	Bibury (Gloucestershire)
D.93-D.178	Braunton Burrows (North Devon)
D.179-D.182	Catcott Heath (Somerset)
D.183-D.192	Gordano Valley (North Somerset)
D.193-D.203	Wookey Hole (Somerset)
D.204-D.205	Miscellaneous papers

D.23-D.55	Avon Gorge (Bristol)	1954-1994, nd
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The greater part of this material relates to investigations, begun in 1964, involving applications of mineral nutrients at various Avon Gorge sites.

D.23	'Avon Gorge Records', contents of a file so inscribed.	August, October 1954
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Typescript records of surveys of flora at various sites (one manuscript page in unidentified hand).

The names of the sites (taken from headings) are as follows: 'Avon Gorge (Clifton side)', 'Stoke Woods (Nr Rodney Stoke)', 'Cheddar Wood', 'Limestone pasture Fry's Hill (Nr Axbridge)', 'Uphill', 'Brean Down', 'Leigh Woods'.

D.24	'Avon Gorge soil'	1961-1964
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Pages of data and brief notes in Willis's hand so entitled; one page entitled 'Garden soil'.

The names of [?research workers] are inscribed at the	/...
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Research

/...	top of each set of data.	
D.25-D.26	Contents of an untitled file Typescript lists headed 'Avon Gorge Vegetation Records' with manuscript data and additions; various manuscript pages of data and notes; reprint of a paper by Willis (1989) incorporating some of the aforementioned data. In the hands of Willis and others. 2 folders.	1964-1967
D.27	Chiefly manuscript data in Willis's hand, probably related to the material in D.25-D.26 Contents of an untitled file.	c.1989
D.28	Loose manuscript data and notes in unidentified hands with 6 black and white photographs of a site (or sites)	1964-1967
D.29-D.41	Black and white photographs of Avon Gorge sites Contents of inscribed envelopes, the inscriptions being reproduced below. These appear to relate to the records and data in D.23-D.28.	March 1966
D.29	'Midslope Gully 31.3.66' 34 photographs.	
D.30	'Top of Gully 31.3.66' 18 photographs.	
D.31-D.36	'Top of Gully Avon Gorge 31.3.66' Envelope containing further envelopes of photographs and one loose photograph. Inscriptions on the internal envelopes are as follows:	

Research

- D.31 '3C (-P) Anthyllis Helianthemum Festuca Bromopsis
Sanguisorba'

One photograph.
- D.32 '3C (-P) Anthyllis Helianthemum Festuca Bromopsis'

One photograph.
- D.33 '2A (N + P) Dense growth of Festuca ovina'

One photograph.
- D.34 '3A (Complete) Much Festuca ovina Some Bromopsis
erecta'

One photograph.
- D.35 '2B (-P) Festuca Helianthemum Anthyllis'

One photograph.
- D.36 Loose photograph featuring Willis and a colleague at the
'Top of Gully' location.
- D.37-D.40 '31.3.66 N. facing slope Avon Gorge'

Envelope containing further envelopes of photographs.
Inscriptions on the internal envelopes are as follows:
- D.37 'Mid-slope Gully 2A (N + P) Dominant Bromopsis'

One photograph.
- D.38 'Mid-slope Gully 2B (-P) Carex humilis plentiful also
Bromopsis Festuca Pseudoscleropodium'

Research

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| D.39 | <p>'Mid-slope Gully 3B (-N) Festuca Carex Bromopsis Helianthemum Sanguisorba'</p> <p>One photograph.</p> | |
| D.40 | <p>'Mid-slope Gully 3A (Complete) Dense growth Bromopsis Festuca'</p> <p>One photograph.</p> | |
| D.41 | <p>'Photos Avon Gorge (taken 12 July '67)'</p> <p>4 photographs, one featuring botanists at a site (one of whom possibly is Willis).</p> | |
| D.42-D.47 | <p>'The Influence of Added Mineral Nutrients on the Vegetation of the Avon Gorge', University of Bristol Avon Gorge Project Report No.18, by Willis, 1994</p> <p>This report covers the 1964-1967 investigations and reproduces some of the data and photographs from these (see D.25-D.41).</p> | <p>1990-1994,
nd</p> |
| D.42-D.43 | <p>Parts of various manuscript drafts of the report and part of a typescript draft</p> <p>2 folders.</p> | |
| D.44 | <p>Revised typescript version inscribed 'As sent 22 Oct '93'</p> | |
| D.45 | <p>Correspondence between Willis and L.C. Frost <i>re</i> late revisions of the draft, with notes on photographs to be used in the Report</p> <p>One letter from Frost encloses a set of 9 photographs and 9 corresponding prints.</p> | <p>1993</p> |
| D.46 | <p>Data and notes found together, mostly in Willis's hand.</p> <p>Most of this material probably relates to the Report; a few notes relate to the site at Berrow.</p> | <p>1990, nd</p> |

Research

D.47	Copy of the Report	
D.48-D.49	'Orchis purpurea Hudson in the Avon Gorge, Bristol', by Willis, M.H. Martin and K.B. Taylor, <i>Watsonia</i> , 1990 or later	1990
D.48	Letters to Willis from co-authors of the paper, with photographs and one slide of the plant and its habitat.	1990
D.49	8pp typescript draft of the paper with manuscript revisions by Willis	
D.50	Willis's correspondence with L.C. Frost re his assistance with the latter's draft report on 'The Nationally Scarce Plants of the Avon Gorge [etc]' and copy of the draft with manuscript corrections by Willis	1993
D.51	'A Botanical Survey of the Distribution and State of the Rare Plants in the Avon Gorge, Bristol: Part II - Somerset Side', by George Hendry and David Pearson (University of Bristol) 47pp typescript so entitled.	September 1973
D.52-D.54	3 bound University of Bristol 'Avon Gorge Project' Reports, not authored by Willis.	1986-1989
D.52	Report No.7: 'A practical Guide to Nature Conservation Management in the Avon Gorge & Environs', by S.D. Micklewright, 1986	
D.53	Report No.14: 'Avon Gorge Rare Plant Counts in 1986 with Analyses and Conservation Comments', by L. Houston, 1988 With pasted-in photographs.	
D.54	Report No.15: 'The Dwarf Sedge Grasslands of the Avon Gorge, Bristol', by C.M. Lovatt, 1989	/...

Research

/...	With pasted-in photographs.	
D.55	Miscellaneous papers and brief correspondence Included is a manuscript plant survey (not in Willis's hand) for the Avon Gorge, nd.	1956, nd
D.56-D.71	Berrow (North Somerset) The greater part of this material relates to various surveys of Berrow salt marsh carried out 1958-c.1963. See also K.7-K.9 for related large format data and K.19 for aerial photographs.	1921-1996, nd
D.56	Manuscript tabulated data from surveys; in Willis's hand Contents of an untitled file.	May 1958 - November 1959
D.57-D.58	Contents of an untitled file Chiefly Willis's manuscript data, with notes, from salinity studies, April 1959-September 1960. There are also a few pages of manuscript notes by Willis relating to the general ecology of the site, 1937-1939, at D.58. 2 folders.	1937-1960
D.59	Pocket notebook, covers detached, containing records of vegetation at Berrow and other sites (eg Shapwick) In Willis's hand.	1958-1959
D.60-D.61	Manuscript data from various surveys, in Willis's hand Chiefly relating to numbered 'transects' at Berrow. This material was found together. 2 folders.	1959-1961

Research

D.62	Manuscript data and notes from various studies, contents of a box file In Willis's and others' hands.	1960, 1965-1966
D.63	Manuscript data from studies on <i>Juncus subulatus</i> (samples from Berrow and Portugal) Almost all in Willis's hand.	1961-1963
D.64	Miscellaneous pages of manuscript data in Willis's hand	1960
D.65	Brief correspondence etc with the National Rivers Authority, South Western Region, re tidal data for Berrow	1996
D.66	'The changing structure and vegetational history of the 85-year-old saltmarsh at Berrow, North Somerset', by Willis, <i>The Linnean Society of London</i> , 2000 17pp typescript draft of the paper (including a few manuscript pages and references etc) with manuscript revisions; off-print.	
D.67-D.70	Various photographs of the Berrow site	1921-1991, nd
D.67	Letter from M.H. Martin (1991) to Willis enclosing 21 black and white photographs, contents of an envelope Dates are written on the back. Many of those taken in 1928 have further annotations noting the plants featured.	1921, 1928, 1991
D.68	5 black and white photographs and 4 colour photographs (or prints) Annotations (dates and/or notes on vegetation) are written on the back of the black and white photographs only.	1921, 1928, nd
D.69	21 prints of official Royal Air Force aerial photographs (black and white), with despatch note	1958

Research

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| D.70 | 4 prints of official Royal Air Force aerial photographs (black and white), with despatch note | 1958 |
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| D.71 | Miscellaneous papers

Included is a 1p typescript of a programme of a visit to Brean Down and Berrow (nd). | 1990-1994,
nd |
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| D.72-D.92 | Bibury (Gloucestershire)

This material relates to part of Willis's long-running study of the control of roadside vegetation using chemical sprays (it appears to have continued at least into the 1990s). In 1952 a number of plots along Akeman Street near Bibury, Gloucestershire, were selected for the experiments. The project appears to have been financed in part by Baywood Chemicals Ltd.

See G.5.-G.17 for material relating to Willis's participation in conferences on weed control and road verge management at which he gave papers on the Bibury experiments.

See also K.10-K.12 for related large format data. | 1952-1973,
nd |
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| D.72-D.79 | Vegetation records, accounts of experiments, data assessments, reports, draft papers etc

Mostly manuscript, in Willis's and other hands.

Manuscript and typescript drafts of papers by Willis are at D.76, D.78, D.79. Data relating to other sites in Gloucestershire and Oxfordshire is in D.72.

8 folders. | 1952-c.1969 |
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| D.80-D.83 | Correspondence etc chiefly with V.F. Woodham, Technical Advisor to Baywood Chemicals Ltd, re the Bibury experiments and related matters.

4 folders. | 1958-1972 |
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| D.84-D.85 | Visitors' guides etc to the Bibury experimental plots produced by Baywood Chemicals Ltd. | 1957-1960 |

/...

Research

- /... Black and white photographs (mounted onto paper with typescript captions) of some of the roadside verge plots are included.
- 2 folders. D.85 is an outsize item.
- D.86 Photographs (one colour) of some of the Bibury plots 1960-1964
- Some have been mounted onto paper with typescript captions, the others are loose with manuscript annotations on back (dates included on some).
- Dated 1960-1961, with covering letter 1964.
- D.87 Miscellaneous papers 1958-1973,
nd
- Included are cuttings from newspapers and magazines and a few photographs of plants (treated and untreated) mounted onto cards and slides.
- D.88-D.92 Samples of vegetation from the Bibury plots 1957-1973
- The samples in D.88-D.91 are contained in envelopes inscribed with name of plant, plot number and date. D.92 contains larger specimens, most mounted onto large piece of paper with inscriptions as on the envelopes.
- 5 folders.
- D.93-D.178 Branton Burrows (North Devon) 1932-2006,
nd
- Willis and colleagues conducted many studies on this important site which had been the subject of earlier investigations by F.R. Elliston Wright, a local expert on Branton Burrows flora. Willis's investigations included water movement in dunes, water relations of plants and rates of vegetation change. His 1959 *Journal of Ecology* paper on Branton Burrows (co-authored) was a groundbreaking study in coastal dune ecology, a subject which became for Willis a special and enduring interest.
- The material is arranged as follows:

/...

Research

/...	D.93-D.97	General correspondence etc
	D.98-D.114	'Transpiration studies data'
	D.115-D.119	Studies on Marram grass (<i>Ammophila arenaria</i>)
	D.120-D.127	Published papers
	D.128-D.153	Braunton Burrows Grazing Trial project
	D.154-D.172	Photographs and slides
	D.173-D.178	Miscellaneous papers

See D.207-D.208 for further papers relating to Braunton Burrows.

D.93-D.97	General correspondence etc	1932-1984
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Willis is the principal correspondent. Correspondence of F.R. Elliston Wright is included from 1932.

re various specimens of flora, matters relating to publications etc. Included at D.96 is a typescript (with reprint) of a paper by Willis ('A New Locality for *Liparis Loeselii*', 1966).

5 folders.

D.98-D.114	'Transpiration studies data'	1951-1960
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Contents of 2 box files so inscribed.

Manuscript experimental data, in Willis's and other hands.

D.98	'Stomatal investigations Braunton 1951'	1951
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Contents of a folded piece of paper so inscribed.

D.99	'Stomatal physiology Braunton 1952'	1952
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Contents of a folded piece of paper so inscribed.

Research

D.100	'Senecio jacobaea Infiltration Water deficit Lloyd's strips - aperture starch 1953'	1953
	Contents of a folded piece of paper so inscribed.	
D.101	'Cynoglossum officinale Infiltration Water deficit Lloyd's strips - aperture starch 1953'	1953-1954
	Contents of a folded piece of paper so inscribed.	
D.102	'Miscellaneous species Infiltration Apertures Starch counts 1953'	1953-1954
	Contents of a folded piece of paper so inscribed.	
D.103	Loose papers	1953-1955
D.104	'1954 Transpiration records'	1954
	Contents of a folded piece of paper so inscribed.	
D.105	'Transpiration 17/6/58'	
	Contents of a folded piece of paper so inscribed.	
D.106	'20/6/58'	1958
	Contents of a folded piece of paper so inscribed.	
D.107-D.108	Loose papers 2 folders.	1958
D.109-D.110	'Transpiration records 1959'	1959
	Contents of a folded piece of paper so inscribed. 2 folders.	

Research

D.111	Loose papers	1959
D.112	<p>'Transpiration records Branton June 1960'</p> <p>Contents of a folded piece of paper so inscribed.</p> <p>Most of the material is separated into three sections by further pieces of paper with the following inscriptions:</p> <p>'Hydrocotyle vulgaris results June 21st 1960'</p> <p>'Climatic data June 21st 1960'</p> <p>'24.6.60 Loss of water vapour from ammophila and Carex arenaria etc. Loss from filter paper Water deficit of ammophila Climatic data'</p>	1960
D.113	<p>'Mon 20.6.60 Rate of loss of water vapour from filter paper'</p> <p>'Data 20.6.60 22.6.60'</p> <p>Contents of two folded pieces of paper so inscribed (respectively).</p>	
D.114	Loose papers	1960
D.115-D.119	<p>Studies on Marram grass (<i>Ammophila arenaria</i>)</p> <p>Manuscript experimental data and notes in Willis's and other hands.</p> <p>5 folders.</p>	1955-1968
D.120-D.127	Published papers	1959-1985
D.120-D.124	<p>'Branton Burrows: the dune system and its vegetation' (parts 1 and 2), by Willis, B.F. Folkes, J.F. Hope-Simpson and E.W. Yemm, <i>Journal of Ecology</i> 49 (1959)</p> <p>An earlier title for this paper was 'Plant Ecology of Branton Burrows'.</p>	

Research

- D.120 Pages of an early manuscript draft, or drafts, of the paper, entitled 'Plant Ecology of Braunton Burrows'
- Chiefly In Willis's hand.
- D.121 121pp typescript draft with manuscript revisions by Willis
- Title the same as in D.120.
- D.122-D.123 Further typescript draft with manuscript revisions and inserted pages in Willis's hand
- The title 'Plant Ecology...[etc]' has been crossed out and replaced by the title as published.
- 2 folders.
- D.124 Offprint
- D.125 'Braunton Burrows: Mineral Nutrient Status of the Dune Soils', by Willis and E.W. Yemm, *Journal of Ecology* 49 (1961) 1960-1961
- Letter (1960) to Willis from D.E. Coombe *re* the paper; offprint.
- D.126 'The Influence of Mineral Nutrients on the Growth of "Ammophila arenaria" ', by Willis, *Journal of Ecology* 53 (1965) 1965
- 16pp typescript draft of the paper (with figures etc) with manuscript revisions; letter (1965) to Willis from J.L. Harper *re* the paper; copy of corrected proof.
- D.127 'Dune water and nutrient regimes - their ecological relevance', by Willis, in 'Focus on Nature Conservation' 13 ('Sand dunes and their management'), Nature Conservancy Council (1985)
- 15pp manuscript draft.

Research

D.128-D.153	Braunton Burrows Grazing Trials project	1997-2006
	<p>In 1996 English Nature de-listed Braunton Burrows as a National Nature Reserve following disagreements with the landowners. The most problematic issue concerned the increase of sheep grazing, introduced to help maintain herb-rich pasture, to which English Nature objected. However, the various parties involved in the management of Braunton Burrows were persuaded to fund a grazing trials project in selected areas using both cattle and sheep, starting in 1997. Proof of the value of this grazing would allow the re-designation of Braunton Burrows as a National Nature Reserve. Willis was involved in an advisory capacity.</p>	
D.128-D.143	Correspondence, with data and reports etc, <i>re</i> the on-going progress of the project	1997-2006
	16 folders.	
D.144-D.153	Printed reports	
D.144-D.152	Series of yearly reports entitled 'Botanical Monitoring on Braunton Burrows Associated with Grazing Trials in the Area of Fox and Bushgrass Slacks' (compiled by P.C. Robinson)	1997-2003
	<p>For most years there are two reports: a 'preliminary' (or 'interim') and a 'main report'. Reports for 2001 are missing.</p>	
	9 folders.	
D.153	Corrected proof of English Nature Research Report No.637: 'The effects of a mixed grazing regime on sand dune vegetation communities at Braunton Burrows, Devon', 2005	
D.154-D.172	Photographs and slides	1947-1969, nd
	<p>From various field trips to the Braunton Burrows by Willis and colleagues. Inscriptions on the back are in Willis's hand unless otherwise stated. Photographs are all black and white.</p>	

Research

D.154	Contents of a wallet	1947
	<p>7 photographs and 2 prints. Various annotations on the backs indicate that they were taken on a University of Bristol Botany School trip, 21-28 June 1947.</p> <p>Most feature the members of the party (or some of them) including Willis; names of the individuals featured are inscribed on the backs. Two show views of the town of Braunton including the hotel where the party stayed.</p>	
D.155	'Photographs of Braunton Burrows April 1948', contents of an envelope inscribed	1948
	<p>12 photographs showing various scenes and features; inscribed on back are notes (unidentified hand) giving the locations and sometimes other details.</p>	
D.156	One photograph featuring Willis, inscribed on back 'Braunton June 1958 Putting salts on dune pasture'	1958
D.157	'Photographs of nutrition plots Braunton June 1959', contents of an envelope so inscribed	
	<p>2 photographs, both featuring Willis.</p>	
D.158	3 photographs, all featuring Willis as a member of a group	1960
	<p>All inscribed 'June 1960' on back, one with a further inscription 'Belt transect (nutrition expt)'.</p>	
D.159	5 photographs of plant specimens used in an experiment	1960
	<p>Inscribed on the back '11.10.60' or '1.12.60'.</p>	
D.160	'Braunton Burrows microquadrats June 1964', contents of an envelope so inscribed	1964
	<p>6 colour slides.</p>	

Research

D.161	'Braunton microquadrats June 1966', contents of an envelope so inscribed. 6 colour slides.	1966
D.162	'Vegetation of Braunton Burrows June 1966', contents of an envelope so inscribed. 2 colour slides.	1966
D.163	3 colour slides, contents of an untitled envelope All inscribed 'Braunton Burrows '66'. One has a further inscription 'Sector Quad. A'.	1966
D.164	'Braunton June 1967', contents of an envelope so inscribed One colour slide.	1967
D.165	'Braunton Burrows microquadrats June 1967', contents of an envelope so inscribed 6 colour slides.	1967
D.166	'Braunton 1967 Liparis microquadrats', contents of an envelope so inscribed 4 slides.	1967
D.167	2 photographs of the same plant, one inscribed 'Liparis 1967' on back	1967
D.168	'Braunton 1968', contents of an envelope so inscribed 12 photographs showing ?microquadrats and various views of the sand dunes.	1968

Research

D.169	5 photographs inscribed '1968' on back, showing various views of the sand dunes	1968
D.170	'Braunton Burrows June 1969', contents of an envelope so inscribed 6 prints showing microquadrats and various vegetation including lichens.	1969
D.171	Negatives Contents of an envelope post-marked '1969'	1969
D.172	Undated photographs These show views and features of the sand dunes and areas of vegetation. Included also is one photograph of F.R. Elliston Wright.	Nd
D.173-D.178	Miscellaneous papers Manuscript and typescript data, notes, reports, classifications etc, and printed material <i>re</i> the vegetation and ecology of Braunton Burrows. Most of the manuscript papers are in Willis's hand. The printed material consists of reports and reprints of papers, only one authored by Willis. Included at D.175 are newspaper cuttings (c.1930) <i>re</i> the work of F.R. Elliston Wright, a copy of his book <i>Braunton - a Few Nature Notes</i> (Barnstaple, 1926) which came into Willis's possession in 1958 (see note inside front cover). 6 folders.	1926, 1930, c.1960-1998
D.179-D.182	Catcott Heath (Somerset) Vegetation studies on an enclosure in the Somerset 'Levels'.	c.1960-1967

Research

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|-------------|--|------------------------|
| D.179 | Willis's correspondence with various colleagues <i>re</i> specimens, with related papers | 1964 |
| | Included are manuscript (in Willis's hand) and typescript data and species inventories. | |
| D.180 | 'The Vegetation of Catcott Heath, Somerset', by Willis, 'Proceedings of the Bristol Naturalists' Society 31, part 3, (1967) | |
| | 8pp manuscript draft of the paper (with tables); later typescript draft with manuscript revisions and letter <i>re</i> publication, 1967; corrected proof. | |
| D.181-D.182 | Samples of vegetation, contained in envelopes inscribed with names of species and, sometimes, further annotations | c.1960-1964 |
| | The inscriptions are in Willis's and other hands. | |
| | Contents of an envelope inscribed 'Bryophytes Catcott Heath'. | |
| | 2 folders. | |
| D.183-D.192 | Gordano Valley (North Somerset) | c.1955-1967, nd |
| | Willis and colleagues began studying the vegetation and ecology of the valley in about 1954. | |
| | See also K.1-K.6 for related large format data. | |
| D.183-D.184 | General correspondence etc | 1956-1959 |
| | Flora lists are included at D.183. | |
| | 2 folders. | |
| D.185-D.187 | 'The Plant Ecology of the Gordano Valley', by Willis and R.L. Jefferies, <i>Proceedings of the Bristol Naturalists' Society</i> 19 (1959) | 1959 |

D.185	Rough manuscript draft of the paper in Willis's hand, with rough notes, figures etc; copy of a related letter by Willis to N.Y. Sandwith (1959)	
	Contents of an untitled file.	
D.186	34pp revised typescript draft, with manuscript corrections, figures and rough manuscript notes	
D.187	Further revised typescript with figure legends; letter <i>re</i> publication; reprint	
D.188	'The Late and Post-Glacial History of the Gordano Valley, North Somerset', by Willis, R.L. Jefferies and E.W. Yemm, 'New Phytologist' 67 (1968)	1967
	Correspondence <i>re</i> revisions to the paper, with comments by others; a few figures are included.	
D.189	Exhibition at the City Museum, Bristol, in connection with National Nature Week.	1963
	Willis assisted with a section on Gordano Valley.	
	Correspondence, with photographs and figures supplied to the Museum by Willis.	
D.190-D.191	Samples of vegetation and pebbles contained in envelopes inscribed with names of species	c.1955-1959
	2 folders.	
D.192	Miscellaneous papers	1958-1959, nd
	Manuscript data relating to soil samples, 1958-1959; typescript notes headed 'Preparation of pollen samples' and very brief manuscript notes on 'Trifolium stellatum', nd.	
	Found with the papers in D.183-D.191.	

Research

D.193-D.203	Wookey Hole (Somerset)	1956-1970, nd
	Contents of a box file inscribed 'Wookey Hole organism'.	
	The material relates to studies on an unusual filamentous saprophyte found in Wookey Hole caves by R.E. Davies (Department of Biochemistry, University of Oxford) in December 1955. Willis and his colleague F.E. Round, with assistance from other experts in the UK and abroad, attempted to identify the organism. The work resulted in three published papers between 1956 and 1961.	
D.193-D.195	Correspondence with scientists in the UK and abroad, with related papers, <i>re</i> studies on the plant and attempts at identification	1956-1961
	R.E. Davies is among the correspondents.	
	Included are manuscript experimental data and notes in Willis's and other hands.	
	3 folders.	
D.196	'A Filamentous Saprophyte from Wookey Hole Caves', by Willis and F.E. Round, <i>Nature</i> 178 (1956)	
	2pp manuscript draft of the paper with an earlier title of 'A interesting filamentous plant from Wookey Hole caves'; typescript draft with manuscript revisions; reprint	
D.197	'Further Observations on a Filamentous Saprophyte from Wookey Hole Caves', by Willis, <i>Nature</i> 191 (1961)	1961
	2pp manuscript draft and typescript draft; letter <i>re</i> publication.	
D.198-D.203	'Further Studies on a Filamentous Saprophyte from Wookey Hole', by Willis, <i>Proceedings of the University of Bristol Spelaeological Society</i> 9 (1961)	1961-1970
D.198	Manuscript draft of the paper and 14pp typescript draft with manuscript revisions	
D.199	17pp revised typescript version and correspondence <i>re</i>	/...

Research

/...	publication	
D.200	Draft material for figures including figure legends Chiefly manuscript drawings with annotations (not Willis's hand); mounted photographs are included.	
D.201	Correspondence arising and <i>re</i> further studies on the organism	1961-1970
D.202	Small box containing 3 glass microscope slides, each labelled 'Wookey organism'	Nd
D.203	2 glass slides from a box labelled 'Wookey Hole'	Nd
D.204-D.205	Miscellaneous papers	1958-1964, nd
D.204	Manuscript pages of experimental data and notes (chiefly from soil experiments) relating to various sites. In Willis's hand.	1958-1964
D.205	2pp typescript headed 'Leigh Woods' [Avon Gorge] describing a planned group visit to this site with details of flora to be found Willis is listed as one of the 'leaders' of the outing.	Nd
D.206-D.208	'STOMATA' Contents of a box file so inscribed.	1951-1959
D.206	'Stomata and water relations', contents of a folded piece of paper so inscribed Correspondence and manuscript experimental data by	1951-1959 /...

Research

/... Willis and others.

D.207-D.208 'Transpiration records Braunton 1957', contents of a June 1957
folded piece of paper so inscribed

Manuscript experimental data, a few pages only in Willis's
hand.

See D.98-D.114 for further records of transpiration
studies at Braunton Burrows.

2 folders.

D.209

MISCELLANEOUS PAPERS

**c.1957-1965,
nd**

3 envelopes containing plant samples, with plant names
inscribed either on envelope or on paper inside, c.1957-
1965; a few undated manuscript lists of plant species (not
in Willis's hand).

SECTION E	PUBLICATIONS, E.1-E.88	1951-2006
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E.1-E.24	DRAFTS
E.25-E.86	EDITORIAL CORRESPONDENCE
E.87-E.88	REPRINTS

E.1-E.24	DRAFTS	[1961 or 1962]-2001, nd
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E.1	'Rare Plants of the Bristol District', <i>Reports of Annual Conferences 1961 and 1962 of the South Western Naturalists' Union</i>	1961 or 1962
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6pp typescript draft with manuscript revisions; reprint.

E.1A-E.2	'Bristol Botany in 1965', <i>Proceedings of the Bristol Naturalists' Society</i> 31, Part II, 1966
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E.1A	11pp typescript draft with manuscript revisions.
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E.2	Corrected proofs and reprint.
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E.3-E.4	'A Broad-Leaved Variety of 'Festuca rubra', with Sylvia M. King, <i>Proceedings of the Botanical Society of the British Isles</i> 7, 1968
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E.3	Correspondence with Sylvia M. King and C.E. Hubbard (Royal Botanic Gardens, Kew) <i>re</i> preparation of the paper.	1966-1967
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E.4	7pp typescript draft of the paper with manuscript revisions; brief correspondence <i>re</i> publication with referee's comments; corrected proof.	1967
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Publications

- E.5 'Bristol Botany in 1969', *Proceedings of the Bristol Naturalists' Society* 31, Part VI, 1970

9pp typescript draft with manuscript revisions; reprint.
- E.6-E.11 *Introduction to Plant Ecology A Guide for Beginners in the Study of Plant Communities*, London 1973 1967-1982

This book was Willis's completely revised edition of Sir Arthur Tansley's work of the same title. Willis's revision added a substantial amount of new material as well as updating parts of the original text.
- E.6-E.9 Correspondence etc chiefly *re* publication, 1967-1974. 1967-1977

Accounts of royalties, 1973-1977, are included at E.9.

4 folders.
- E.10 Corrected proof.
- E.11 Correspondence with publishers *re* the suggestion of a revised edition of Willis's book, with related expert reports by others. 1981-1982
- E.12-E.17 ' 'Ophrys apifera' Huds. x 'O. insectifera' L., a natural hybrid in Britain', *Watsonia* 13, 1980
- E.12 Manuscript drafts of sections of the paper (pagination disordered), with 2pp manuscript notes by another.
- E.13-E.16 Scientific correspondence with various botanists in East Germany, West Germany and the UK *re* the subject matter of Willis's paper; correspondence *re* publication with typescript drafts and corrected proofs. 1978-1980

4 folders.
- E.17 Miscellaneous material relating to the preparation of the paper: notes (mostly manuscript), photographs, /...

Publications

- /... photocopied printed pages.
- E.18 'Arthur Roy Clapham', *Biographical Memoirs of Fellows of the Royal Society* Vol. 39, 1994 1992
- Correspondence with P.W. Richards *re* the preparation of the article, with some biographical notes on Clapham by Richards; 33pp typescript draft with manuscript corrections and annotations by Richards.
- E.19 'Obituary: Paul Westmacott Richards CBE', *Journal of Ecology* 84, 1996 1995-February 1996
- Correspondence etc with family and colleagues *re* the preparation of the text, with 11pp typescript of the article; offprint.
- E.20 Contribution to *Encyclopedia of Ecology and Environmental Management*, Blackwell Science Ltd, 1998
- 6pp typescript draft headed 'Angiosperms - global diversity and conservation', with manuscript revisions, and revised typescript; letter *re* publication..
- E.21 'Braunton Burrows in context, a comparative management study', with J.R. Packham, published in *Coastal Dune Management: Shared Experience of European Conservation Practice*, eds J.A. Houston, S.E. Edmondson & P.J. Rooney, Liverpool 2001 1998-2001
- Photocopied typescript draft, with manuscript revisions by Willis, and letter from Packham; 14pp typescript revised version inscribed '24 August 1998'; offprint.
- E.22 'Bristol Botanists' Nd
- This appears to have been a chapter contributed by Willis for a book.
- Incomplete typescript draft so entitled with manuscript pages attached; later 25pp typescript draft with manuscript corrections; figures.

Publications

- | | | |
|------|--|----|
| E.23 | 'The growth and value of 'Eriophorum angustifolium Honck. in relation to the re-vegetation of eroding blanket peat', with J.R.A. Richards and B.D. Wheeler | Nd |
|------|--|----|

14pp typescript so entitled with manuscript revisions.

- | | | |
|------|---|----|
| E.24 | 'Ecology, Control and Use of Fresh-water Vascular Hydrophytes with particular reference to 'Eichhornia crassipes', 'Ceratophyllum demersum', 'Typha domingensis' and 'Polygonum senegalense': a Review', with M.A. Zahran | Nd |
|------|---|----|

16pp typescript draft so entitled with manuscript revisions.

E.25-E.86	EDITORIAL CORRESPONDENCE	1962-2006
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Arranged alphabetically by publication or publisher, as follows:

- | | |
|-----------|--|
| E.25-E.73 | <i>Biological Flora of the British Isles</i> |
| E.74-E.81 | Chapman and Hall |
| E.82-E.83 | <i>Journal of Biogeography</i> |
| E.84-E.85 | <i>Journal of Ecology</i> |
| E.86 | Shorter correspondence and papers |

E.25-E.73	<i>Biological Flora of the British Isles</i>	1988-2005
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Biological Flora of the British Isles is a special series of autoecological accounts published as a separate section of *The Journal of Ecology*, with its own Editor and team of Associate Editors. Willis was associated with *Biological Flora* from 1968 until his death. He retired as Editor in 2004.

Willis's correspondence with authors of submitted papers, referees and others, with his and referees' notes on texts, typescript drafts, corrected proofs, and a few photos.

Most of this material was found in envelopes, each relating to a particular paper. The title of the papers (or

/...

Publications

I...	<p>the Latin name of the plant forming the subject of the paper) was inscribed on each envelope. These inscriptions are reproduced in the descriptions below, followed by the authors' names in brackets.</p> <p>Contents of a box inscribed 'Examples of editorial process'.</p> <p>Much further material relating to Willis's work on <i>Biological Flora of the British Isles</i> was discarded after his death.</p>	
E.25-E.26	<p>'<i>Armeria maritima</i>' (S.R.J. Woodell and A. Dale)</p> <p>2 folders.</p>	1988, 1992-1993
E.27-E.28	<p>'<i>Prunus padus</i>' (S.R. Leather)</p> <p>2 folders.</p>	1988-1995
E.29	<p>'<i>Cynoglossum officinale</i>' (T. de Jong and P.G.L. Klinkhamer)</p>	1989-1990
E.30	<p>'<i>Fallopia japonica</i>' (D.J. Beerling et al.)</p>	1990-1994
E.30A	<p>'The Ecological Flora Database' (A.H. Fitter and H.J. Peat)</p> <p>This paper appears to have been published as a supplement to <i>Biological Flora of the British Isles</i>, June 1994.</p>	1990-1994
E.31	<p>'<i>Senecio cambrensis</i>' (R. Ingram and H. J. Noltie)</p>	1990-1995
E.32	<p>'<i>Impatiens glandulifera</i>' (D.J. Beerling)</p>	1991-1992
E.33	<p>'<i>Peucedanum palustre</i>' (T.C. Meredith and P.J. Grubb)</p>	1991-1992

Publications

E.34	'Phleum arenarium' (W.H.O. Ernst)	1991-1993
E.35-E.36	'Heracleum mantegazzianum' (G.E.D. Tiley et al.) 2 folders.	1991-1995
E.37	'Hieracium pilosella' (Bishop and A.J. Davy)	1992-1993
E.38	'Tripleurospermum inodorum' (Q.O.N. Kay)	1992-1994
E.39-E.42	'Stachys germanica' (A.J. Dunn) 4 folders.	1992-1997
E.43	'Betula nana & Betula glandulosa' (P.A. Thomas)	1995-1996
E.44-E.45	'Potentilla rupestris' (G.B. Wilson et al.) 2 folders.	1993-1995
E.46	'Symphoricarpos albus' (O.L. Gilbert)	1994
E.47	'Trisetum flavescens' (J.M. Dixon)	1994-1995
E.48	'Lichnis viscaria' (G.B. Wilson et al.)	1995
E.49	'Peucedanum officinale' (R.E. Randall and G. Thornton)	1995-1996
E.50-E.51	'Erica ciliaris' (R.J. Rose et al.) 2 folders.	1995-1996

Publications

E.52	'Vaccinium uliginosum' (A.-L. Jacquemart)	1996
E.53	'Vaccinium oxycoccos' (A.-L. Jacquemart)	1996-January 1997
E.54	'Capsella bursa-pastoris' (Aksoy et al.)	1997
E.55	'Sorbus aucuparia' (Raspé et al.)	1997-2000
E.56	'Festuca longifolia' (D.J. Gibson and I. Taylor) The correspondence appears to relate to two separate papers: 'Festuca arundinacea' and 'Festuca longifolia'.	1997, 2004
E.57	'Glechoma hederacea' (M.J. Hutchings and E. Price)	1997-1998
E.58	'Vulpia ciliata ssp. ambigua' (A.R. Watkinson et al.)	1997-1998
E.59-E.60	'Galium aparine' (K. Taylor) 2 folders.	1998
E.61	'Mycelis muralis' (G. Clabby)	1998
E.62	'Veronica spicata' (W.J. Whittington et al.)	1998-1999
E.63	'Ornithogalum pyrenaicum' (D.J. Hill et al.)	1998-1999
E.64	'Taxus baccata' (P.A. Thomas)	2003
E.65	'Orchis ustulata' (T. Kull and K. Tali)	2003

Publications

E.66	'Bartsia alpina' (K. Taylor and F. Rumsey)	2003
E.67	'Rosa rugosa' (H.H. Bruun)	2003-2004
E.68	'Geranium robertianum' (R.J. Tofts)	2003-2004
E.69	'Viola kitaibeliana' (R.E. Randall)	December 2003-January 2004
E.70	'Geranium purpureum' (R.J. Tofts)	2004
E.71	'Rhinanthus minor' (D.B. Westbury)	2004
E.72	'Pinguicula' (Y. Heslop-Harrison)	2004
E.73	Miscellaneous papers and correspondence	1999-2005
	Included is a manuscript list by Willis of contributions to <i>Biological Flora of the British Isles</i> 2001-2005.	
E.74-E.81	Chapman and Hall	1987-1992
	The following material chiefly relates to a book <i>The Vegetation of Egypt</i> by M.A. Zahran (Head of the Department of Botany, University of Mansoura, Egypt) and edited by Willis, Chapman and Hall, 1992. Willis's collaboration in this work arose from an academic link (for botanical studies) established in 1990 between the University of Sheffield and the University of Mansoura. The establishment of this link, facilitated by the British Council, was one of the main reasons for Willis's visit to Mansoura in February / March 1990.	
	Contents of a box file inscribed 'Examples of AJW's editorial work'.	

Publications

E.74-E.75	<p>Correspondence etc <i>re</i> early contacts between the two universities, the proposed academic link and Willis's visit to Mansoura, 20 February - 2 March 1990.</p> <p>Included is correspondence <i>re</i> arrangements for the visit and arising; a typescript copy of Willis's report (to the British Council) on the visit (E.75); photographs of sites visited during the trip (E.75); and a typescript of a paper entitled 'Growth and Chemical Composition of Fibre-producing Plants under a Range of Salinities', by Willis et al., from studies undertaken at the two universities (E.75).</p> <p>2 folders.</p>	1987-April 1990
E.76-E.78	<p>Correspondence etc, chiefly with M.A. Zahran and publishers, <i>re</i> Willis's editing of the book.</p> <p>3 folders.</p>	1990-1992
E.79-E.81	<p>Typescript drafts of various sections of the book, with manuscript revisions in the hands of Willis and ?Zahran.</p> <p>Included are some manuscript draft pages in Willis's hand.</p> <p>3 folders.</p>	
E.82-E.83	<p><i>Journal of Biogeography</i></p> <p>Willis's correspondence with various academic botanists, ecologists etc and with Blackwell Scientific Publications Ltd <i>re</i> a proposed new 'Journal of Biogeography'.</p> <p>Willis was acting in an advisory editorial capacity for Blackwell Scientific Publications Ltd.</p> <p>2 folders.</p>	1972
E.84-E.85	<p><i>Journal of Ecology</i></p> <p>Willis was Honorary Editor 1970-1975.</p>	1971-1977

Publications

E.84	Large hardback notebook inscribed 'Journal of Ecology' on cover.	1971-1977
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Contains manuscript notes, almost all in Willis's hand, giving details (names of authors, title, date, names of referees, outcome etc) of the editorial process for individual papers submitted to the Journal.

Found loose within the volume is a letter (May 1975) to Willis from P.J. Grubb (Honorary Editor) enclosing copies of his letters to various authors.

E.85	Two letters from P.J. Grubb to Willis <i>re</i> an Editorial Board matter.	May 1973
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E.86	Shorter correspondence and papers	1962-2006
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Chiefly *re* Willis's assistance in respect of various publications by others, and general editorial matters.

E.87-E.88	REPRINTS	1951-2005
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Willis's reprints.

2 boxes.

SECTION F	LECTURES AND BROADCAST, F.1-F.8	1958-?1976
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F.1-F.7	LECTURES
F.8	BROADCAST

F.1-F.7	LECTURES	1958-?1976
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F.1	Lecture to the Natural History Section of the Somerset Archaeological and Natural History Society, Taunton, early October 1959	1959
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Letter of thanks.

F.2-F.3	Lectures to the Geological Section of the British Naturalists' Society, 9 March 1961, and to the Geographical Association (Bristol Branch), 19 January 1962
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These two lectures on pollen analysis and the Gordano Valley are closely related; Willis possibly delivered the same lecture on both occasions.

F.2	6pp manuscript notes headed 'Pollen in Peat Deposits', with the following inscriptions underneath: 'BNS Geol. Section Mar 9th '61' and 'Also Bristol Branch of Geog. Assocn Jan 19th '62'; further manuscript notes on geology, flora etc of Gordano Valley	1958-c.1962
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One page of the latter group of notes is inscribed with the date '18.10.58'.

F.3	Correspondence <i>re</i> arrangements for the lecture to the Geographical Association (Bristol Branch)	1961-January 1962
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F.4	'Plants of the Bristol Area', a lecture given at Colston's Girls' School, Bristol, 28 November 1963	1963
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Correspondence *re* arrangements.

Lectures and broadcast

- | | | |
|-----|---|-----------|
| F.5 | North Gloucestershire Naturalists' Society, May 1965 | 1965 |
| | Willis gave a talk on the 'Sorbi' of the Avon Gorge. | |
| | Letter of thanks. | |
| | | |
| F.6 | Botanical Society of Edinburgh lectures, 22-24 February 1972 | 1971-1972 |
| | Willis was invited by the Council of the Society to contribute to its 1971-1972 lecture programme. He agreed to deliver his lecture at three venues: University of Aberdeen (22 February); University of St Andrews (23 February); Royal Botanic Garden, Edinburgh (24 February). | |
| | Correspondence <i>re</i> arrangements and arising. | |
| | | |
| F.7 | Seminar on sand dunes, Department of Botany, University of Manchester, January 1976 | ?1976 |
| | Letter of invitation to give the seminar to students and staff. | |
| | | |
| F.8 | BROADCAST | 1966 |
| | | |
| F.8 | 'Look: Flowers without Time', BBC television programme | 1966 |
| | Willis assisted with the commentary for the programme. | |
| | Letter of thanks, February 1966. | |

SECTION G	VISITS AND CONFERENCES, G.1-G.22	1960-1986, nd
G.1	<p>Visit to Sweden and Denmark, 22-26 May 1960</p> <p>The main purpose was to spend a few days at the Institute of Plant Physiology at the University of Lund (23-25 May). On his return journey Willis briefly visited the Laboratory of Plant Physiology at the Royal Veterinary and Agricultural College, Copenhagen, Denmark.</p> <p>Correspondence chiefly <i>re</i> arrangements.</p>	1960
G.2	<p>Seminar on weedkillers, National Agricultural Advisory Service, South Western Region (Ministry of Agriculture, Fisheries and Food), Bristol, 14 January 1963</p> <p>Invitation and acceptance.</p>	1962
G.3	<p>Local authority meeting in connection with weed control, Northampton, 15 April 1964</p> <p>Willis gave a talk, probably based on his research on road verges at Bibury, Gloucestershire (see D.72-D.92).</p> <p>Correspondence <i>re</i> arrangements.</p>	
G.4	<p>Tenth International Botanical Congress, Edinburgh, [?late July] - early August 1964: pre-Congress excursion</p> <p>Correspondence <i>re</i> arrangements for a pre-Congress excursion to sites in the Bristol area (chiefly the Avon Gorge), 28 July. Willis agreed to lead the party and to give a relevant talk at the the University of Bristol on the previous evening.</p> <p>There is no material relating to the Congress itself.</p>	1962-March 1964
G.5-G.8	<p>8th British Weed Control Conference, Brighton, 21-24 November 1966</p> <p>Willis, with E.W. Yemm, gave a paper entitled 'Spraying of roadside verges: long-term effects of 2,4-D and maleic hydrazide' which was an account of their studies at Bibury, Gloucestershire (see D.72-D.92).</p>	1958-1966
G.5	Correspondence etc <i>re</i> arrangements, including	/...

Visits and conferences

/...	typescript draft of Willis's paper, with manuscript revisions, and 6pp final version; programme.	
G.6	Correspondence arising.	November- December 1966
G.7	<p>'Methods of Weed Control and Use of Grass Growth Retarding Substances'</p> <p>Manuscript draft so entitled by Willis and 11pp later typescript draft version.</p> <p>This paper includes reference to the Bibury experiments and could be an expanded version (?for publication) of the Conference paper.</p>	
G.8	Manuscript notes and data by Willis from experiments at Bibury (1958-1960), with further related manuscript and typescript notes.	1958-1962
G.9-G.12	<p>'Roads in the Landscape', international conference organised by the Ministry of Transport and the British Road Federation, University of Keele, Staffordshire, 17-20 July 1967</p> <p>Willis delivered a paper entitled 'Chemical grass and weed control'.</p>	1967-1969
G.9	Brief correspondence <i>re</i> arrangements, programme and list of delegates.	
G.10	Manuscript draft of Willis's paper with pages of manuscript notes; correspondence <i>re</i> the preparation of the paper, with revised and annotated 5pp typescript draft.	1967
G.11	Further typescript draft with manuscript revisions; printed version.	
G.12	Correspondence arising, with printed Conference report; printed papers of other delegates.	1967-1969

Visits and conferences

G.13-G.15	'Road verges: their function and management', symposium held in London, 14 March 1969 Willis delivered a paper entitled 'Road verges - experiments on the chemical control of grass and weeds', based on the Bibury experiments.	1968-1969
G.13	Correspondence <i>re</i> arrangements and preparation of Willis's paper, with programme and list of participants.	1968-1969
G.14	Manuscript draft of Willis's paper; 12pp revised typescript draft; printed version; 2pp manuscript data from Bibury experiments (1968); 8pp manuscript notes.	
G.15	Correspondence arising; summary of conference proceedings; printed booklet of conference papers.	1969
G.16-G.17	'Road verges in Scotland: their function and management', a symposium held in Edinburgh, 3 April 1970. Willis delivered a paper entitled 'The Use of Chemicals in the Management of Vegetation: Long-Term Studies of the Effects of Spray Treatments', based on the Bibury experiments. See D.78 for a further draft of this paper.	1969-1970
G.16	Correspondence <i>re</i> pre-conference publication of Willis's paper and 14pp typescript draft of the paper with manuscript revisions; pages of manuscript notes and lists of slides; programme.	1969-1970
G.17	Printed version of Willis's paper; printed conference proceedings etc; correspondence arising.	1970
G.18	'People and Plants (in Derbyshire)', study conference, Lea Green, Matlock, Derbyshire, 19-20 September 1970 Willis presented a paper entitled 'The use and misuse of herbicides and fertilizers in the countryside'. 3pp manuscript notes for the paper and lists of slides;	1970 /...

Visits and conferences

/...	programme; printed conference report with texts of papers delivered.	
G.19-G.20	11th British Weed Control Conference, Brighton, 13-16 November 1972 Willis delivered a paper entitled 'Long-term ecological changes in sward composition following application of maleic hydrazide and 2,4-D'.	
G.19	Printed volume of conference proceedings.	
G.20	Printed delegates list.	
G.21	Annual Conference of the Society of Chiropractors, [?late April or beginning of May] 1986. Letter of thanks only.	1986
G.22	Public Works Services (Ireland) Ltd Exhibition and Convention, Belfast, 20-22 September [year unknown] One page only of programme which lists a paper by Willis entitled 'Verge Maintenance and Weed Control'.	Nd

SECTION H	SOCIETIES AND ORGANISATIONS, H.1-H.6	1959-1994
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H.1	BRISTOL NATURALISTS' SOCIETY	1959, 1962
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One letter (1959) *re* Willis's appointment as Honorary Editor.

Papers *re* the Society's Centenary celebrations, May-July 1962: 6pp typescript draft of report on the events, with manuscript revisions and additions mostly in Willis's hand; printed pamphlet 'A Centenary History of the Bristol Naturalists' Society' (1962), edited by Willis; Centenary Dinner menu.

H.2	BRITISH ECOLOGICAL SOCIETY	1961-1974
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Willis was a member of Council (including Programme Planning Committee), and served as Vice-President.

Papers and correspondence *re* general business.

H.3	COMMITTEE OF VICE-CHANCELLORS AND PRINCIPALS OF THE UNIVERSITIES OF THE UNITED KINGDOM	1984
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Letter to Willis *re* his assistance with the 'ORS [?Overseas Research Studentship] Scheme'.

H.4	NATIONAL TRUST	February-March 1976
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Willis became a member of the Regional Committee for the East Midlands.

Correspondence *re* Willis's joining of the Committee and minutes of its Inaugural Meeting.

Societies and organisations

H.5 PEAK PARK JOINT PLANNING BOARD 1978

Willis was a member of the Board.

Brief correspondence with Department of Environment *re*
Willis's re-appointment.

H.6 MISCELLANEOUS PAPERS 1965-1994

Newsletters etc *re* various organisations.

J.1-J.41 CORRESPONDENCE 1899-2003

- J.1-J.18 'MISCELLANEOUS BOTANICAL
CORRESPONDENCE MOSTLY RE
BRISTOL REGION'
- J.19-J.33 GENERAL BOTANICAL
CORRESPONDENCE
- J.34-J.36 REFERENCES AND
RECOMMENDATIONS
- J.37-J.41 N.Y. SANDWITH AND C.I. SANDWITH
CORRESPONDENCE

**J.1-J.18 'MISCELLANEOUS BOTANICAL CORRESPONDENCE
MOSTLY RE BRISTOL REGION' 1956-1969**

Contents of a box file so inscribed.

Correspondence *re* plant finds in the Bristol / Somerset area and other botanical matters. Included are related manuscript and typescript papers, chiefly lists of plants, some in Willis's hand or with his annotations.

Arranged alphabetically by correspondent J.1-J.14; J.15-J.18 is a chronological sequence with various correspondents.

The sequences under named correspondents below sometimes include related brief correspondence of Willis with other individuals.

J.1-J.2 Appleyard, Joan 1965-1969

Appleyard was a botanist living in Somerset.

re various plants including mosses. Included is correspondence with D. Munro Smith.

2 folders.

J.3 Perring, F.H. 1959, 1962

Perring, based at the Cambridge University Botanic Garden, was Director of the Distribution Maps Scheme run by the Botanical Society of the British Isles.

/...

Correspondence

- /... re the Distribution Maps Scheme and levels of strontium in soil in the Bristol area.
- J.4 **Roe, R.G.B.** 1966-1968
- Roe was a botanist living in Somerset.
- re a survey of 'Flora of Somerset' in which Roe was involved.
- J.5-J.13 **Sandwith, N.Y., and correspondence arising from his death** 1956-1966
- Sandwith was a long-serving botanist at the Herbarium, Royal Botanic Gardens, Kew, and an expert on the flora of Somerset and Gloucestershire. Between 1936 and 1965 he contributed many annual 'Bristol Botany' accounts to the *Proceedings of the Bristol Naturalists' Society*, often in collaboration with his mother, C.I. Sandwith.
- J.5-J.9 Willis's correspondence with Sandwith 1956-1965
- The correspondence relates to a large number of species of flora, as well as to 'Bristol Botany' articles and other matters. Included is a proof, with Willis's corrections, of Sandwith's article 'Bristol Botany in 1963'. Also included is some correspondence with D. Munro Smith.
- 5 folders.
- J.10-J.13 Correspondence arising from Sandwith's death 1965-
December
1966
- Sandwith died in 1965. Willis wrote an obituary of Sandwith which appears to have been published in the *Proceedings of the Bristol Naturalists' Society*.
- Correspondence etc re the disposal of Sandwith's herbarium, books and papers, and Willis's obituary of Sandwith. Principal correspondents are J.P.M. Brenan of the Royal Botanic Gardens, Kew, and Sandwith's solicitors; his brother is also one.
- 4 folders.

Correspondence

J.14	Smith, D. Munro Munro Smith was a botanist living in Bristol. <i>re</i> various plants including mosses.	1962-1968
J.15-J.18	Chronological sequence Various correspondents. 4 folders.	1959-1969
J.19-J.33	GENERAL BOTANICAL CORRESPONDENCE Arranged alphabetically by correspondent J.19-J.25; J.26-J.33 is a chronological sequence with various correspondents.	1953-2003
J.19	Clapham, A.R. Clapham was Professor of Botany, University of Sheffield, 1944-1969. Willis's memoir of Clapham appears in <i>Biographical Memoirs of Fellows of the Royal Society</i> , vol. 39 (1994). <i>re</i> various matters including plant specimens found at Berrow salt marsh (Somerset) and Braunton Burrows (North Devon).	1957, 1969-1971
J.20	Godwin, H. Godwin was Professor of Botany at the the University of Cambridge. <i>re</i> ongoing work at sites such as Shapwick and Gordano Valley (both Somerset), general academic matters etc.	1955-1970, nd
J.21	Paton, J.A. Paton was a botanist at the University of Southampton. <i>re</i> various plant finds in the Bristol area.	1958-1959

Correspondence

- | | | |
|-----------|---|--------------------------|
| J.22 | Simpson, J.H. Hope- | 1955, 1970,
1987-2000 |
| | Hope-Simpson was a colleague and friend of Willis's at the Department of Botany, University of Bristol, and an expert on the plant ecology of Branton Burrows, North Devon. | |
| | Chiefly <i>re</i> Branton Burrows topics; personal matters are also covered. Included is a reprint of a publication (1955) by Willis and Hope-Simpson. | |
| J.23 | Stace, C.A. | 1974, 1980 |
| | Stace was a botanist at the University of Manchester, later at the University of Leicester. | |
| | <i>re</i> Stace's research and publications. | |
| J.24 | Watson, E.V. | 1961, 1966 |
| | Watson was a botanist at the University of Reading. | |
| | Chiefly <i>re</i> his plans for a [?University of Reading] Botany Society visit to south west England. | |
| J.25 | Wright, F.R. Elliston | 1956-1959 |
| | Wright was an amateur botanist and an expert on flora of Branton Burrows (North Devon). | |
| | <i>re</i> various plants found by Wright on the Branton Burrows. | |
| | See D.93-D.97 for further correspondence of Wright. | |
| J.26-J.33 | Chronological sequence | 1953-2003 |
| | Various correspondents. | |
| J.26-J.29 | 1953-1963 | |
| | 4 folders. | |

Correspondence

J.30-J.33	1964-2003 4 folders.	
J.34-J.36	REFERENCES AND RECOMMENDATIONS Applications for academic posts 3 folders.	1970-1995
J.37-J.41	N.Y. SANDWITH AND C.I. SANDWITH CORRESPONDENCE Willis acquired correspondence of N.Y. Sandwith (see note at J.5-J.9 above) and correspondence of his mother, C.I. Sandwith, sometime after the death of the former in 1965.	1899-1965, nd
J.37-J.38	N.Y. Sandwith Incoming correspondence <i>re</i> plant finds in south-west England, chiefly Somerset; a few related papers are included. One letter dated 1899 (W. Whitwell to E.J. Marshall) was found with the letters to Sandwith and has been placed at the end of the sequence. 2 folders.	1899, 1945- 1965, nd
J.39-J.40	C.I. Sandwith Incoming correspondence <i>re</i> various plant finds and other botanical matters. Correspondents include D.E. Coombe. Included at J.19 is a photograph (1951) featuring (from annotation on verso) C.I. Sandwith, Elizabeth Davis and Peter Taylor.	1917-1956, nd

/...

Correspondence

- /... One letter (19 April 1917) is addressed to an unidentified recipient.
2 folders.
- J.41 Manuscript notes by various individuals, found with the 1917-1962,
correspondence described in J.37-J.40. nd
- The notes relate to botanical finds and include several rough maps of locations. Some are in N.Y. Sandwith's hand; a few pages only are dated.

SECTION K	NON-TEXTUAL MATERIAL, K.1-K.26	1921-1972, nd
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- | | |
|-----------|---------------------------------------|
| K.1-K.18 | LARGE FORMAT GRAPHS, MAPS AND FIGURES |
| K.19-K.23 | PHOTOGRAPHS |
| K.24-K.25 | SLIDES |
| K.26 | ALBUM OF FLORA |

K.1-K.18	LARGE FORMAT GRAPHS, MAPS AND FIGURES	c.1956-1972, nd
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The material chiefly consists of large format graphs and charts, contour maps etc relating to studies carried out at Gordano Valley (Somerset), Berrow salt marsh (Somerset) and Bibury (Gloucestershire). Most of the items are rolled up.

Manuscript (including stencilled). Only a small quantity is clearly in Willis's hand.

Arranged by site as follows:

- | | |
|-----------|--------------------|
| K.1-K.6 | Gordano Valley |
| K.7-K.9 | Berrow salt marsh |
| K.10-K.12 | Bibury |
| K.13-K.18 | Unidentified sites |

K.1-K.6	Gordano Valley (Somerset)	[c.1956]- 1965, nd
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- | | | |
|-----|---|--------|
| K.1 | Bundle of very large graphs and charts for rainfall water level, plant species distribution etc | c.1956 |
|-----|---|--------|

A number of sheets are in Willis's hand.

- | | | |
|-----|--|-----------|
| K.2 | Roll of 3 data charts headed 'Gordano Valley DBI percentages of total tree pollen' | 1958-1962 |
|-----|--|-----------|

Non-textual material

K.3	Data chart headed 'Gordano Valley DB3 1965'	1965
	This appears to be part of the same set of data as the chart in K.3.	
K.4	Data chart headed 'Gordano Valley DB3 1965'	
K.5	Graph: 'Profile and stratigraphy'	Nd
K.6	Contour map	Nd
K.7-K.9	Berrow salt marsh (Somerset)	c.1959
K.7	Contour map	1959
K.8	Vegetation distribution map	1959
K.9	Map, similar to that in K.7 and probably of Berrow salt marsh, apparently indicating gradients	c.1959
K.10-K.12	Bibury (Gloucestershire)	1972 or after
K.10	Graph: 'Long term effects of MH on sward composition'	1972 or after
	Data 1958-1972.	
K.11	Graph: 'Long term effects of MH + 2, 4 - D on sward composition'	1972 or after
	Data 1958-1972.	
K.12	Graph: 'Long term effects of 2, 4 - D on sward composition'	1972 or after
	Data 1959-1972.	

Non-textual material

K.13-K.18	Unidentified sites	1960, nd
K.13	Graphs of transpiration rate etc inscribed 'Hydrocotyle vulgaris 21.6.60'	1960
K.14	Graph showing water tables	Nd
K.15	Map showing 'Geographical distribution of Juncus Subulatus Forsk' Possibly a figure for a publication.	Nd
K.16	Rough sketch diagram in Willis's hand, apparently showing contours	Nd
K.17	Rough sketch diagram in Willis's hand, apparently showing contours, probably related to that in K.16	Nd
K.18	Various figures, possibly for a publication, on a single large sheet	Nd
K.19-K.23	PHOTOGRAPHS	1921, nd
K.19	Box of aerial phtographs (black and white) of Berrow salt marsh	Nd
K.20	Ring binder containing black and white photographs mounted onto cards The photos are of nature reserves in Wales (from accompanying captions on some) and of plant species in situ (locations not indicated). Captions are not in Willis's hand.	Nd

Non-textual material

K.21	Ring binder containing black and white photographs of un-named plant species mounted onto cards A few slides are attached to the last card.	Nd
K.22-K.23	Black and white photographs of various sites and plant species, contents of an unmarked file Many have manuscript inscriptions on verso, not in Willis's hand, giving names of sites and species. Sites include Braunton Burrows. At K.22 are 2 photographs (probably of Braunton Burrows) inscribed on verso in Willis's hand '1921' and (one) 'J. Ecol. (1922)', contents of an envelope; and 5 photographs within a piece of folded paper inscribed, in Willis's hand, 'Coppice-with-standards, Hayley Wood'. 2 folders.	1921, nd
K.24-K.25	SLIDES	Nd
K.24-K.25	2 boxes of slides: chiefly showing plant species (names inscribed on slides)	
K.26	ALBUM OF FLORA	Nd
K.26	Album inscribed 'Flora Alpina' on cover containing specimens of flora taped to pages The names of the species are on cut-out printed labels; occasionally Willis has added a name in his own hand.	Nd

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