

GB 0440 GDH Bell Collection

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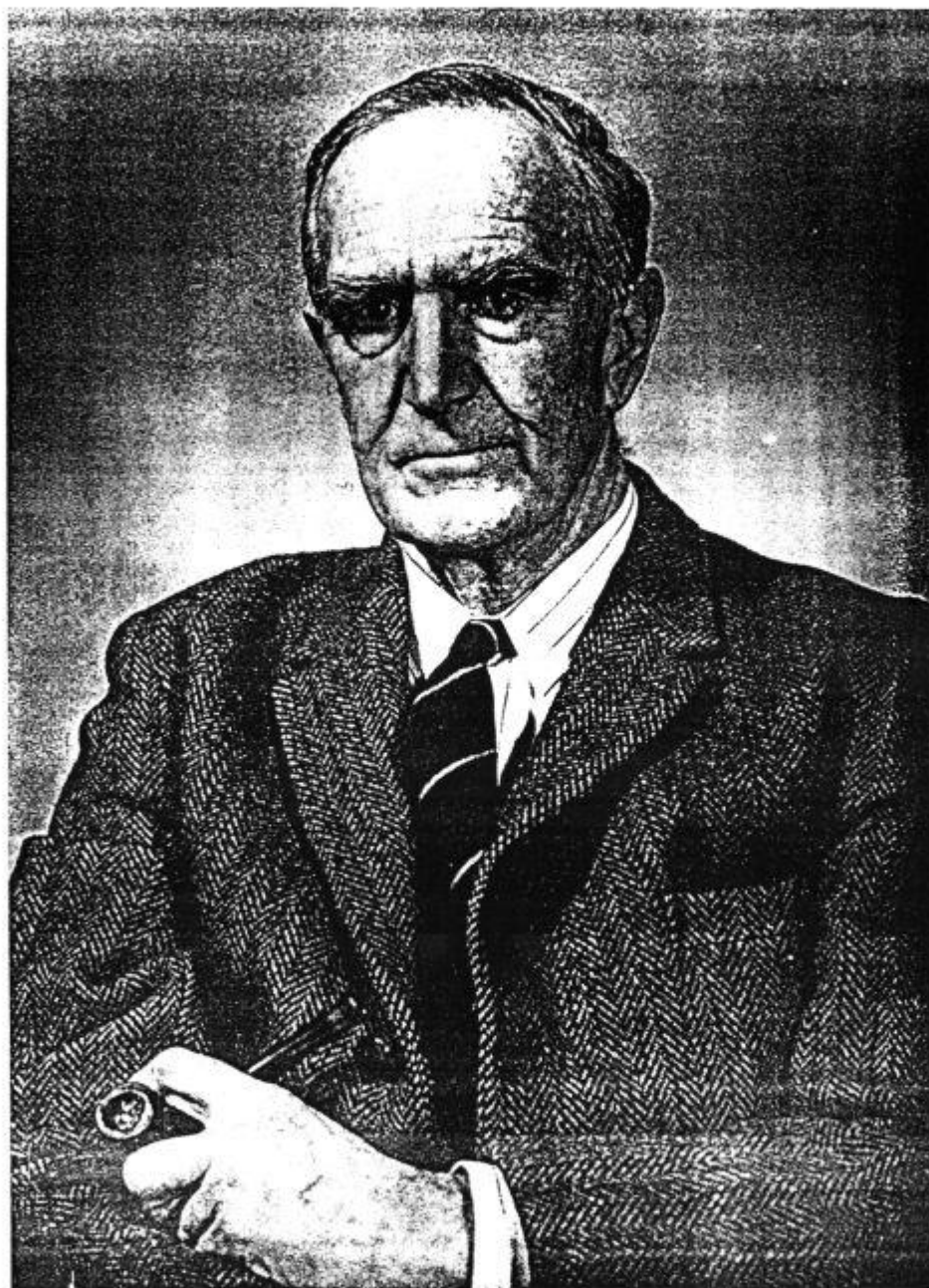
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CATALOGUE OF THE PAPERS OF  
GEORGE DOUGLAS HUTTON BELL

deposited at the John Innes Centre, August 1993.



*Catalogue compiled by Rosemary Harvey, Archivist to the John Innes Centre.*

## BIOGRAPHICAL NOTE.

George Douglas Hutton Bell, known as Douglas Bell, was an outstanding breeder of barley varieties, a fine teacher and an inspired Director of the Plant Breeding Institute, Cambridge.

He was born on October 18th, 1905 and obtained first class honours in agricultural botany at the University College of North Wales, Bangor.

Douglas Bell came to Cambridge in 1928 to work with Rowland Biffen and Frank Engledow in the Plant Breeding Institute, (PBI), which then formed part of the School of Agriculture at the University.

In 1932 he was appointed lecturer at the Cambridge Department of Agriculture and from this point began his remarkably successful career as a plant breeder. Dr. Bell released his first variety, Pioneer, in 1943. This was a winter hardy variety of barley, adapted to British climatic conditions and much in demand during the war years.

In 1947 Douglas Bell was appointed Director of the Plant Breeding Institute and to him fell the task of choice of site, planning of buildings and the provision of equipment and recruitment of staff for an enlarged Institute, which was now separate from the School of Agriculture. The PBI was legally constituted under its own governing body in 1952 and became one of the Agricultural Research Council Institutes, conducting pure and applied research for the improvement of agricultural crops, particularly those suited to the drier parts of the country: wheat, barley, oats, potatoes, sugar beet, kales, beans, lucerne, red clover, tall fescue and cocksfoot. A biochemical and a chemical laboratory were also established and, three years later, a cytogenetics section.

Douglas Bell's next major success was the production of Proctor barley, launched on the market in 1953. Proctor combined excellent malting quality with a yield 10% higher than any other variety available at the time and was the most popular barley in the farmers' fields for 15 years.

The PBI moved from the University Farm to Trumpington in 1955. Increasing preoccupation with plant pathology characterised the years from 1955 until 1960. By 1956, 50% of barley acreage was sown with Proctor barley, and during the decade 1960-1970, PBI launched a further 19 crop varieties.

From 1960-1966 four Crop Sections were established: Cereals; Potatoes and Brassicas; Sugar Beet; Forage and Grasses. A new laboratory building, providing double the working space, opened in 1970 and glasshouse space was also more than doubled.

The combination of practical plant breeding work with scientific support has been quoted as a main component of the success of the Plant Breeding Institute over the years. The work on cytogenetics was particularly successful. Here Dr. Bell played an important part in elucidating for wheat breeders the relations between their crop and its wild ancestor, which was used as a source of disease resistance and other desirable characteristics.

Although the formal link with the University had been broken, Dr. Bell encouraged graduate students to come and work at PBI before taking up appointments as plant breeders overseas.

Dr. Bell was an excellent teacher and a Director who was well-informed of all pertaining to his Institute. He and his wife were also very generous with hospitality and their Christmas parties showed staff their director under a new aspect - that of a family man.

Dr. Bell was the author of several books and numerous papers - over a career that spanned more than 50 years. His books include: *Cultivated Plants of the Farm*, 1948; *The Breeding of Barley Varieties* in "Barley and Malt", 1962; *Cereal Breeding* in "Vistas in Botany", vol. 2, 1963; *Phylogeny of Temperate Cereals* in *Crop Plant Evolution*, 1965; contribution to: *Wheat Breeding: the Scientific Basis*, 1987.

Dr. Bell was keenly interested in the history and archaeology of cultivated plants, natural history, the theatre and music.

## GDH Bell Collection

### CONTENTS

Box 1: Archives: Botanical and Other Notes: Cambridge . . . . .	1
Box 2: Archives: Foreign Travel: Tropics (and Europe) . . . . .	2-3
Box 3: Archives: Lecture Notes, etc. 1946-1956 . . . . .	4-8
Box 4A: Reprints of Papers by GDH Bell:1930-49 . . . . .	9-10
Box 4B: Reprints of Papers by GDH Bell: 1950-63 . . . . .	11-13
Box 4C: Reprints of Papers by GDH Bell: 1964-87 (including undated reprints) . . . . .	14-15
Box 5: PBI Archive History for John Innes . . . . .	16
Box 6: Archives: Notes on PBI Material: 1928-1961 . . . . .	17
Box 7: Archives: PBI: Annual Reports: 1943-59 . . . . .	18
Box 8: Archives: Lecture Notes and Correspondence: 1962-71 . . . . .	19
Box 9: <i>Journal of Agricultural Science</i> . . . . .	20
Box 10: PBI History: Archives: 1943-1978 . . . . .	21-23
Box 11: Royal Society: Correspondence and Committees served on . . . . .	24
Box 11A: Biographical Memoirs of the Royal Society: F.L.Engledow and J.B.Hutchinson . . . . .	25
Box 12: My Review Lecture 1968. Royal Society Discussion Meeting, 1973 . . . . .	26
Box 13: Royal Society Discussion Meeting, 1976 and 1980 . . . . .	27
Box 14: Royal Society: Candidates and Elections and "Royal Society Year Book" . . . . .	28
Box 15: United Kingdom Cereal Pathogen Virulence Survey . . . . .	29
Box 15A: United Kingdom Cereal Pathogen Virulence Survey . . . . .	29
Box 16: PBI Book on Wheat . . . . .	30
Box 17: Opening of the Main Building. Opening of Douglas Building and Retiral Dinner . . . . .	31-34

## CONTENTS

Box 18: Commonwealth Foundation; Commonwealth Agricultural Bureaux; Centenary Rose Conference; Royal Agricultural Society of England . . . . .	35-36
Box 19: Notes for Addresses; Clive Behrens Lectures . . . . .	37-39
Box 20: Reports Overseas . . . . .	40-41
Box 21: GDH Bell's Notes; Lecture notes; Graduate Diploma School of Agriculture . . . .	42-44
Box 22: Personal Notes for Lectures - External. Dr.Bell's Notes . . . . .	45-48
Box 23: Cereal Physiology, Photosynthesis, Productivity, Climate and Yield, Meteorology	49-52
Box 24: GDH Bell's Notes: Miscellaneous, including his Lecture Notes and Notes on Breeding, etc. . . . .	53-55
Box 25: Tables and Diagrams for Slides. GDH Bell's Notes: Barley: Two Row Hybrids, Hybrid Register from H.B.I., 1932 . . . . .	56-57
Box 26: Proctor Barley . . . . .	58
Box 27: Photographs; Buildings; Breeding Techniques . . . . .	59
Box 28: Photographs of some of GDH Bell's Work . . . . .	60-65
Box 29: Negatives; Barley Varieties for Thesis on Classification taken 1931; Aberdeen Idaho Sacaton Arizona . . . . .	66-68
Box 30: Old Student Lectures . . . . .	69
Box 31: Imperial Bureau of Plant Genetics; National Seed Development Organisation; Royal Society Jubilee Exhibit; Bell, GDH: History of PBI; Riley, R.: Developments in Plant Breeding; Aerial Photographs of PBI . . . . .	70
Box 32: PBI Cambridge: Plant Breeding International. National Institute of Agricultural Botany: Leaflets; Biffen, R.H.: Correspondence and Press Cuttings . . . . .	71-72

## CONTENTS

### Boxes of Slides:

Box 1: Barley . . . . .	73-78
Box 2: Barley: Tables, etc . . . . .	79-80
Box 3: Wheat . . . . .	81-85
Box 4: Crop Statistics . . . . .	86-90
Box 5: Sugar Beet, Oats, Barley, Potatoes, Kale, Beans, etc . . . . .	91-94
Box 6: Plots, Buildings and Agricultural Equipment at PBI: History of Cereal Cultivation; Crop Markings . . . . .	95-97

### Card Indexes: (two boxes):

Subject Bibliography on cards . . . . .	98
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G.D.H.Bell Collection: (collected 3.8.93).

Boxes.

Box 1: Archives: Botanical and other notes: Cambridge.

File 1: Ancient Agriculture:

Notes by GDH Bell on: "The Origin of the First True Men and their Agriculture"; "The Most Ancient East"; "The Legacy of the Ancient World"; "The Aryan Races"; "Pre-Roman Britain"; "Early History of England".

File 2: Floras: Cambridge 1928-30.

Notes by GDH Bell on cereals:- notes taken from the early herbals, e.g. Fuchs: "De Historia stirpium comentarii insignes" (1549), and later works.

File 3: *Hordeum* Taxonomy, Cambridge, 1928-30.

Notes by GDH Bell from works on cereals.

File 4: Old English Herbals, Cambridge, 1928-30. Notes by GDH Bell on cereals, taken from early works, e.g. Fitzherbert's "Book of Husbandry" (1534).

File 5: Cultivated Plants: N.I.Vavilov. Notes by GDH Bell taken from Vavilov's "Studies on the origin of cultivated plants". (*Bull. Applied Bot. & Plant Breeding*, 1926, vol.26) and "The role of Central Asia in the origin of cultivated plants". (*Bull. Applied Bot. & Plant Breeding*, 1931, vol.27).

File 6: Gramineae etc. notes: taxonomy, suggested book. Bell, G.D.H. "The Gramineae"; notes on genus *Solanum*, notes on botany of British cultivated plants, Cruciferae, Solanaceae, Chenopodiaceae, etc.

File 7: Bangor: Notes by GDH Bell on origin of the British flora. n.d., holograph, 91pp.

**GDH Bell Collection**

**Box 2: Archives: foreign travel: Tropics, 1950-1971.**

*Notebooks:*

Cotton Research Corporation: African Tour, 1969.

French Trip, June 25th - July 6th, 1950.

Ghana W.A.C.R.I. Royal Society 1968.

Hungary 1971.

Kenya & Uganda Visit, Sept.- Oct.1955.

Russia 23 June - 5 July 1965.

Visit to Canada & USA, 1960.

Visit to East & Central Africa, September/October 1958.

*Files:*

Belgium & Holland, July 1961.

East African Cotton Research Corporation Visit, 1969.

Report on Royal Society Visitation to Ghana, August 1968.

Report on IInd Congress of the European Association for Research on Plant Breeding, Cologne, July 1959.

Report on a visit to France and Portugal, May 1962.

Report of a visit to North America, March/April 1960.

Visit to East Africa: correspondence, 1958.

Visit to East Africa, Kenya and Uganda, 1955: correspondence.

Visit to Hungary, 1963. (Includes: "Some recent developments in the research work of the Plant Breeding Institute." Lecture given to Hungarian Academy of Sciences, June 1963. Typescript, 23ff.)

Visit to Hungary, June 1971.

Visit to Nigeria, 1966.

Visit to Trinidad, Barbados & Jamaica for C.A.R.C. 3-16 May 1957. Statement on work and crops mostly, but also Fisheries Livestock.



**GDH Bell Collection: Box 2 [Contd.]**

Visit to Uganda, July 1969: correspondence.

Visit to USA, 1964.

Visit to West African Cocoa Research Institute, Ghana and Statement by G.D.H.Bell and H.H.Rogers on Policy and Breeding Strategy, September 1956.

West African Maize Research Unit, Nigeria, 1959: notebook, map, correspondence.

## GDH Bell Collection

### Box 3: Archives: Lecture notes etc. 1946-56.

#### File 1: Requests for Articles and Talks, 1955-1956.

Bell, GDH: Talks given by the Director: list, 1946-1956.

Bell, GDH: Clive Behrens Lectures, Leeds, 1956. Correspondence, *University of Leeds Gazette*, 1956, vol.3, no.5.

Bell, GDH: Correspondence with: P.M.Adorian, British Association, S.C.Chandler, E.P.Clarke, District Passenger Manager: King's Cross Station, N.C.Goodwin, J.K.Grant, K.B.Hubbard, S.T.Johnson, Macmillan Company, J.A.McMillan, J.C.Marshall, M.Messer, W.C.Moore, J.T.D.Nelson, L.H.Read, J.M.Robertson, M.Spence?, Station Master: Dundee Tay Bridge Station, J.Sword, J.A.S.Watson: 1955-1956.

Bell, GDH: The implication and possibility of organised plant breeding. n.d., typescript, 9ff.

Bell, GDH: The implication and possibility of organised plant breeding. n.d., pp.295-300.

Cory-Wright: Talk at Stratford. ?1956. typescript, 4ff.

Farmers Weekly: Food Festival at Stratford-upon-Avon, February 15th to 17th, 1956: Programme of discussions.

Lewis, D.: The genetical approach to plant breeding. n.d. pp.291-29 and galley proof.

I.C.A.M. Annual Conference 1956 to be held at the School of Agriculture and Christ's College, Cambridge, 25th to 28th June, 1956. Programme.

National Farmers' Union, King's Lynn Branch: Eighth Annual Dinner, 27th January 1956. Menu.

Royal Institute of Chemistry: Programme of a Symposium at the University of St.Andrews on Recent Advances in the Chemistry and Industrial Application of Cereals. 25-29 June 1956.

#### File 2: Requests for Articles and Talks, 1955.

Bell, GDH: Correspondence with: J.H.Anderson, P.Batty, A.H.Clover, J.H.Dernie, S.J.Dodd, T.Duke, F.Graham, E.Griffiths, L.C.Gutsell, W.H.Hallett, H.W.Howard, J.I.James, I.O.Male, J.C.Mann, J.Miller, P.M.Morrow, National Institute of Agricultural Botany, C.H.Pomfret, F.Porter, C.W.Rowell, R.J.Rowles, E.M.Rutland, *Science Progress*, R.J.K.Walters, W.H.D., 1955.

Bell, GDH: Agriculture and W.H.D. Notes for a talk. n.d., holograph, 7pp.

The Chartered Surveyor: The Journal of the Royal Institution of Chartered Surveyors, July 1955.

Farmer and Stock-Breeder: Excerpts, 1-2.2.55.

Farmers Weekly: Excerpt. 4.2.55.

## GDH Bell Collection

### Boc 3: [Contd.]

#### File 3: Requests for Articles and Talks, 1954.

Bell, GDH: Correspondence with: Association of Agriculture, Association of Cereal Research, Detmold/Lippe, West Germany; British Social Biology Council, I.M.Dickinson, *East Anglian Daily Times*, W.E.A.Easy, W.E.H.Fiddian, *The Financial Times*, J.R.Hannam, D.S.Harrison, P.A.Hassall, A.Hay, E.H.Hinton, Institute of Biology, Ministry of Agriculture and Fisheries, H.I.Moore, N.A.A.S., A.M.Parry, F.Staniforth, University of Reading Department of Agriculture, 1953-1954.

Lupton, FGH: Wheat breeding for quality in England. n.d. typescript, 5ff.

#### File 4: Requests for Articles and Talks, 1952.

Bell, GDH: Correspondence with: Association of Agriculture, *British Agricultural Bulletin*, British Council, British Social Biology Council, Cambridge Men's Fireside, *Eastern Daily Press*, A.N.Holden & Co., Institute of Biology, Ministry of Agriculture, N.A.A.S., National Federation of Young Farmers' Clubs, Norfolk News Co.Ltd., W.S.Woodhead, 1952.

Bell, GDH: Review of "Crop varieties" by H.Hunter. 1952.

N.A.A.S., Yorks. and Lancs. Province: "Plant Breeding and Crop Production": A summary of the lectures and discussions at the 3rd annual refresher course held at Grantley Hall, Ripon, December 1951.

Religion and Evolution: a Conference: to be held in the Chemistry Lecture Theatre, University College, London, 7th-8th March, 1952.

Shuttleworth College, Old Warden: The Richard Ormonde Shuttleworth Remembrance Trust: Agriculture 1951-1952. Prospectus.

#### File 5: British Association, 1951.

Bell, GDH: The origin and history of the cultivated cereals: wheat, barley, rye and oats. 1951. typescript, 12ff.

Bell, GDH: Correspondence with: British Railways, D.J.B.Copp, D.N.Lowe, G.Taylor. 1951.

#### File 6: Talks by GDH Bell.

Bell, GDH: Biology and food plants. Shuttleworth College, 10th April. n.d. holograph, 5ff.

Bell, GDH: Cereal breeding and research at the Cambridge University Plant Breeding Institute. n.d. typescript, 2ff.

Bell, GDH: The application of science to food production: Philosophical Society, 7.2.49: The Plant. typescript, 16ff. (Two versions).

**GDH Bell Collection**

**Box 3 [Contd.]**

*File 6 [Contd.]*

Bell, GDH: The importance of crop improvement in farm practice. Seale-Hayne, 20.3.51. typescript, 1f.

Bell, GDH: Correspondence with the Ministry of Agriculture. 1951.

Bell, GDH: Correspondence with University College of North Wales. 1950-1951.

Bell, GDH: Correspondence with Orsett and District Agricultural Discussion Group. 1951.

Bell, GDH: The science of genetics and other aids to plant breeding. 10.12.51. typescript, 2ff.

Bell, GDH: The science of genetics and other aids to plant breeding. (NAAS, Ripon, 17.12.51). holograph, 5ff. typescript, 19ff.

Bell, GDH: Correspondence with Woodheads Seeds. December, 1951.

Bell, GDH: Population studies on certain arable crops. Symposium on Population Problems. British Ecological Society, Oxford, 5.1.52. typescript, 10ff.

Bell, GDH: Cereal breeding. (For special series of articles for the weekly provincial press, A.N.Duckham, Ministry of Agriculture, 1952). typescript, 3ff. (two copies).

Bell, GDH: The application of genetics and other sciences to the breeding of agricultural plants. (Article for Summer issue of *Biology and Human Affairs*, 1953, following Conference on "Plant and Animal Breeding" held by the Joint Committee and the Association of Agriculture, University College, London, 7.3.53). typescript, 7ff.

Bell, GDH: The history of cereal cultivation. (Two articles for *The Association of Agriculture Review*, August 1953). typescript, 8ff. & 8ff.

Bell, GDH: Breeding Research at Cambridge: Wheat and Barley. (draft). (Article published in the *Northumberland Gazette Survey of Farming and Agriculture*), 1954. typescript, 3ff. and correspondence.

Bell, GDH: Cereals. (Article for *East Anglian Daily Times*: theme: "Farming in a Freer Economy"). 1954. typescript, 5ff.

Bell, GDH: The improvement of agricultural crops. Draft for *Financial Times*, Autumn 1954. "Arrangements cancelled." Holograph, 7ff.

Bell, GDH: The implication and possibility of organised plant breeding. British Association, Section K, September 15th. typescript, 11ff. and correspondence with W. Williams, John Innes Horticultural Institution, 19.9.55.

GDH Bell Collection: Box 3 [Contd.]

File 6 [Contd.]

Bell, GDH: Latest techniques in the breeding of cereals. *The Birmingham Post Agricultural Supplement*, 2.3.55. typescript, 3ff. and newspaper cutting.

Bell, GDH: The Plant Breeding Institute, Cambridge. Article in *The Chartered Surveyor*, July 1955, p.40 in connection with a Conference of Agricultural Members held at Cambridge, 13.5.55. typescript, 3ff.

Bell, GDH: Notes of address given at the Plant Breeding Institute Luncheon, 10.5.56. C.A.F.M.N.A. typescript, 9ff. (Also draft of this address).

Bell, GDH: Correspondence with The Compound Animal Feeding Stuff Manufacturers Association. 1956.

Bell, GDH: Grain quality considered as a plant genetic character. Royal Institute of Chemistry, Symposium at the University of St. Andrews on "Recent Advances in the Chemistry and Industrial Applications of Cereals." June 1956. typescript, 16ff.

Lee, James: Britain's crisis - the way out. Issued by Harry Ferguson Ltd., n.d. 31pp.

Selly, C. Small farmers. (Article in ? *The Observer*), 1956.

"The Farmer in Business": a series of talks given at the Annual Short Course in Agricultural Co-operation at the Queen's College, University of Oxford, 23rd-30th July, 1949. 88pp.

Oxford Course in Agricultural Co-operation, July 9th-16th, 1950: syllabus, correspondence concerning Dr. Bell's talk on: "Cereal breeding."

Short Course for Employees of Agricultural Co-operative Societies in Great Britain...Welsh Plant Breeding Station, April 25th-27th, 1950. Prospectus. Correspondence.

Bell, GDH: The application of science to food production. (Philosophical Society Meeting). Includes correspondence. 1949. typescript, 2ff.

Association of Agriculture. Correspondence with GDH Bell, requesting him to address a teachers' meeting. 1948.

Royal Agricultural College, Cirencester. Crop Husbandry Refresher Course. September 9th-20th. Programme, correspondence, also talk by:

Bell, GDH: The application of genetics and other sciences to the breeding of agricultural plants. 1953. typescript, 11ff.

Bell, GDH: The importance of crop improvement in farm practice. Seale-Hayne, 20.3.51. typescript, 13ff.

Bell, GDH: The farmer and the plant breeder. (NAAS, Aylsham, 7.3.51). Notes for a talk. typescript, 4ff.

**GDH Bell Collection**

**Box 3 [Contd.]**

*File 6: [Contd.]*

Bell, GDH: The science of genetics and other aids to plant breeding. (NAAS, December 1951, Ripon). holograph, 21ff.

Bell, GDH: Few facts of general interest. (Selwyn Science Club, 193?). holograph, 12ff.

Bell, GDH: No title. The notes begin: "Survey should cover, as far as possible, the feasibility & desirability of extending the scope of the work..." n.d. holograph, 7pp.

Bell, GDH: Introduction to a discussion at the School of Agriculture. n.d. holograph, 11ff.

Bell, GDH: Historical review of cereal varieties and breeding. (Article for Woodhead Seeds Ltd. 1951). typescript, 12ff.

Bell, GDH: Developments in cereal breeding - past, present and future. (Talk to First Conference I.C.A.M., July 22nd, 1948). typescript, 16ff.

## GDH Bell Collection

### Box 4A: Reprints of Papers by GDH Bell: 1930-49.

- 1932 The history and origin of the cultivated forms of barley, and the classification of the two-row barleys of the British Isles. *Journal of the Institute of Brewing*, 38: 371-375. (3 copies).
- 1935 Preliminary experiments on vernalisation. *Journal of Agricultural Science*, 25: 245-257. (4 copies).
- 1936 Experiments on vernalisation. *Journal of Agricultural Science*, 26: 155-171. (3 copies).
- 1936 Vernalization: its meaning and practical application. *Agricultural Progress*, 13: 76-82. (5 copies).
- 1937 The art and science of plant breeding. *Agricultural Progress*, 14: 126-135. (2 copies).
- 1937 The classification and identification of some two-row varieties of barley cultivated in Great Britain, including a description of the use of grain and vegetative characters for this purpose. *Zeitschrift für Züchtung, Reihe A*, 22: 81-146. (2 copies).
- 1937 The effect of low temperature grain pre-treatment on the development, yield and grain of some varieties of wheat and barley. *Journal of Agricultural Science*, 27: 377-393. (4 copies).
- 1938 Some aspects of the influence of scientific research on plant breeding. *Women's Farm and Garden Association Journal*, pp.39-43.
- 1939 A study on the date of ear emergence in barley. *Journal of Agricultural Science*, 29:175-228. (Galley proof and 4 copies).
- 1941 Cut setts reduce potato planting costs. *The Farmer & Stock-Breeder*, 28.1.41, p.185
- 1941 Experiments on growing sugar beet under controlled illumination. (With A.B.Bauer). *Journal of Agricultural Science*, 32:112-140.
- 1941 The inheritance of rachilla length in barley. (With G.P.Carson). *Journal of Agricultural Science*, 31: 246-279. (2 copies).
- 1942 Experiments on growing sugar beet under continuous illumination. III. The production of a seed crop in the field and the resolution of a heterogeneous population. (With A.B.Bauer). *Journal of Agricultural Science*, 33:85-94.
- 1942 Experiments on cutting potato tubers. (With M.R.Gilson and W.A.R.Dillon Weston). *Journal of Agricultural Science*, 32:255-272. (3 copies).
- 1942 Seed potato cutting experiments. *Agriculture*, 48: 231-234.

**GDH Bell Collection**

**Box 4A: Reprints of Papers by Dr.GDH Bell: 1930-1949.[Contd.]**

- 1944 Ear tipping in wheat. *Agriculture*, 51: 318-320. (5 copies).
- 1944 Prefect six-row Winter Barley. Better seed: better crops. *National Institute of Agricultural Botany*, 2pp.
- 1946 Induced bolting and anthesis in sugar beet and the effect of selection on physiological types. *Journal of Agricultural Science*, 36:167-183. (4 copies).
- 1947 Plant Breeders' Conference at Cambridge. *Nature*, 160: 423.
- 1948 The artificial production of polyploids as a means of plant improvement. *British Science News*, 1:1-3. (5 copies).
- 1948 Developments in cereal breeding. *Journal of the Institute of Corn and Agricultural Merchants*, Autumn 1948, pp.155-170. (4 copies).
- 1948 Plant Breeding Institute: historical review, 1912-1948. *The third of a series of articles summarizing phases of agricultural research particularly associated with the School of Agriculture since its inception.*
- 1949 Hybrid vigour in plants. *Farming*, 3: 359-361.
- 1949 World cereals today: barley. *World Crops*, 1: 143-145.
- 1949 World cereals today: oats. *World Crops*, 6: 113-116.



**GDH Bell Collection**

**Box 4B: Reprints of papers by GDH Bell: 1950-1963.**

- 1950        Investigations in the Triticinae. I. Colchicine techniques for chromosome doubling in interspecific and intergeneric hybridization. *Journal of Agricultural Science*, 40: 9-18. (2 copies).
- 1950        Plant breeding and crop production. *Farming*, 4pp. (4 copies).
- 1950        The Plant Breeding Institute. *Farming*, July 1950, pp.204-209. (4 copies).
- 1951        Barley breeding and related researches. *Journal of the Institute of Brewing*, 57:247-260. (3 copies).
- 1951        The contribution of plant breeding to crop improvement. *Agriculture*, 58: 91-95.
- 1951        Great scope for plant breeding. Introduction of Continental varieties opens a new phase - new approach wanted to feeding barley. *Farmer and Stock-Breeder*, March 20-21 1951, p.57.
- 1951        Minerva Maple Pea. Better seed: better crops. *National Institute of Agricultural Botany*, 3pp.
- 1951        Plant breeding at Cambridge. *The Agricultural Merchant*, August 1951, pp.183-184.
- 1951        Plant breeding at Cambridge. II. *The Agricultural Merchant*, September 1951, pp.209-210.
- 1952        Proctor Spring Malting Barley. Better seed: better crops. *National Institute of Agricultural Botany*, 3pp.
- 1952        Yellow Rust in wheat: its significance in wheat cultivation and breeding in England. By GDH Bell and FGH Lupton. *Agriculture*, 58: 572-576. (5 copies).
- 1953        The application of genetics and other sciences to the breeding of agricultural plants. *Biology and Human Affairs*, 18:1-7. (4 copies).
- 1953        The history of cereal cultivation (Part I). *Association of Agriculture Review*, no.20, August 1953, pp.16-24. (5 copies).
- 1953        The history of cereal cultivation (Part II). *Association of Agriculture Review*, no.21, October 1953. pp.4-16. (5 copies).
- 1953        Investigations in the Triticinae. II. The cytology and fertility of intergeneric and interspecific F<sub>1</sub> hybrids and their derived amphidiploids. By GDH Bell and Leo Sachs. *Journal of Agricultural Science*, 43:105-115. (3 copies).
- 1953        Polyploidy and plant breeding. *N.A.A.S. Quarterly Review*, no.22, pp.47-54. (4 copies).
- 1954        Agricultural crops: quality versus quantity. *Nature*, 173: 198. (2 copies).

**GDH Bell Collection.**

**Box 4B: Reprints of papers by Dr.GDH Bell: 1950-1963. [Contd.]**

- 1954 Plant breeding research into wheat and barley. *Northumberland Gazette Farming Survey*, March 19, 1954, p.9.
- 1954 Proctor Spring Malting Barley. Better seed: better crops. *National Institute of Agricultural Botany*, 2pp.
- 1955 The implication and possibility of organised plant breeding. *Advancement of Science*, 12:295-300. (6 copies).
- 1955 Investigations into the Triticinae. III. The morphology and field behaviour of the A<sub>2</sub> generation of interspecific and intergeneric amphidiploids. By GDH Bell, Mary Lupton and Ralph Riley. *Journal of Agricultural Science*, 46:199-231. (4 copies).
- 1955 Investigations in the Triticinae. IV. Disease reactions of species of *Triticum* and *Aegilops* and of amphidiploids between them. By GDH Bell and FGH Lupton. *Journal of Agricultural Science*, 46: 232-246. (2 copies).
- 1955 Latest techniques in the breeding of cereals. Hybridisation v. mutation. *Birmingham Post*, 7.3.55, one page.
- 1955 The Plant Breeding Institute, Cambridge. *Nature*, 176: 487. (2 copies).
- 1956 Cacao breeding at W.A.C.R.I. Statement by GDH Bell and HH Rogers. *Proceedings of the Cacao Breeding Conference, held at the West African Cocoa Research Institute, Tafo, Ghana, 1st to 3rd October 1956*, pp.31-49.
- 1956 A study of the value of repeated backcrossing of a pentaploid hybrid of *Triticum vulgare* (cult. var. Little Joss) and *T.turgidum* (cult. var. Rivett). (With F.L.Engledow and F.G.H.Lupton). *Journal of Agricultural Science*, 48: 250-257. (5 copies).
- 1957 Cereal breeding. *Science Progress*, no.178, pp.193-209. (2 copies).
- 1957 Grain quality - a genetic and plant-breeding character: 2. Barley. *Agricultural Review*, 3: 10-20. (3 copies).
- 1957 Grain quality - a genetic and plant-breeding character: 1. Wheat. (With J.Bingham). *Agricultural Review*, 3: 10-22. (2 copies).
- 1957 Some aspects of plant breeding. *Journal of the Royal Agricultural Society of England*, 118: 91-101.
- 1957 Winter hardiness and frost resistance in cereals. (With R.N.H.Whitehouse). *Agricultural Review*, 3: 10-14.
- 1958 Barley breeding methods and objectives. *Brewers' Guardian*, pp.3-10. (2 copies).
- 1958 The evaluation of synthetic species. By Ralph Riley and GDH Bell. *First International Wheat Symposium, Winnipeg, August 1958*, pp.161-180.

**GDH Bell Collection.**

**Box 4B: Reprints of Papers by Dr.GDH Bell: 1950-1963. [Contd.]**

- 1958           Improvements in crop production. *The Biological Productivity of Britain*, Institute of Biology, 1958. pp.43-51.
- 1959           A great season for Proctor, but - still better barleys may be on the way. *East Anglian Farming World*, 26.11.59. One page.
- post 1959       The contribution of plant breeding to the production of desired characteristics in barley quality. *Recent Advances in Processing Cereals*, pp.15-33.
- 1960           Barnwell Winter Oat. Better seed: better crops. *National Institute of Agricultural Botany*, 2pp.
- 1960           Ein historischer Überblick über die englischen Braugerstensorten. (A historic review of the English varieties of malting barley). *Brauwelt*, 100:1441-1443.
- 1960           Varieties of sugar beets. *Farmers' Leaflet*, no.5. 4pp.
- 1961           Better barley. *Agriculture*, 68:245-247. (5 copies).
- 1961           Phylogeny, genetic variation and plant breeding. *A Darwin Centenary; edited by P.J. Wanstall, 1961*, pp.121-129. (4 copies).
- 1962           Breeding for disease resistance in cereals. By GDH Bell and RCF Macer. *N.A.A.S. Quarterly Review*, 13:144-152. (Only contents page of Journal).
- 1962           The breeding of barley varieties. By GDH Bell and FGH Lupton. *Barley and Malt (1962)*, pp.45-99. (2 copies).
- 1962           Opportunities for increased production presented by plant breeding. *Journal of the National Institute of Agricultural Botany*, 9:193-199. (3 copies).
- 1963           Breeding techniques - general techniques. *Barley Genetics I: Proceedings of the First International Barley Genetics Symposium, Wageningen, 1963*, pp.285-302. (4 copies).
- 1963           The contribution of barley breeding to British agriculture: in retrospect and prospect. *The Fourth Lord Hastings Memorial Lecture, 1963*. 26pp. (3 copies).
- 1963           Developments in sugar beet breeding. *Journal of the National Institute of Agricultural Botany*, 9:435-444. (4 copies).

GDH Bell Collection.

Box 4C: Reprints of Papers by Dr.GDH Bell: 1964-1987, (including undated reprints).

- 1964        *Genetical Principles and Plant Breeding*. Watkin Williams. Blackwell Scientific Publications. (Review). *Agriculture*, pp.488-489.
- 1964        Introductory remarks. *Empire Cotton Growing Corporation Summer Meeting, 1964*. *Empire Cotton Growing Review*, 41:292-293.
- 1964        *Recent Plant Breeding Research*, Svalöf, John Wiley. (Review). *Agriculture*, 71:48-49.
- 1965        Utilization of growth responses in breeding new varieties of cereals. By GDH Bell and EJM Kirby. *The Growth of Cereals and Grasses: Proceedings of the Twelfth Easter School in Agricultural Science, University of Nottingham, 1965*. pp.308-319. (2 copies).
- 1966        The Mendel Centenary. *Advancement of Science, July 1966*, pp.118-132. (3 copies).
- 1966        "Physiological aspects of earliness in cereals and its genetic background." By GDH Bell and EJM Kirby. *Department of Geography, U.C.W., Aberystwyth, Symposium 9. "Early Crop Production in Britain", March 9th 1966*. 8pp. (2 copies).
- 1968        Plant breeding for crop improvement in Britain: methods, achievements and objectives. *Proceedings of the Royal Society , B*, 171:145-173. (4 copies).
- 1969        Chairman's introduction. Symposium of The Nutrition Society on Plant Breeding and Nutrition, 26 and 27 June 1969. *Proceedings of the Nutrition Society*, 1970, 29:1.
- 1969        The future of cereal breeding. *Agricultural Progress*, 44:24-29. (2 copies).
- 1971        Biological productivity and environment. *Presidential address delivered to Section M (Agriculture) on...2 September 1971, at the Swansea Meeting of the British Association*, pp.135-147. (13 copies).
- 1973        Introductory remarks. [To the Royal Society meeting on Agriculture.] *Philosophical Transactions of the Royal Society of London, B*, 267:3-4. (20 copies).
- 1975        The Plant Breeding Institute, Cambridge. *The Massey-Ferguson Papers, no.9*. 119pp. (4 copies).
- 1980        *The Journal of Agricultural Science 1905-1980: a historical record*. *Journal of Agricultural Science*, 94:1-30. (2 copies).
- 1987        Chapter 2: The history of wheat cultivation. (Includes letter from Francis Lupton, 20.8.87). pp.31-49.

**GDH Bell Collection**

**Box 4C: Reprints of Papers by Dr.GDH Bell: 1964 - 1987: Also: Undated reprints.[Contd.]**

Undated Reprints.

- n.d. The breeding of barley varieties. By GDH Bell and FGH Lupton. Chapter 3. pp.45-99.
- n.d. The breeding of a two-row winter-hardy barley. *Journal of Agricultural Science*, 34: 223-238.
- n.d. The comparative phylogeny of the temperate cereals. *Essays on Crop Plant Evolution*, 4, 12pp. (Galley proof).
- n.d. Controlling plant development: effect of light and temperature. *Farmer & Stock-Breeder*, March 30th.
- n.d. Disease control by plant breeding. *Biological Problems arising from the Control of Pests and Diseases, Institute of Biology*, pp.27-37.
- n.d. Historical review of cereal varieties and breeding. *One Hundred and Fiftieth Anniversary Brochure of Woodheads Seeds Limited, Leeds*. 12pp. (2 copies).
- n.d. Some British plant breeding problems. *Agricultural Progress*, 25:1-10.

**Box 5: PBI Archive History for John Innes.**

Bell, G.D.H. The Plant Breeding Institute, Cambridge. 1964 (and correspondence).

Institut International de Recherches Betteravières, 15th Summer Meeting in England, 1961.

Ministry of Agriculture: Agricultural science and the farmer. June 1957.

8th International Grassland Conference, 1960: a summary of the work in progress.

*Files*

Physiologic Race Surveys: Executive Committee, 1972, 1974: meetings, correspondence.

Physiologic Race Survey: Foundation and Early History, 1966-70. Also letter from ARC concerning independence of Committee. Also: correspondence, minutes of meetings, etc.

Fungicide Tolerance Meeting, 30.4.74: correspondence, reports, notes.

PBI handouts for visitors: opening of the new buildings and experimental grounds by the Minister of Agriculture...descriptive notes, 15.7.55.

Hutchinson, Joseph B.: correspondence between Sir Joseph Hutchinson and G.H.D.Bell and Ralph Riley, 1959-1971.

PBI History 1951-1960. Correspondence with the Ministry of Agriculture on the Governing Body and Matters relating to the site.

## GDH Bell Collection

### Box 6: Archives: Notes on PBI Material 1928-1950's.

#### File 1:

This file contains a note by Dr. Bell: *These are the earliest records at the PBI, my first growing season being 1928-29.*

Barley Latin Square 1928, Barley 1933, 1934, 1933-37, analyses on samples of barley from NIAB observation plots...1928, Data for ear survival 1937, Six Row Latin Square 1938, Winter hardiness 1938-39, Ear survival of hybrids 1938, 1939 hybrids, Latin Squares 1942-3.

#### File 2:

PBI Cereal Breeding 1942-1954: 1) Mostly wheat, barley and oat crosses 1945 *et seq.* 2) Also amphidiploids and amphidiploids x *vulgare* - TAV. 3) Lists of Hunter & Carson Hybrids with an interesting Hunter List going back to 1931. 4) NIAB 1946 List of Pedigrees and Origins of Cereal Varieties including those from PBI. 5) List of cereal varieties & hybrids at PBI from other breeders. No date.

#### File 3:

Barley Trials: 1932-4.

#### File 4:

Barley Hybrids 1950-62. Trials at Outstations and Cambridge.

#### File 5:

Mildew resistant cereals 1949-60 : a detailed account, including selection trials.

#### File 6:

Barley Trials, 1949-52.

#### File 7:

Spring Malting Barley: notes on malting quality and mildew resistant crosses, 1945-1961.

**GDH Bell Collection**

**Box 7: Archives: PBI: Annual reports:**

1943/4, 1944/45, 1945/46, 1946/47, 1947/48, 1948/49, 1949/50, 1950/51, 1951/52, 1952/53, 1953/54, 1954/55, 1955/56, 1956/57, 1957/58, 1958/59.

Progress report on the breeding of blight resistant potato varieties, year ending 30.9.45.



**GDH Bell Collection**

**Box 8: Archives: Lecture notes & correspondence 1962-71.**

Bell, GDH Developments in micro-malting techniques for the assessment of malting quality in new barleys. (Institute of Brewing Lecture, 13.3.67).

Bell, GDH and Kirby, EJM Utilization of growth responses in breeding new varieties of cereals. (Sutton Bonington Lecture).

Bell, GDH The prospects of breeding barley, wheat and oats to meet the special requirements in human and animal nutrition. (Symposium on Plant Breeding and Nutrition, 1969).

Bell, GDH Director's forthcoming lectures, 1957 - 1963.

Bell, GDH Articles written for publication and lectures given, 1962.

Bell, GDH Hastings Memorial Lecture, 16.11.63. Also correspondence.

Bell, GDH Lectures given; Articles for publication, 1963. Also correspondence.

Bell, GDH Lectures, 1964. Also correspondence.

Bell, GDH Lecture to Junior British Association, 25.3.64. Also correspondence.

Bell, GDH Lectures, 1966: Saffron Walden and District Agricultural Discussion Society; University of Newcastle upon Tyne; Victoria Road Congregational Church Men's Fellowship.

Bell, GDH Lectures and articles, 1966-67: Institute of Brewing, Stalham Farmers' Club, Berkshire Cereal Society, Fisons Chesterfield Park. Also correspondence.

Bell, GDH Lecture to Canterbury Farmers' Club, 20.10.67. Also correspondence.

Bell, GDH Lectures and articles, (Chadacre Agricultural Institute Jan.1968.) Also correspondence.

Bell, GDH Specific adaptation in Winter Wheat. (International Winter Wheat Conference, June 5-10, 1972, Ankara, Turkey.) Also correspondence.

Bell, GDH Plant breeding for crop improvement in Britain. (Royal Society, 7.3.68). Also correspondence.

Bell, GDH Current trends in barley breeding. (Irish Maltsters' Conference, 1968). Also correspondence.

Bell, GDH The future of cereal breeding. (Agricultural Education Association, 5.12.68: the meeting was cancelled and this lecture was not given). Also correspondence.

Bell, GDH Articles for publication: 1964. Also correspondence.

Bell, GDH Articles for publication: 1965. Also correspondence.

Bell, GDH Articles for publication: 1965-1966. Also correspondence: (2 files).

**GDH Bell Collection**

**Box 9: Journal of Agricultural Science.**

Correspondence, concerning publishing matters and refereeing papers. 1970-89.

Meetings of Editors: 1964-66, 1970, 1972-88, 1989.

Bell, GDH: *The Journal of Agricultural Science* 1905-1980: a historical record. (*J.agric.Sci., Camb.*, 1980, 94:1-30); Typescript of History of *Journal of Agricultural Science*. Also holograph manuscript, n.d., 161ff.

"Photocopies of papers regarding the founding of the *Journal of Agricultural Science*: 1) Cambridge University Press. 2) Agricultural Education Association". Correspondence: 1978-7; "List of Correspondence with John Russell during writing of his history of agricultural research." Special meeting of the Agricultural Education Association, 8.12.03.

## GDH Bell Collection

### Box 10: PBI history: Archives 1943-1978.

Old correspondence and 1) My final statement on policy to ARC 1970. (2) Establishment figures from 1949. (3) Two old printed articles on PBI 1949 & 1951.  
Old student lectures. (GDH Bell).

#### File 1:

Earliest correspondence with the Ministry, 1943-49, concerning finding a site for the PBI and notes on meeting, etc.

#### File 2:

Photograph of Unidentified International Conference at Cambridge (? Genetics, c.1930), Botany School, Cambridge. The photo includes many distinguished scientists and agriculturalists, including: R.A.Fisher, A.D.Hall, R.N.Salaman, E.R.Saunders, C.D.Darlington, R.R.Gates, H.H.Hurst, J.B.S.Haldane, C.L.Huskison, A.E.Watkins, M.B.Crane, R.O.Whyte, R.H.Hudson. F.R.Horne and G.D.H.Bell are back row, 4th and 3rd from left.

Ordnance survey map, sheet 52/45, showing Anstey Hall Farm. 1947.

Eucarpia: 6th Conference, 1971: programmes.

Laverton, S. Facts about barley. (*E. Anglian Magazine*, April 1951, pp.459-464).

Watkins, A.E. Summary of K and k segregation and possible explanation in *durum* crosses: notes.

*Illustrated Sporting and Dramatic News*: Modern England: Cambridge scientists' contribution to the nation's food supply, 20.9.45. (Photographs of members of PBI staff, taken at Cage Field, University Farm, Cambridge.)

#### File 3:

ARC Directors' Conference 1969: photograph.

#### File 4:

Sugar Beet: the early days, 1946-1953. Correspondence almost entirely with the Ministry of Agriculture (T.A.Eveleigh, W.R.Black, J.R.Wright), and much of it about the Sugar Beet Research and Education Committee and the organization of IIRB Conference in Cambridge. The most interesting topics are equipment of the laboratory and costs.

#### File 5:

1950-55: Arthur Guinness, (Guinness Barley Research Station, Warminster, Wilts). Correspondence with Tom Davies, who succeeded H.Wickham at Westminster as director of the work under Mr.R.T.Kerslake at Head Office.

There is nothing especially significant in the correspondence but it continues the story of the relationship with Westminster, a station of great significance in barley breeding because of Dr.E.S.Beaven and his work, e.g. Plumage-Archer. N.B. Note, however, the letter from F.R.Horne and my reply reiterating the "special relationship."(GDH Bell).

The correspondence discusses barley breeding and equipment necessary for its cultivation and harvesting.

## GDG Bell Collection

### Box 10: [Contd.]

#### File 6:

1943-1958: Arthur Guinness. Interesting and important in relation to the PBI's relationship with Arthur Guinness. It was a unique working association with a commercial organization & was officially supported by ARC and MAF.

Latterly, particularly when Mr. Trevor Kerslake was in charge, we had great support & encouragement in the malting barley research. Guinness lived on Proctor! N.B. W.H. Wickham was Dr. E.S. Beaven's head maltster at the family maltings. I knew Beaven, of course; he visited the PBI at Cage Field & I discussed breeding methods with him. Wickham was very expert and knowledgeable. (GDH Bell).

#### File 7:

Variety Testing. 1) Testing and distribution of new varieties. 2) Variety testing as affecting plant breeding. "1950-51: ALC: ARC. Interesting historic references to meetings held to discuss varietal testing, including the matter of quality, and the matter of introduction of new varieties. Directors of plant breeding centres involved as well as NIAB." (GDH Bell)

#### File 8:

"1948-54. Norfolk Agricultural Station. There has always been a close relationship between PBI and Norfolk Agricultural Station since Biffen and T.B. Wood."

This correspondence between F. Rayns & GDHB has interest in this respect and also because of the behaviour of PBI varieties & breeding material - mostly barley, Pioneer & Proctor. F.R.'s comments on agricultural matters also pertinent & the advent of single seed sugar beet - monogerm - in USA with hopes of getting material.

Finally, high protein in barley & its practical possibilities genotypically and agriculturally makes interesting reading. We tried the German material, but it didn't live up to expectations.

Keep for pertinence to the launching & marketing of Proctor. F.R. was most enthusiastic.

Note also reference to *Beta maritima*." (GDH Bell).

Owers, A.C. The role of the independent experimental station and its impact on local farming. *The Eighth Lord Hastings Memorial Lecture*, 1978; delivered by A.C. Owers, The Assembly House, Norwich, 7th November 1978. pp.19. (2 copies).

File 9: Notes on wheat, barley and oats. "Very interesting historically. Miscellaneous Information on Cereals including: Excerpts and Cuttings - including Notes on Proctor and Pioneer. Records of correspondence on Proctor etc. Some notes of mine regarding the start of PBI breeding & lecture by F.R. Horne. Covers 1940's to 1960's." (GDH Bell).

#### File 10:

Breeding Proctor; Development; Photographs; History. The photographs comprise:

3 ears of barley, 18.3.60 (*Farmer & Stockbreeder*);

Washing and raking grains (photo: Walter Nurnberg);

Loading sacks of grain on board ship: 2 Docks & Waterways Executive photographs, Southampton, 12.6.53; Loading sacks of grain on board ship: 3 photographs: Gordon Hull, Southwell, Notts.;

**GDH Bell Collection**

**Box 10:[Contd.]**

**File 10 [Contd.]**

A view of one of the Control Laboratories;

Typical rootlet development of barley;

5 photographs of ABM;

Photograph of grain sorting ? machine: Gordon Hull, Southwell, Notts;

Harvesting barley, 8/54: *The Farmer & Stock-Breeder*);

Mr.Clifford Spencer in his field of Proctor Barley, Springdale Farm, E.Yorks: *The Farmer & Stock-Breeder*);

Mounted photo of scientist examining barley ear; NIAB field of Proctor Barley (mounted photo).

**GDH Bell Collection**

**Box 11: Royal Society: Correspondence and committees served on, 1967 - 1990.**

My notes: miscellaneous notes including my own lecture notes & my own notes on breeding etc.

Personal notes for lectures - external. My notes.

Royal Society Discussion Meeting 1973.

Royal Society Discussion Meeting 1976 & 1980. My review lecture 1988.

Royal Society: Correspondence 1986- .

Royal Society: miscellaneous correspondence and committees served on.

Royal Society: candidates and elections.

Royal Society. Year Book.

PBI Book on Wheat.

PBI Publications.

## GDH Bell Collection

### Box 11A: Biographical Memoirs for the Royal Society: F.L.Engledow and J.B.Hutchinson.

Memoir for the Royal Society of J.B.Hutchinson, by M.H.Arnold. Typescript, 24ff. Includes letter from M.H.Arnold to GDH Bell, 29.7.90.

Royal Society Biographical Memoir: F.L. Engledow: Envelope 1: correspondence 1985-87; Commemorative Sermon, St.John's, 6.5.50; Requiem service, 12.10.85 (includes photograph of Sir Frank Engledow's gravestone at Stiffkey); *The Eagle*, Easter 1985; "Sundays at Hadleigh": biographical reminiscences on the Engledow Family; "The Church of St.John the Baptist, Stiffkey"; Obituary of Sir Frank Engledow in *Sveriges Utsädesförenings Tidskrift*, Nov.1987; Cuttings and other biographical details on Sir Frank Engledow; Family trees; Bibliography of works by Sir Frank Engledow; Two photographs of Stiffkey churchyard, 1986.

Royal Society Biographical Memoir: F.L.Engledow: Envelope 2: printed text; bibliography; correspondence, 1972-1985; Engledow, F.: "Principles of policy for British agriculture," n.d., typescript, 84pp.; biographical information on Sir Frank Engledow; Engledow, F.L.: "The policy of the National Institute of Agricultural Botany," (J.NIAB, 1931); Cuttings concerning Sir Frank Engledow's life and work; Bibliography of Sir Frank Engledow's papers.

Royal Society Memoir: F.L.Engledow: File: Manuscript of GDH Bell's biography of Engledow; photocopy of handwritten document, 108ff. [Some parts dated 1985].

Dictionary of National Biography: F.L.Engledow: final draft.

Bell, GDH: correspondence, 1987-89; Bell, GDH: "Frank Leonard Engledow..." (*Biographical Memoirs of Fellows of the Royal Society*, 1986, 32:189-219); Bell, GDH: "F.L.Engledow": first draft and final draft for *Dictionary of National Biography*, holograph, 4ff.; Bell, GDH: notes.

GDH Bell Collection

Box 12: My review lecture 1968. Royal Society Discussion Meeting 1973.

Bell, G.D.H.: Review lecture: Plant breeding for crop improvement in Britain: methods, achievements and objectives. (*Proc.roy.Soc.,B*).

Bell, G.D.H., and others: Gene action and its control: a meeting for discussion, February 1970: programme.

Bell, G.D.H., and others: A discussion on agricultural productivity in the 1980's. (*Phil.Trans. Roy.Soc.,Lond., B*, 1973, 267:1-172).

Correspondence on: A discussion on agricultural productivity in the 1980's: 1972-3, programme, list of guests.



GDH Bell Collection

Box 13: Royal Society Discussion Meeting 1976 and 1980.

Cooke, GW, Pirie, NW and Bell, GDH: Management of inputs for yet greater agricultural yield and efficiency. Royal Society Discussion Meeting, November 1976: programme, correspondence: 1975-77, notes, summaries, notes for speakers.

Royal Society Discussion: Manipulation of Genetic Systems in Plant Breeding, 29-30.11.80: correspondence, 1976-80, list of participants, notes for speakers.

**GDH Bell Collection**

**Box 14: Royal Society: candidates and elections and Royal Society Year Book.**

Correspondence: 1966-87.

Procedures.

List of candidates 1967-89.

Minutes of committee meetings 1967-9.

Bibliography of candidates' works. Candidates' papers.

Fellows elected 1972-74.

Foreign members of the Royal Society.

Royal Society Year Book entry for GDH Bell: correspondence 1966-1989.

**GDH Bell Collection**

**Box 15: United Kingdom Cereal Pathogen Virulence Survey.**

Correspondence with GDH Bell, 1980 to 1984.

Papers by various authors.

Minutes of meetings.

**Box 15A: UK Cereal Pathogen Virulence Survey.Boxes 15A, nos.1 & 2.**

Physiologic Race Survey (Cereal Pathogens): annual reports 1967-76.

UK Cereal Pathogen Virulence Survey: 1977-1991.

**GDH Bell Collection**

**Box 16: PBI Book on Wheat.**

Bell, GDH: Correspondence with FGH Lupton and Chapman and Hall on projected book on wheat: 1974-1987.

Bell, GDH: Chapter outlines and excerpts.

Bell, GDH: Notes on works about wheat and cereals generally, source materials, bibliographies.

Bell, GDH: "Wheat, 1974: ms." holograph, 73ff.

## GDH Bell Collection

### Box 17: Opening of the main building. Opening of Douglas Building and Retiral dinner.

#### *File 1*

##### Opening of the Main Building of the Plant Breeding Institute.

Programme and descriptive notes, 15.7.55;

Photographs of Opening of the Main Building by Mr.Heathcote Amory, Minister of Agriculture, Sir Frank Engledow, Chairman, Great Britain: 3 black and white photographs, 21 x 17cm.

#### File 2.

##### Opening of Bell Building:

Opening of New Building: Minutes of a Meeting on 6.4.70, to consider the publications necessary for the opening of the new building;

Minutes of Grounds Sub-Committee: 13.3.70 and 7.4.70;

Invitations to Official Opening: list, 20.5.70;

Internal memo: Arrangements for Field Tours, 24.6.60;

Printed invitation from the Governing Body of the Plant Breeding Institute to the opening of the new laboratories by Mrs.G.D.H.Bell, 9.7.70 (9 copies);

Guest List: Opening of the Douglas Bell Building: 9.7.70;

Programme of Conducted Tour; Programme of events on the Opening Day (3 copies), and holograph speech by Mrs.Lilian Bell on the opening of the new laboratories: 4ff., last page missing, another version: 2ff., another version: 6ff.;

*Plant Breeding Institute Cambridge*:informational pamphlet, 14pp. (7 copies), Cuttings: 1970;

Governing Body Luncheon: 9.7.70: seating arrangements; platform seating arrangements; map showing location of PBI;

Photographs of the new building (taken by D.R.Hadden, and including memo by him, 23.12.69): 10 black and white photos: 21 x 17cm.;

"Plant Breeding Institute Cambridge": draft for booklet issued on the occasion of the Opening of the Douglas Bell Building, 9.7.70; Bell, G.D.H: correspondence -1990;

"Opening of the Douglas Bell Building, 9.7.70: Guide to Laboratory Exhibits, Engineering developments, Glasshouse and field demonstrations," (4 copies).

Plant Breeding Institute: Staff Restaurant: catering facilities; photograph of interior of staff restaurant: 1 black & white photo: 24 x 20 cm..

**GDH Bell Collection**

**Box 17: [Contd.]**

File 2:[Contd.]

Agricultural Research Council News, October 1970, including a report on the Opening of the Douglas Bell Building.

Bell, GDH: Visiting card.

Bell, GDH and Bell, Eileen: Correspondence, 18.7.69 to 6.6.1990.

File 3

Poems: Rixator: poem, *Cambridge Review*, 1925: "Sir Gowland & Sir Rowland, Sir Rowland & Sir Bill..."

Poem: "Sir Rowland is a kindly knight..."

File 4

Bell, G.D.H.: Retirement:

Final speech: notes: (5 ff.), messages and correspondence;

Retirement Dinner: notes for speech (9ff);

Photograph of Retirement gift: a tankard, 19.3.71, (black and white photo: 19 x 24.5 cm.); Names of Contributors to Bell Tankard;

Retirement Dinner at University Arms Hotel: menu, 17.3.71 (2 copies);

Allocation of Parking Spaces at University Arms Hotel;

Advertisement for Director of Plant Breeding Institute, to replace Dr.Bell.

File 5:

Allard: "Principles of Plant Breeding". 1960. Notes by GDH Bell. holograph, 2ff.

Allen, E.F.: Letter to GDH Bell. 14.8.75. Notes. holograph, 1f.

Allen, E.F. "A Simplified Rose Classification for Gardeners". RNRS, 1973. Notes by GDH Bell. holograph, 4ff.

Allen, Tessa: "China Roses". (*Rose Annual*, 1973). Notes by GDH Bell. holograph, 3ff.

Allen, T.: "Trends in Rose Breeding". (*J.Roy.Hort.Soc.*,1970, **95.**) Notes by GDH Bell. holograph, 5ff.

**GDH Bell Collection**

**Box 17:[Contd.]**

File 5: [Contd.]

Bell, GDH: Correspondence on roses with: The Commonwealth Bureau of Plant Breeding and Genetics, 21.11.75; the Royal National Rose Society, 21.11.75; Indian National Science Academy, 2.3.76.

Bell, GDH: "Main Classes of Garden Roses". n.d. holograph, 2ff.

Bell, GDH. Official documents concerning his trip to Turkey. 1972.

Bell, GDH: "Rosa Species, Forms, Shrubs in Garden". n.d. holograph, 2ff.

Bell, GDH: "Shrub roses - Summer Flowering. Modern Hybrids". n.d. holograph, 1f.

Bot. Congress, Edinburgh, 1964. A Symposium. pp.113-120.

Darlington, C.D. "Chromosome botany." excerpts. 1956. photocopies, 8ff.

Dickson, A.P.C.: "A Breeder's Reply". (*Rose Annual*, 1975). Notes by GDH Bell. holograph, 2ff.

Ellick, C.W. "In Quest of her Infinite Variety". (*Rose Annual*), 1969. Notes by GDH Bell. holograph, 1f.

Gerstel, D.U. and Mann, T.J.: "Aspects of Chromosome Manipulations..."(10th International Bot. Congress, Edinburgh, 1964). pp.113-120.

Harkness, J.L. BARB. (*Rose Annual*, 1975). Notes by GDH Bell,. holograph, 3ff.

Harkness, J.L.: "A Breeder's Story". (*Rose Annual*), 1974. holograph, 2ff.

Harland, S.C. (Chairman): 4th International Rose Conference 1968. Rose Breeding: *The Rose Annual* 1969. Notes by GDH Bell. holograph, 16ff.

Hollis, Leonard: Symposium on the Twelve Best Roses of H.T.Type for Garden Display. (*Rose Annual*, 1974). Notes by GDH Bell. holograph, 4ff.

Hurst, C.C.: Notes by GDH Bell on C.C.Hurst's work on roses. 1925. holograph, 6ff.

Hurst, C.C. et al. "Improvement of garden roses." (International Rose Conference). n.d. photocopy, 5ff.

Hurst, Rona: Roses and Genetics. (*The Rose Annual*, 1969). Notes by GDH Bell. holograph, 2ff.

International Congress of Genetics, 8th, Tokyo, 1968. Abstracts of contributed papers. p.354. 2ff.

Le Grice, E.B. "The Modern Trend in Floribunda Rose". (*Rose Annual*), 1973. Notes by GDH Bell. holograph, 1f.

**GDH Bell Collection**

**Box 17:[Contd.]**

File 5:[Contd.]

Pal, B.P. "Indian-Raised Garden Roses". n.d., typescript, 5ff.

Pal, B.P. "Rose Breeding. The Future". Notes by GDH Bell. n.d. holograph, 3ff.

Pal, B.P. "The Rose in India". 2nd ed. 1972. Notes by GDH Bell. holograph, 2ff.

Printed lists of Rosaceae: n.d., photocopies, 4ff.

Raban, Nigel: "The Men behind the New Roses". (*Rose Annual*, 1973, 1974). Notes By GDH Bell. holograph, 9ff.

Royal Horticultural Society: Masters Memorial Lecture, 1954. Extract. Photocopy, pp.17, 78, 557, 560, 562-3, 566, 569.

West, Olga: "Amateur Detective". *The Rose Annual*, 1969. Notes by GDH Bell. holograph, 2ff.

Wylie, Ann P. "History of the Garden Rose". (*J.Roy.Hort.Soc.*, 1954 and 1955, 79: 555-571. & 80: 8-24;77-87). Notes by GDH Bell. holograph, 2ff.

Wylie, Ann P: "The History of the Garden Rose. Parts I to III". (*J.Roy.Hort.Soc.*, 1954, 1955, vols.79 & 80). Notes by GDH Bell. holograph, 11ff.



GDH Bell Collection

Box 18: Barley: wheat: 1) R.H. Intro. Symposium 1974. 2) Centenary Rose Conference 1976. 3) R.A.S.E. Membership. 4) R.A.S.E. Exam.

Bell, GDH: Travel and medical insurance for Turkey trip, 11.6.72.  
The Commonwealth Foundation: the first five years 1966-71. 89pp.

File 1:

The Commonwealth Foundation 1966-71: correspondence, meetings.

Commonwealth Agricultural Bureau. Report on the Commonwealth Potato Collection, by E.Ashby, G.D.H.Bell and G.Samuel. June 1949, 22ff. Correspondence between GDH Bell and F.L.Engledow, 1954.

File 2A:

Royal Agricultural Society of England. Fream's *Elements of Agriculture* (15th edition), Chapter on Plant Breeding: correspondence, 1971-8; notes, pedigrees.

File 2B:

Royal Agricultural Society of England. Correspondence concerning membership, election to committees, etc. 1972-75.

Poster and other publicity material, also programme, for the Royal Show, 3-6 July 1972.

Tickets etc.for the Royal Show, 1974.

Royal Agricultural Society of England: Report of the Council to the annual general meeting...1973.

Bell, G.D.H. Note (on an envelope) about having stopped his subscription to R.A.S.E., from 1.11.76.

File 3:

Centenary International Rose Conference, 2 July to 8 July 1976, Oxford.

Notes on visit to John Mattock Ltd.

The Royal National Rose Society: Press Open Day - 17th June, 1975: notes on gardens and the society.

The Royal National Rose Society. Correspondence: 1975-76.

Royal National Rose Society. Press release. Nov.1976, Programme of lectures 5th-8th July 1976.

The Guardian. Growers spot the secret. (Cutting: 19.5.76); Why the world is looking rosy. (Cutting: 27.6.76).

The Sunday Times. Green grows Chelsea - oh! (Cutting: 23.5.76).

**GDH Bell Collection: Box 18 [Contd.]**

Bell, GDH: Questions. Audience participation: Notes, (holograph, 12ff.);

Keeping Tabs on Progress: Note, (holograph, 4ff);

Support Knowledge & Research, Notes, (holograph, 6ff);

Trends in Rose Breeding: Notes, (holograph, 10ff);

Are We Getting Too Many Roses? Notes, (holograph, 5ff);

Rosa - Use of Variation: Notes, (holograph, 4ff); International Rose Conference 1968: Notes, (Holograph, 9ff.);

The Man behind the New Roses: Notes, (holograph, 5ff);

Credentials: Notes (holograph, 5pp.);

Breeding Symposium. Our Plan of Campaign: Notes (holograph, 13ff);

C.C.Hurst: Notes, (Holograph, 5ff);

Feeding and Mulching: Notes (holograph, 4ff).

Centenary International Rose Conference, 2nd July to 8th July, 1976.: 2 programmes.

File 4:

The Rank Prize Funds. International Symposium - "Bread": 1 - 6 September 1974.

Abstracts, September 1974; Provisional programme and Programme.

Bell, GDH: Notes for Rank Prize Fund Symposium - "Bread", 1 - 6 September 1974, (holograph, 13ff).

Bell, GDH: MSS. and second copy of Discussion, and second copy of his retyped Introduction.

Bell, GDH: Bread Symposium notes, 2.9.74: draft typescript, 9ff.  
Correspondence, 1974.

International Food Information Service: publicity material, 1974.

## GDH Bell Collection

### Box 19: Notes for Addresses; Clive Behrens Lectures.

#### File 1:

Bell, GDH: Some aspects of plant breeding. (*J.roy.agric.Soc.Eng.*, 1957). typescript, 14ff., 1 plate.

Bell, GDH: Cereal breeding. (*Science Progress*, 1957). typescript, 16ff. & spare pages.

Bell, GDH: The barley crop. (*E.Anglian Farming World*, Oct.1959). typescript, 4ff.

Bell, GDH: Article on the work of the Plant Breeding Institute, Cambridge. *The Sunday Times* article in connection with the Royal Show. 1960. typescript, 2ff.

Bell, GDH: Breeding for disease resistance in cereals. (*N.A.A.S. quart.Rev.*, 1962, 13:144-152). typescript, 9ff., 2 plates.

Bell, GDH: Better barley. (*Agriculture*, June 1961). holograph & typescript, 5pp., 4ff.

Bell, GDH: Cereal breeding and new varieties for British agriculture. (Written for the Central Office of Information, in connection with International Seed Year. Article No.7215 - for world distribution). Typescript, 3ff.

#### File 2:

Bell, GDH: The integration of control methods and the role of plant breeding. (Leaf and Ear Diseases of Cereals, Manchester, April 1968). typescript, 12ff.

Bell, GDH: Strategy of breeding for resistance for the leaf diseases. holograph, 2ff.

Bell, GDH: Problems of Breeding for Disease Resistance. holograph, 6ff.

Bell, GDH: Triticeae, etc. holograph, 6ff.

Wood, RKS: Introduction: disease resistance in plants. (*Proc.roy.Soc.Lond.B.*, 1972, 181:213-232).

Wood, RKS: Letter to GDH Bell, 12.6.73.

Bell, GDH: Summary of some important points made by M.S.W. holograph, 4ff.

Wolfe, M.S.: The forced evolution of cereal disease. typescript, 16ff.

Anon: The bases of vertical resistance.n.d. typescript, 3ff.

Bell, GDH: Notes based on Van der Plank's Plant Diseases: Epidemics & Control. holograph, 6ff.

Bell, GDH: Notes: Allard, 1960. holograph, 6ff.

Bell, GDH: Notes: Vavilov: The origin, variation, immunity & breeding of cultivated plants. holograph, 4ff.

**GDH Bell Collection: Box 19 [Contd.]**

Bell, GDH: Plant Pathology. vol.3: notes. holograph, 3ff.

File 3: Breeding for Disease Resistance. International Pathology Congress, 1968.

Bell, GDH: Notes; Wheat. holograph, 14ff.

Bell, GDH: Notes: Biffen 1913: Investigations on the control of disease in plants. (*J.Roy.Hort.Soc.*), holograph, 6pp.

Bell, GDH: Notes: Biffen, R.H.: Studies on the inheritance of disease resistance II. (*J.agric.Sci.*, 1912, 4:422-9.) holograph, 8ff.

File 4: Director's Staff Talk, 19 November 1969 & 1970.

Plant Breeding Institute:

Further education 1969-70, 1970-71.

Analysis of expenditure for the sexennium 1954-59 and 1960-65, 1966-71, 1966-72. Analysis of sectional expenditure 1970-71. Costs of servicing scientific officers 1970-71.

Effective laboratory etc., working areas and glasshouses as at 31.2.72.

Bell, GDH: Notes and outline of Address given at presentation of his portrait to Professor Sir.Joseph Hutchinson on his retirement. ?1969. holograph, 13ff.

Bell, GDH: The Context Lecture to Staff. holograph, 3ff., (Includes *Memorandum of Association of the Plant Breeding Institute*).

Plant Breeding Institute: Seminar, 25.1.67. typescript & holograph, 15ff.

Bell, GDH: Finale. holograph, 4ff.

Bell, GDH: Introduction. holograph, 7ff.

Bell, GDH: Annual staff address, 18 Nov.1969. holograph, 7ff., 2 plans.

Nacam Seed Survey, 1969. printed, 1f.

Amounts in tons of seed of leading varieties handled by seed houses, 1968-70. typescript, 1f.

Cole, CS and Howard, HW: Annual report 1970: Potatoes and Brassicas. typescript, 1f.

**GDH Bell Collection: Box 19 [Contd.]**

File 5: Clive Behren's Lectures, University of Leeds, 1955-56 and 1956-57.

Correspondence between GDH Bell and TL Bywater, 1955.

Bell, GDH: Note: "These 5 sets of notes give, I think, the more or less final versions of the lectures."

Bell, GDH: Lecture 1: Plant breeding and crop improvement: techniques: problems: achievements and objectives. typescript, 27ff.

Bell, GDH: Lecture 2: Methods of plant breeding. typescript, 38ff.

Bell, GDH: Lecture 3: New techniques and the breeding of wheat. typescript, 19ff.

Bell, GDH: Lecture 4: Barley. typescript, 17ff.

Bell, GDH: Lecture 5: Potatoes. typescript, 14ff.

Bell, GDH: note: "From here on this material is top or copy of the first 5 sections foregoing. Have discarded most of the apparently duplicate material, but even what is left in first 5 intact lectures was altered in substance."

Bell, GDH: Background...typescript, 20ff.

Bell, GDH: section from: The improvement and breeding of wheat. typescript, 5ff.

Bell, GDH: Oats. typescript, 4ff.

Yields of cereals per acre: notes. holograph & typescript, 5ff.

Bibliography: The cultural geography of Middle America. n.d. typescript, 8pp.

Bibliography: Human geography. n.d. typescript, 4ff.

Bell, GDH: List of books on plant breeding, with address of Bernard Quaritch. n.d. holograph, 1f.

Genus *Aegilops*: List showing: section, species, chromosome no. and genome type. n.d. typescript, 1f.

Genus *Triticum*: List showing: section, species, chromosome no. and genome type. n.d. typescript, 1f.

GDH Bell Collection

Box 20: Reports Overseas.

File 1: Visit to Moscow, 15 - 26 August 1954. Report, Correspondence and various Comments on Soviet Agriculture and Lysenko's scientific & other Commentaries.

USSR Agricultural Exhibition, 1954. Pamphlet, 47pp.

Report of the Delegation to the Agricultural Exhibition, Moscow. c.1955. typescript, 40pp.

*New Times: a weekly journal*, no.33, 1954.

Envelope with letter from D.F.M.Taylor attached: "Dear Private Secretary, At Dr.Bell's request I am sending you these documents for you to keep for him until his return from the USSR. As some of the documents are confidential he was advised by the Foreign Office not to take them with him to Russia." (Letter dated 14.8.54 and addressed to Private Secretary to Dr.Bell).

Contents of Above Envelope: (marked Confidential):

Hayter, W.G. Letter from the British Embassy, Moscow, to Sir Anthony Eden, 4.8.54.

Donaldson, T. Letter from the Ministry of Food, to K.C.Christofen, with attached questionnaire, 4.8.54.

Cabinet Mutual Aid Committee, Subcommittee on the Economic Commission for Europe. Invitation to visit the All-Union Agricultural Exhibition in Moscow: (Note by the Foreign Office). Includes Questionnaire on Soviet Farming, 26.7.54. typescript, 4ff.

Cabinet Mutual Aid Committee, Subcommittee on the Economic Commission for Europe. Brief for the UK Delegation to the All-Union Agricultural Exhibition in Moscow, 26.7.54. typescript, 2ff.

Board of Trade: Note for Delegates attending the All-Union Agricultural Exhibition in Moscow. n.d. typescript, 1f.

Report on Soviet farm situation (brought up to date). July 1954. typescript, 4ff.

Soviet farm policy. n.d. typescript, 25ff.

Note on the All-Union Agricultural Exhibition of the USSR. Information and Liaison Branch, August 1954. typescript, 1f.

Benediktov, I.: Invitation to Dr.GDH Bell to a reception on 29.7.55 and note of regret from Dr.Bell that he cannot attend.

Perrin, John: Correspondence with GDH Bell concerning a reception on the visit of Mr.Benediktov on 20.6.55, and Dr.Bell's acceptance of invitation to attend the reception.

Hudson, P.S. The genetics controversy. 17.9.54. typescript, 6ff.

Lysenko, T.D. Address delivered on the situation in biological science. (Proc.Lenin Acad. Agric.Sciences of USSR, July 31-Aug.7 1948. Verbatim report). typescript, 9ff. Also: Science and philosophy re Lysenko. n.d. typescript, 1f.

GDH Bell Collection: Box 20 [Contd.]

Bell, GDH: Crop production, plant breeding and improvement. n.d. typescript, 41ff.

Bell, GDH: Correspondence with C.H.M.Wilcox of the Ministry of Agriculture, 1955; E.J.Marston of the Ministry of Agriculture, 1955; E.T.Jones of the Welsh Plant Breeding Station, 1955; M.E.Ashford of Rothamsted, 1955; C.S.Goodwin of the ARC, 1955; L.Samiloff, of the Ministry of Agriculture, 1954, 1955; W.G.Alexander, of the ARC, 1954; Sir James Scott Watson, of the Ministry of Agriculture, 1954; List of slides, Moscow, 1954; E.H.High of the Ministry of Agriculture, 1954; Dr.P.S.Hudson, 1954; British Chargé d'affaires: invitation to GDH Bell for cocktails on Aug.25th.

File 2: Visit to Denmark and Sweden, July 1952. (Correspondence only, also itinerary). Did not make this trip - in hospital!

Bell, GDH: Correspondence, 1947, 1952.

Abed Plant Breeding Station. Summary.n.d. printed, 6pp.

File 3: Visit to Holland & Belgium, 1951.

Report on a visit to Holland and Belgium, July 15th - 20th, 1951. typescript, 16ff.

File 4: Visit to France, June - July, 1950.

Visit to France - June 28 to July 6 1950: report on individual visits. typescript, 5ff.

File 5: British Association, Swansea. General Committee, Sept. 1st. Arts Hall.

Bell, GDH: Report of a visit to certain Swedish plant breeding stations, August 1937. typescript, 11ff.

Bell, GDH: note: "Foreign Travel: Swedish Plant Breeding Stations, Aug.1937. (My first visit to European research centres & the last for some time owing to World War II)."

File 6: Imperial College of Tropical Agriculture: Visit and report (confidential), Oct.29th to December 5th, 1944.

Bell, GDH: Notes on his visit to the Imperial College of Tropical Agriculture, 1944. holograph, 3ff.

Imperial College of Tropical Agriculture: Report of the Visiting Committee appointed by the Governing Body, October 29th-December 5th, 1944. Confidential. printed, 70pp. (two copies).

Macfadyen, Eric: correspondence with GDH Bell, 1944, 1945.

Imperial College of Tropical Agriculture: Report of the Visiting Committee appointed by the Governing Body: the Jamieson-Thompson Case (separately printed). Confidential. n.d. printed, 4pp. (two copies).

**GDH Bell Collection**

**Box 21: My notes: Lecture notes and material. Graduate diploma School of Agriculture.**  
Vicia - Vetches. n.d., holograph, 18ff.

Notes on Clover. n.d., holograph, 22ff.

Fyfe, J.L. Polyploidy in Sainfoin. (*Nature*, 1946, 158:418).

Leguminosae. holograph, n.d. 19ff.

Notes on Legumes. n.d., holograph, 7ff.

Sweet Lupins. Summary of some German work on Sweet Lupins up to 1938. n.d., typescript, 3pp.;  
Sweet blue lupins. n.d., typescript, 1f. Letter from A.W.Oldershaw to Dr.Bell concerning growing  
Sweet Lupins, 19.1.44. holograph, 2pp.

Birdsfoot Trefoil. (*Experimental Farm News*). Canadian Department of Agriculture, 3.5.48.  
typescript, 1f.

Soybeans for New Brunswick. (*Experimental Farm News*). Canadian Department of Agriculture.  
19.4.48. typescript, 1f.

Soybean Varieties for Southwestern Ontario. (*Experimental Farm News*). Canadian Department of  
Agriculture. 19.4.48. typescript, 1f.

Soybeans and Protein. (*Experimental Farm News*), Canadian Department of Agriculture. 1.12.47.  
typescript, 1f.

Ladino Clover. (*Experimental Farm News*). Canadian Department of Agriculture. 22.11.48.  
typescript, 1f.

Alfalfa varieties for the Southern Prairie Region. (*Experimental Farm News*). Canadian Department  
of Agriculture. 22.11.48. typescript, 1f.

List of plant material for demonstrations. Nov.2nd & 4th. n.d. typescript, 1f.

Table showing Homologous Variation in Brassica. n.d., typescript, 1f.

Brassicac: notes on. n.d., holograph, 11ff.

Howard, H.W. Wild and cultivated watercress types. (*Agriculture*, 1947, 53: 453-456).

Bondi, A. and Meyer, H. Carotene in Palestinian crops. (*J.agric.Science*, 1945, 36:1-5).

Gramineae. n.d., holograph, 41ff.

Dactylis glomerata. n.d., holograph, 21ff.

Phalaridae. n.d., holograph, 13ff.

Avena - Oats. n.d., holograph, 12ff.



**GDH Bell Collection: Box 21 [Contd.]**

Ecology of Oats, n.d., holograph, 11ff.

Hordeum: USSR. Cult.Flora, n.d., holograph, 8ff.

Triticum: lists of varieties. n.d., holograph, 15ff.

*A.sativa*: varieties, also varieties of *A.byzantina*, *A.abysinica*, *A.strigosa*. n.d. holograph, 4ff.

Varieties of Economic Value: Varietal Characters, n.d., holograph, 11ff.

Bell, GDH: Notes from various books and journals: on potatoes in Scotland; Swedish-English oats; English oats - Winter; Seed production of grain crops. n.d., holograph, 4ff.

Pover, W. (?): Origin of Cultivated Barleys. n.d., holograph, 1f.

T.vulgare. Bread Wheats, n.d., holograph, 3ff.

Secale, n.d., holograph, 1f.

Rye, n.d., holograph, 9ff.

Inter-Species in Annual Forms: Cereals, n.d., holograph, 14ff.

Systematic Botany - (Advanced) For Reference, n.d., holograph, 17ff.

[Course of Agricultural Botany], n.d., holograph, 20ff.

General Conclusion on What I have already done & the Maps, n.d., holograph, 15ff. (Includes note, written in pencil across top of page 1: "Spent more time on this section 1947-8, & could virtually make a lecture of this").

World Wheat Figures based on Continents, n.d., holograph, 8ff.

Kent Jones. 1939. Cereal Chemistry: Composition of Wheat Flour & Grains, n.d., holograph, 9ff.

The Leguminosae, n.d., holograph, 21ff. (Includes: *Memorandum to F.R.Horne on spring bean varieties*, by J.L.Fyfe, 7.10.46; and Home grown Threshed Peas Joint Committee: Harrison's Glory Peas: a report on the Scheme for Inspecting and Grading Crops of Home Grown Seed, 1946 harvest.)

K.J.Frandsen. The Experimental Formation of *Brassica juncea* (?). (*Dansk Botanisk Arkiv*, 11, no.4, pp.17. 1943.) Notes. n.d., holograph, 12ff.

Cruciferae, n.d., holograph, 6ff.

Chromosome Numbers in Solanaceae, n.d., holograph, 27ff. (Includes letter from the Royal Society, dated 8.12.67, concerning Dr.Bell's proposed lecture; *Notes for the Guidance of Lecturers and Authors addressing Meetings of the Royal Society*; correspondence with W.Seyffert, dated November 1971, concerning a laudation of Professor Stubbe on his 70th birthday).

**GDH Bell Collection: Box 21 [Contd.]**

The Gramineae. n.d., holograph, 18ff.

Gramineae - General: Surplus Lecture. n.d., holograph, 14ff.

## GDH Bell Collection

### Box 22: Personal notes for lectures - external. My notes.

Bell, GDH: Biological productivity and environment. (Presidential address...to Section M (Agriculture) on 2.9.71, at the Swansea Meeting of the British Association).

Bell, GDH: The Big Changes: Seminar, PBI, Feb.1954. holograph, 4ff.

Bell, GDH: Selwyn Fellows, 12.2.84. Notes, holograph, 13ff. (Includes letter from "William", Selwyn College, Cambridge, 29.2.84).

Bell, GDH: World Populations. Notes. n.d., holograph, 11ff.

Bell, GDH: Ninth World Food Council, June 1983: notes. holograph, 9ff.

Bell, GDH: Rural Poverty in Developing Countries & Means of Alleviating. *FAO Agric.Series*, 1981. holograph, 20ff.

Bell, GDH: E.D.Cook Retirement Presentation, 30.3.83. Notes. holograph, 4ff.

Bell, GDH: The Organisation & Management of Government R.& D. Rothschild. Notes. n.d., holograph, 14ff.

Bell, GDH: Conservation of resources. Notes. n.d., holograph, 7pp.

Royal Society Discussion on Agriculture in the 1980's. Notes. holograph, 11ff.

Bell, GDH: Modern Approaches to Plant Breeding. (Walkerian Society: Botanic Gardens, 18.2.74). holograph, 7ff. (Includes letter from "Max", University Botanic Garden, Cambridge, 6.2.74 and List of Lectures by Visiting Lecturers given at the Walkerian Society 1973-74).

Bell, GDH: Breeding for Resistance to Disease. Lecture to RHM Symposium, 7.11.72. Holograph, 3ff.

Bell, GDH: Science Lunch Club, 24.11.72. holograph, 10ff.

Bell, GDH: The Grain Revolution. n.d., holograph, 7ff. Including correspondence with Philip Hargrave of the Mullard Radio Astronomy Observatory, November 1972, concerning Dr.Bell's talk at the Scientists' Lunch Club.

Bell, GDH: Specific Adaptation in Winter Wheat: A New Approach.(International Wheat Nursery, Ankara, Turkey, 1972). n.d. holograph, 11ff.

Bell, GDH: correspondence with The Rev. BJH de la Mare, Trinity College, concerning Dr.Bell's talk, January 1971: "The Green Revolution".

Bell, GDH: ADAS Course 1971. Subject: Some matters of importance in the world of agricultural affairs. Jan. 1971. holograph, 7ff.

WHD Seed Growers Ltd. Twenty five years of W.H.D.; compiled by P.P.Warren. Pamphlet, 12pp.

Bell, GDH: W.H.D. Salisbury, 19.1.71. holograph, 9ff.

**GDH Bell Collection: Box 22 [Contd.]**

Bell, GDH: Problems of Breeding for Disease Resistance. Lecture to W.H.D. 1971 (?) holograph, 15pp.

Bell, GDH: Correspondence with J.E.Newton, Secretary of the Agricultural Society, University College of North Wales, Bangor, May-July 1970, concerning Dr.Bell's talk: "The Scientific, Economic and Agricultural Basis of Cereal Breeding". Includes notes on Dr.Bell's talk. typescript, 2ff.

Bell, GDH: NIAB Talk, 9.2.70. My thinking in terms of the Institute's Development & its most effective interaction with our new facilities. holograph, 7ff.

Bell, GDH: Tendencies in Plant Breeding. Part II, 19.5.70. holograph, 4ff.

The Agricultural Merchant, Seeds: variety survey. November 1970. pp.46-4; In focus, April 1970, pp.35-36, Oct.1970, pp.35-41.

Joint FAO/IAEA Division of Atomic Energy in Food and Agriculture. Circular letter, Jan.1971; Conclusions and recommendations of the Panel on Mutation and Breeding for Disease Resistance, Vienna, 12-16 Oct.1970, 8ff.

Modern Farming and the Soils: Extract, pp.104-108.

Phealon, Patrick: 11.1 tons of potatoes is not at all exceptional. (*Farmer & Stockbreeder*, 15.12.70, 2ff).

Farmers Weekly: Cereal varieties. 13.11.70, pp.12-13; Cereals marketing. 19.2.71, pp.10-13.

Bell, GDH: Tendencies in Plant Breeding. Pt.II. 15.5.69. Holograph, 4ff.

Bell, GDH: Norfolk Agricultural Club: Correspondence (Sept.-Oct.1970) with GDH Bell concerning a request for him to give a lecture: "Crop improvement and the Norfolk farmer", on 10.2.71. Cuttings, list of slides, list of Norfolk crops and yields 1969/70, abstract of lecture.

Bell, GDH: Notes for a talk at the National Farming Union at St.Neot's. April 1970. holograph, 21ff.

Farmers Weekly: 18.12.70: Farm Co-operation in trouble: notes by GDH Bell. holograph, 1f.

Industrial R.& D. in Government Laboratories: a new Organisation for the Seventies: HMSO, London. Notes by GDH Bell. n.d. holograph, 3ff.

Application of Atomic Science in Agriculture & Food, Vol.11. Report of a Working Conference, July 1958. Notes by GDH Bell. holograph, 4ff.

Peaceful Uses of Atomic Energy: Proc. 2nd International Conference, Geneva, Sept.1958, vol.27, U.N. Notes by GDH Bell, 5ff.

**GDH Bell Collection: Box 22 [Contd.]**

Applications of Atomic Science in Agriculture and Food. OEEC Report of Mission to USA under European Productivity Agency: Under Project No.396, Feb. 1958. Notes by GDH Bell. holograph, 11ff.

Bell, GDH: NAAS Lecture, 2.11.70. holograph, 12ff.

Bell, GDH: Botany and Agriculture of Barley. Lecture notes (unknown occasion). n.d. holograph, 5ff.

Bell, GDH: Correspondence with *The Financial Times* concerning Dr.Bell's donation of his lecture fee to Action for the Crippled Child, Oct.-Nov.1966.

Bell, GDH: Plant Breeding for Mechanization: paper read to W.Midlands Branch of the I.A.E., 26.9.66. MS (holograph, 21ff.) and correspondence, Oct.1966.

Bell, GDH: The Main Features of U.K. Cereal Growing. n.d., typescript, 11ff.

Bell, GDH: Plant Breeding in the Service of Agriculture. (Lecture, University of Newcastle-on-Tyne, Department of Plant Science). 1.2.66. holograph, 8pp.

Bell, GDH: Improving Crop Plants and Feeding the World. 20.1.66. holograph and typescript, with graphs and list of slides, 11ff.

Bell, GDH: School of Agriculture, Cambridge: Lectures: Part I: Agriculture, 2nd lecture. 14.2.67, 20.2.67. Part II: 1968: Lecture notes. holograph, 9ff.

Bell, GDH: Seed analysts. 29.6.66. typescript & holograph, 30ff.

Bell, GDH: Lecture to South Staffordshire Farming Club. 3.2.65. typescript, 15ff.

Bell, GDH: The Contribution of Plant Breeding to the Production of Desired Characteristics in Barley Quality. (Paper given at Society of Chemical Industry Food Group Symposium; Paper on Wheat Quality given by J.Bingham). September 1961. typescript, 23ff.

Bell, GDH: Agriculture. (Science Teachers' Conference, Oxford, 18.11.60). typescript, 15ff.

Bell, GDH: Developments in Sugar Beet Breeding. (*J.Nat.Inst.agric.Botany*, 1963, 2: 435-444). Includes: Notes on Developments in Sugar Beet Breeding. typescript, 3ff.

Bell, GDH: Barley Breeding. (Irish Maltsters' Conference, 1959). typescript and holograph, 36ff.

Bell, GDH: Phylogeny, Genetic Variation and Plant Breeding. (For the Proceedings of the Darwin Centenary Meeting of the Botanical Society of the British Isles, Nov.1959). typescript, 10ff.

Bell, GDH: Barley Breeding Methods and Objectives. (Lecture at Burton-on-Trent Technical College, 1958). typescript, 9ff.

**GDH Bell Collection: Box 22 [Contd.]**

Bell, GDH: Improvements in Crop Production. (Institute of Biology Symposium, Oct.1957). typescript, 8ff.

Bell, GDH: Lecture to Women's Institute, 25.7.56. typescript and holograph, 22ff.

Bell, GDH: Primitive Agriculture and Society. (Selwyn, 1947). holograph, 22ff.

Bell, GDH: Introduction (talk on plant breeding). n.d., holograph, 31ff.

Bell, GDH: Plant Breeding: an Art or Science? (Cambridge Natural History Society). holograph, 28ff.

Bell, GDH: The Plant Breeding Institute, Cambridge. (Article for *I.C.A.M. Journal*). n.d., typescript, 2ff.

Bell, GDH: Problems, Aims and Methods in Plant Breeding: Spring Barley. (Lecture to NAAS Refresher Course: Cirencester, 19.9.46). typescript, 16ff.

Bell, GDH: The Art and Science of Plant Breeding. (Agricultural Education Association: Summary of a Paper read at the December Meeting, 1936). typescript, 15ff.

Bell, GDH: Fireside Chat [on food supply], 10.2.53. holograph, 4ff.

## GDH Bell Collection

### Box 23: Cereal physiology, photosynthesis, productivity, climate and yield, meteorology.

Austin, R.B. Cereals. Notes by GDH Bell. n.d., holograph, 20ff.

Austin, R.B. Actual and potential yields of wheat and barley in the United Kingdom. (*ADAS Q.Rev.*, 1978, 29:76-87).

Bell, GDH: Physiology Dept. (P.B.I.). n.d., holograph, 2ff.

Bell, GDH: Improvements in Crop Production. (Reprinted from: *The Biological Productivity of Britain*, Institute of Biology, 1958). pp.43-51.

Bell, GDH: Biological Productivity and environment. (Presidential Address delivered to Section M (Agriculture) on 2.9.71, at the Swansea Meeting of the British Association). pp.135-147.

Bell, GDH: Genetic Manipulation programme, P.B.I. n.d., holograph, 9ff.

Bell, GDH: Genetic Manipulation at Cell Level by controlled Manipulation Other than Random Chromosome Assortment. n.d., holograph, 3ff.

Bell, GDH: Notes on dressings and their effects on size of spikelet in cereals. n.d. holograph, 5ff.

Duckham, A.N. and Masefield, G.B.: Farming Systems of the World, 1970. Notes by GDH Bell. n.d., holograph, 26ff.

Duckham, A.N. and Masefield, G.B.: Resources: Farming Systems and the Biology of Farming Systems. Notes by GDH Bell. n.d., holograph, 15ff.

Bell, GDH: Achievement in Plant Breeding. (*Discovery*, Nov.1955, pp.467-470). (Includes compliments slip, MRC Laboratory of Molecular Biology, Cambridge: "Thank you for your letter. I am sorry to have kept this so long. Max Perutz.").

Bell, GDH: Plant Breeding for Crop Improvement in Britain: Methods, Achievements and Objectives. (*Proc.roy.Soc. B*, 1968, 171:145-173).

Wareing, P.F. and Cooper, J.P. eds.: Potential Crop Production. 1969. Notes by GDH Bell: Macro- and Micro-Climates. holograph, 7ff.

Ehrlich, P.R. and Ehrlich, A.H.: Population Resources and Environment. History of population Growth. Stanford University, 1970. Notes by GDH Bell. holograph, 2ff.

Orwin, C.S.: A History of English Farming. 1949. Notes by GDH Bell. holograph, 5ff.

Franklin, T.Bedford: A History of Agriculture. 1948. Notes by GDH Bell. holograph, 3ff.

Bell, GDH: Breeding for Increased Biological Efficiency. (Edinburgh School of Agriculture, 20.10.71). (Includes correspondence between GDH Bell and N.F.Robertson, Aug.-Sept. 1971). holograph, 5ff.

GDH Bell Collection: Box 23 [Contd.]

Bell, GDH: World Food Production. Notes. n.d., holograph, 2ff.

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**GDH Bell Collection: Box 23 [Contd.]**

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Hudson, JP: Correspondence with GDH Bell and EJM Kirby concerning crops and long-term weather forecasts. January 1971.

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**GDH Bell Collection: Box 23 [Contd.]**

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**Box 24: My notes: misc. notes including my own lecture notes & my own notes on breeding etc.**

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Anon.: Early History of Wheat Breeding. n.d., typescript, 16ff.

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FL Engledow: Elements of Statistics, 1929, holograph and typescript, 16ff. Notes on genetics and plant breeding: self-fertilized plants, n.d. holograph, 5ff.

RH Biffen: Grasses; Chenopodiaceae; National Aspects; The agricultural output of England and Wales, 1925. n.d., holograph, 40ff.

N.W. European Wheats. GDH Bell's notes. n.d., holograph, 8ff.

Wheat Varieties: Gescher, v.N. (?): The international character of wheats and the diffusion of the different varieties of wheat throughout the world. (*Inter.Rev.Agric.*, 1937, 282: 329T-348). Notes by GDH Bell. holograph, 5ff.

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Maize Breeding. n.d., holograph, 11ff.

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Selection Methods based on Populations. n.d., holograph, 10pp.

The Practical Approach to Plant Breeding. n.d., holograph, 6ff.

Cereals: Wheat Breeding. 1953. holograph, 9ff.

Lecture 6: Controlled Pollination in Cross-Pollination. n.d., holograph, 2ff.

Solanaceae. n.d., holograph, 12ff.

Barley. n.d., holograph, 5ff.

Lecture 4: Oats: Present Position of Breeding. 1956. holograph, 12ff.

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## GDH Bell Collection

### Box 24:[Contd.]

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Tysdal, HM: Controlled Heterosis as a Method of Forage Crop Improvement. (Spragg Memorial Lecture, Michigan State College, USA, 1942). holograph, 15ff.

Bell, GDH: Inter-Species Relationships: Intra and Inter Specific Genus: Mutation Complex. (Lecture: "Not included 1947-48.") holograph, 4ff.

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Bell, GDH: Comparative Phylogeny. n.d., holograph, 11ff.

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Bell, GDH: Notes on works by: Engledow, FL; Lawrence, WJC; Darlington, CD; Vik (?), K.; Flovik, K.; mostly on genetics and plant breeding. n.d., holograph, 11ff.

Bell, GDH: Notes on works by: Laude, HH and Swanson, AF: "Natural selection in varietal mixtures of wheat," (*J.Amer.Soc.Agron.*, 1942, 42:270-274); Hawkes: "Potatoes." (*Handb.der Pflanzenz.*, 2nd ed. vol.3); *Hordeum*; Agricultural products. n.d., holograph, 9ff.

Bell, GDH: Notes on: Snelling, LO: "The place and methods of breeding for insect resistance in plants." (*J.Ec.Ent.*, 1941, 37:335). holograph.

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Bell, GDH: Notes from: Hayes and Immer: "Genetics and Plant Breeding in relation to Quantitative Characters." n.d., holograph, 4ff.

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Anon.: Self-fertilised crops. June 1937. typescript, 4ff.

**GDH Bell Collection: Box 24 [Contd.]**

W., AE (?AE Watkins): Method of breeding cross pollinated crops at Aberystwyth. June 1938. typescript, 2ff. (two copies).

World Cereal Crop Production: Area occupied by various crops...(1) the average 1934-38 figures, and (2) 1951 figures.n.d., typescript, 2ff.

Bell, GDH: Notes from various works on sugar beet. 1942-45. holograph and typescript, 13ff.

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Genetics of Sugar Beet: (*Beet Growing*, vol.1, Sci.Inst.Sug.Ind., Kiev, 1940: 549-604). holograph, 27ff.

Trabut, L. (Director of Botanical Services, Algerian Government): On the origin of cultivated oats. pp.336-346: International Conference of Genetics, Paris, 1911. typescript, 11pp.

GDH Bell Collection

Box 25: Tables & diagrams for slides. My notes: barley: two row hybrids, Hybrid Register from H.B.I. 1932.

File 1: "For Slides": Tables on:

Breeding of two-row Spring Malting Barley;

Comparison of malting analysis of PBI hybrids with Spratt-Archer and Kenia, 1946, 1947;

Winter Barley Trial, Sprowston 1962;

Type of drilling, variety and manuring: Sprowston 1962;

Hybrid pedigree chart, Winter barley hybridisation scheme;

Disease resistance: general breeding programme;

Stripe Rust and Powdery Mildew breeding programme;

Leaf Rust and Powdery Mildew breeding programme;

Two-row Winter barley: hybridisation scheme. tables. holograph and typescript, 13ff.

Barleys 1940-47. tables. typescript, 8ff.

Nitrogen of Spring Barleys, 1940-50. holograph, 1f.

Factorial Laboratory Malting 1961, tables. typescript, 24ff.

Factorial malting - barleys grown at Warminster 1962. graph. holograph, 1f.

Association of British and Irish Maltsters: Report: 1931. holograph, 2ff.

County Acreages: Barley: 1939-63: table. typescript, 2ff.

Seale Hayne: Winter Barley Trials 1960, 1963. tables. typescript, 4ff.

Quality in Barley. (Hist.Inst.Rev. 1955). holograph, 15ff.

National Institute of Agricultural Botany: Report on Observation Plots for Season 1928 for Spring sown cereals. holograph, 2ff.

Micro-malting of Winter Barley: Trial II. Cambridge, 1957.

Ickleton Proctor, 1964: (Mr.Wombwell). tables, typescripts, 2ff.

Weekly Harvesting Experiment, 1966. table. typescript, 1f.

National Malting Barley Championships: Barley samples, 1964. table. typescript, 1f.

**GDH Bell Collection: Box 25 [Contd.]**

**File 2:**

New Numbering of Barley Hybrids: 1937-1960. holograph, 68ff.

Cross Histories of HB 196 (Spratt-Archer x Fresca), HB 197 (Spratt-Archer x Ymer). 1950-56. holograph, 2pp.

Spring Barley Crosses: 1953, typescript, 2ff.

**File 3:**

Plant Breeding Institute Barley Crosses: 1932-1966. tables. typescripts and holograph, 31ff.

**File 4:**

The Proctor Story. Barley: HB 34 et seq. Handling and some data. My notes.  
Freja x Spratt Archer; Spratt Archer x Ymer. 1950. graphs, 3ff.

Two-row Spring barleys. 1950. holograph, 5ff.

Data on yield of 2-R Winter hybrids. 1939-42. holograph, 11ff.

Bell, GDH: Notes on Winter hardiness. 1940-50. cuttings, typescript & holograph, 16ff.

**File 5:**

Bell, GDH: The breeding of two-row Winter-Hardy Barley. n.d., 52ff. typescript, photographs, line drawings, glass plate negatives.

**Box 25A:**

Bell, GDH: The two row cultivated barleys of the British Isles, including:

- 1) A discussion on the origin and history of cultivated forms in general.
- 2) A key for the identification of the cultivated varieties of the British Isles, based on grain and vegetative characters.
- 3) A study of the fluctuation of the characters used in the key for identification.

Thesis presented for the degree of PhD, n.d. typescript, 223pp, figures, photographs, including 21 loose photographs.

**GDH Bell Collection**

**Box 26:**

*File 1: Proctor Barley notes: press and other references. 1952-1970.*

*File 2: NIAB - PBI Proctor Correspondence. 1953-59.*

*File 3: Correspondence concerning Proctor Barley. 1952-55.*  
(Includes a sample of what is probably Proctor Barley).



GDH Bell Collection

Box 27: Photographs: Buildings; Breeding Techniques.

File 1: Miscellaneous aspects of breeding techniques.

Mildew and yellow rust resistance;  
Micro-malting;  
Colchicine treatment;  
Strawberry storage;  
Multiple Crosses;  
Inhibition of potato sprouting by gamma ionisation;  
Virus resistance tests;  
Botanical Analysis;  
Iris and Dahlia petal modification induced by radiation dose;  
Radiation cell interior at Wantage Research Laboratories;  
Harvesting, etc.

File 2: Crop Evolution *et al.*

*Spelta: vavilovi; macha?; sphaerococcum; compactum; aestivum. Avena. Triticum.*

File 3: Artificial Induction of Polyploids by Colchicine. Earliest work by Victor Chapman and GDH Bell.

*Triticum, Triticale* hybrids; Seedling inoculation of wheat with *Puccinia glumarum*; *Aegilops*; *Agropyron*. 1947, 1948, 1949, 1954.

File 4:

Grafting for bolting resistance in sugar beet; Pathology glasshouses at the Plant Breeding Institute; Wheat-Rye hybrids "*Triticale*"; Maris Ranger, taken by R.Oliver, Jan.1968.

## GDH Bell Collection

### Box 28: Photographs of Some of My work.

#### File 1: Crop Markings P.B.I.

Photographs taken on Anstey Hall Farm, Summer 1957, showing crop markings in barley.

#### File 2:

J.D.Palucci, 1947?;

Early hybridisation under glass *Triticinar* ?;

Winter barley hybrids, Cage Field, Breeding of Pioneer;

"Yawning" of barley: hitherto unrecorded form of sterility found extensively in barley crops 1947. (Photo V.Chapman, P.B.I. Cambridge);

Proctor barley, the first variety to receive the NIAB Challenge Cup (1953) for the best home-bred cereal variety of the year;

Winter hardy peas showing transition from juvenile (Winter hardy) foliage to Spring growth;

R.Riley with Nord Desprez, the bread wheat, rye variety King II, hybrid produce from the above two to obtain the hardness of the rye with the high milling quality of the wheat: 20.7.54;

G.K.G.Campbell with: sugar beet sown 8.4.54, two rows of commercial seed sown 10.3.54 which are bolting, resistant seed stocks sown 10.3.54 - no bolters, 20.7.54;

Plant Breeding Institute: new headquarters opened 15.7.55: view of main laboratory and administrative building. Band dibbing and sowing of cereals, later to be superseded by one mechanized operation;

New methods for handling hybrid progenies;

Barley micro-malting test devised at the Institute;

Maris Page potato;

Compair wheat, 25.8.71;

Selected breeding material of marrow stem kale for producing a double cross commercial hybrid, e.g. Maris Kestrel;

Transferring virus carrying aphids to healthy sugar beet seedlings - tests for Virus Yellows;

Harvesting single ears of wheat for maintenance of required genetic standards in nucleus stocks of wheats;

GDH Bell Collection  
Box 28: [Contd.]

Whole plant physiology of wheat in the field. Measuring the photosynthetic activity of wheat leaves;

Breeding barley for mechanization and higher yield;

Hybridisation glasshouse for potatoes;

G.K.G.Campbell, 14.3.63;

Cage Field: Ken Hedge - assistant.

File 3: Photographs of N.I.Vavilov and E.C.Stakman.

Dr.N.I.Vavilov Director of the Institute of Applied Botany, Leningrad, Jan.1931: This photograph belonged, I believe, to Sir Rowland Biffen who must have passed it on to me. Or maybe from Dr.H.V.Harlan USDA. Vavilov had been visiting the USA a few years before I was there 1928-29.

Dr.E.C.Stakman, Plant Pathologist.

File 4: Staff.

G.E.Russell, 1963;

Analysis of beet juices (with Pat Webster);

Mechanical inoculation of *Claytonia perfoliata* with virus yellows (with Anderson);

Separation of sugars in the laboratory (I.A.Barford);

Virus experiments in the glasshouse;

John Bingham 1955;

R.C.F.Macer;

F<sub>2</sub> selection on straw length (with David Sparrow);

Geoff Porter;

Automatic seeder for small plot trials (With E.W.Marshall);

Staff group photograph 1954 (including memo from D.Hadden, 16.11.70), another undated group photograph of PBI staff.

File 5: Barley Line Types. Early work on inheritance by Biffen, Hunter, Bell.

GDH Bell Collection: Box 28 [Contd].

File 6: Proctor, Pioneer - including photographs of juvenile Winter damage, Prefect, Micromalting.

Pioneer; Prefect; Camton?; Winter barley trial; Frost damage; Oat frost damage, 1951; Baley frost damage Jan.1951; NIAB Challenge Cup to the breeder of the best cereal of the year; Proctor - Narrow ear, Canterbury x P.-A. - Broad ear, 1953; 2 radiation induced mutants; Plumage-Archer; Tschermak's; Wintergerste; Tschermak's x Archer; Winter-gerste x Sp.-Ar.; Spratt Archer; Tschermak's x Plumage Archer; Tschermak's & Pioneer Winter Barleys, 2.4.43; Winter Barleys 3.4.43; Praecox; Tschermak: Pioneer: S-A, July 1943.

File 7: F.L.Engledow's wheat census work. Plant population studies.

Plants from shallow & deep sown seed in a field of Archer 1925; Dibbed 2" intervals; yield tables.

File 8: Winter Barleys - HB 22 etc. & Vernalisation. Barley: Field trials.

Photos and glass plate negatives: Winter Barley Vernalisation; Tschermak's.

File 9: Miscellaneous of my Work - some Triticums, mutants, breeding.

'Atle' wheat: artificial mutants; *T.monococcum*; Proctor; Plumage-Archer; *T.vulgare* x *S.cereale*; *E.gramineus* on *T.vulgare*; *T.aegilopoides*; *T.dicoccoides*; Winter pea trial 1952-52.

File 10: Sowing and Harvesting.

V-Belt Seeder, with John Norman and Martin Seckings?;

Hand sowing, with John Norman;

A.H.Sewell - dibbing;

Connie Gawthrop? planting potatoes;

Short strawed Western? barley project;

Winter oat trials I & II 1955;

Field beans: inbred lines & pollinations?;

Hybridisation of wheat;

Dwarfs from *Triticale*;

Cage Field circa 1932. Drying oat bunches outside the only building on the plots;

Harvesting trials Cage Field (with Fred Philips);

Hughes (Assistant), 1952?;

Tractors.

## GDH Bell Collection

### Box 28: [Contd.]

#### File 11. Mostly crop photographs that have been published.

Sugar beet;

Proctor and Spratt Archer barley;

"Sun II". S172 hybrids. "Grey Winter", 20.7.54; "D", "Lord Alexander", "April Bearded" wheat, "Tenton", 20.7.54;

Potatoes grafted on to tomatoes, 20.7.54;

Preparing a bean flower for cross pollination, 20.7.54;

Spratt Archer barley lodged. Shorter variety. Freja, 20.7.54;

Loaves produced at Cambridge by crossing the best English wheat with the best Canadian;

Long-grain oats;

Win Oat Trial I, 1955;

Holdfast;

Carbonized wheat from prehistoric sites;

Primitive cereal types;

*Triticum dicoccum*; *A. triticum aegilopoides*; *Triticum monococcum*;

Barley: unicum? mutant;

Harvesting Hunter's oats NIAB;

Hunter's oats Cage Field;

Tomato leaves;

Andean Potatoes;

Stand showing potato plants and tubers.

#### File 12: Early Sugar Work: tetraploid and bolting.

General view of equipment showing treatment, 1.3.43;

Artificial induction of bolting in sugar beet;

GDH Bell Collection

Box 28:[Contd.]

File 12: [Contd.]

Sugar beet seedlings cochicine-treated, 8.9.47;

*B.patellaris*;

Sugar beet: vernalisation & photoperiodism;

One trolleyload: Virus Station 27.4.43;

Lolwarth?;

Roots of sugar beet plants previously treated with colchicine, 3.10.47;

Selfing bags, July 1943;

Plants in flower grown under continuous illumination;

*Beta maritima* plants in their first year of domestication, 1945;

Sugar beet showing bolting and non-bolting;

Sugar beet inflorescence types, with Bolton;

Lane: Chief Assistant, 1942?;

Sugar beet inflorescence types, with Jackson.

File 13: Vistas in Botany et al. Cereal Pedigrees.

Winter Oats; Malting Barleys; Winter Barleys; Bulk Progeny Method of Selection.

File 14: Old Photographs - 1950's of my work & also Wheat.

Jubilegem (*sic*) x Holdfast;

Mildew resistance tests, Oct.1951;

German mildew-resistant barleys;

Kenia Proctor Pl.Archer;

Little Joss, Holdfast;

Sugar beet: bolting & non-bolting types;

Frost damage 1957?;

GDH Bell Collection

Box 28 [Contd.]

*File 14 [Contd.]*

Wild beet - *B.maritima* grown from seed collected by local naturalists at sea-coast sites;

Proctor, Provost, Maythorpe;

Spratt Archer, Provost, Kenia;

Goldthorpe, Maythorpe, Maja;

Proctor;

Secure? ear sterility induced by low temperatures 1947.

GDH Bell Collection

Box 29: Negatives: Barley Varieties for Thesis on Classification taken 1931: Aberdeen Idaho  
Sacaton Arizona.

Juvenile habit, 1931;

1st planting location;

Earing;

2nd planting location;

3rd planting location;

Transcius?: Ievine?;

Gymnosperms? Aberdeen 1931;

Beves, Aberdeen 1931;

Haxt, Aberdeen 1931;

Pallidum;

Old Irish;

Coeleste China;

Hereford? China;

Abed Brewster?;

Bene Lax?;

*Palmella erectum?*;

Coeleste India;

*Palmella nutans* Russia;

*Nigrum* India;

Barley grains;

Coeleste Japan;

Coeleste Russia;

Millenium;



GDH Bell Collection  
Box 29 [Contd.]

*Nigricans*;

Kinvens?;

S.A.Prentice;

Primus, Maltster, Golden Pheasant;

Millenium & Victory;

Old Cran, Cornish, Abed? Rex;

Spratt;

Plumage PBI;

Purple barley & Velvet;

*Spontaneum*;

Scotch comma?;

Bocumer?;

Shetland Bene;

Gynmer?;

Haxtonii;

Scotch Annat;

Beaven's H.;

Goldthorpe;

Kors;

Goldthorpe?;

Princess;

Bigo;

Chevaliers;

Nutans? Austria;

**GDH Bell Collection**  
**Box 29 [Contd.]**

Nutans England;

Nutans Germany;

Nigrum India;

Nigrum Manchuria;

Nigrum Abyssinia;

Horsfordianum China, and many more.

GDH Bell Collection

Box 30: Old Student Lectures.

Bell, GDH: Honours Botany: Fossils. Session 1926-1928. Notes. Holograph.

Bell, GDH: Genetics Notes:- Cambridge. Including lectures from Engledow, Pease and Punnett. (Includes plates showing colour markings of: rabbits, tropical fish and various flowers). Holograph.

Bell, GDH: Filter Passing or Virus Diseases. Notes made in his last year at Bangor, 1927-8. Holograph.

Bell, GDH: Fison's Lecture, 5.10.67. Breeding for pest resistance. Typescript, 19ff. Also carbon copy and correspondence with Dr.E.F.Edson, Chesterford Park Research Station, 1967.

GDH Bell Collection

Box 31: Imperial Bureau of Plant Genetics; National Seed Development Organisation; Royal Society Jubilee Exhibit; Bell, GDH: History of PBI; Riley, R.: Developments in plant breeding; Aerial photographs of PBI.

Agricultural Research Council. Contribution of Scientific Discoveries to Increases in Agricultural Productivity during the Queen's Reign: an exhibit organised by Dr.G.W.Cooke...for the Royal Society Jubilee Exhibition, 20-24 June 1977.

Bell, GDH. The Plant Breeding Institute, Cambridge. "History of P.B.I. for Massey-Ferguson Award 1975."

Photocopy of manuscript: holograph, c.163ff.; Typescript; Galley proof, 33ff; notes; corrections; correspondence with A.F.Dave of Massey Ferguson (UK) Ltd., 5.8.74, 5.11.75, 21.10.75; 3.6.76.

Imperial Bureaux of Plant Genetics.

Whyte, R.O. and Hudson, P.S. "Vernalization, or, Lysenko's method for the pre-treatment of seed." *Bulletin* no.9. March 1933.

National Seed development Organisation.

Leaflets:

Avalon winter wheat.

Bounty winter wheat.

Norman winter wheat.

Virtue winter wheat.

"Wheat: a guide to varieties from the Plant Breeding Institute".

Riley, Ralph Developments in plant breeding. *Agric.Progress*, 1974, 49:1-16.

University of Cambridge Committee for Aerial Photography:

Letter from J.K.S.St.Joseph giving permission to publish aerial photographs of the Plant Breeding Institute, 26.8.74, and two aerial photographs of the Plant Breeding Institute, black and white 22.5 x 23.5 cm. and 25 x 19.5 cm.

## GDH Bell Collection

### Box 32: PBI Cambridge: Plant Breeding International. National Institute of Agricultural Botany: Leaflets. Biffen, R.H.: Correspondence and Press Cuttings.

PBI, Cambridge: Plant Breeding International.

Press release, n.d.; "Turning over a new leaf", 8pp., n.d.; Notepad, with logo: PBI Cambridge: Plant Breeding International; *Unilever Magazine*, no.68, 2nd issue 1988.

Biffen, R.H. Correspondence and Press Cuttings.

Biffen, Lina Letters to GDH Bell, 10.9.53; 21.9.53. (Photocopies: 2 copies).

Biffen, R.H. Letter to F.L. Engledow. 8.3.18. (Photocopies: 2 copies).

Biffen, R.H. Newspaper cuttings concerning his work. 1906-1949. (Photocopies: 2 copies).

Biffen, R.H. Photographs of his house in Cambridge and another of his house in Histon. (Photocopies: two copies).

National Institute of Agricultural Botany.

Bell, GDH: Notes.

#### *Leaflets:*

Better seeds - better crops. 1957.

Cereal quality. 1957:(2 versions), 1965, 1961.

Cereal synonyms. 1932, 1934, 1937.

Classified list of cereal varieties: England and Wales, 1983/84; 1985/86.

Growing cereals for seed. n.d.

Notes on growing cereal seed crops. 1943.

Recommended varieties of cereals: 1968-1981, 1985.

Summary of the recommended lists of cereals for 1953.

Varieties of barleys. 1958-1966.

Varieties of cereals. 1967.

Varieties of cereals for Autumn sowing. 1935, 1936, 1938, 1939, 1940, 1942.

Varieties of cereals for Spring sowing. 1932, 1935, 1937, 1939, 1940, 1942, 1943, 1944, 1946, 1947, 1949.

Varieties of oats. 1958-1966.

**GDH Bell Collection**

**Box 32 [Contd.]**

Varieties of Spring oats. 1954, 1955, 1956, 1957.

Varieties of Spring wheats. 1958-1966.

Varieties of Spring wheats and Spring barleys. 1954, 1955, 1956, 1957. (2 copies).

Varieties of Winter oats and Winter barley. 1945, 1954, 1956.

Varieties of Winter wheat. 1944, 1950, 1952, 1954, 1956, 1958-1966.

Varieties of Winter wheat recommended for soils of different texture and fertility. 1942.

**GDH Bell Collection**

**Boxes of Slides.**

**Box 1: Barley.**

- 1) Barley trial. 1960. Drought.
- 2) 1960 drought: Kenia, Spratt Archer.
- 3) No label.
- 4) Barley: drought, 1960.
- 5) Drought, 1960.
- 6) Drought, 1960. 281 Union.
- 7) Drought, 1960.
- 8) 169, irrigated.
- 9) Drought, 1960.
- 10) Drought, 1960. "Good slide."
- 11) 169, not irrigated.
- 12) H.B.251 (?) Union, H.B.251 (?).
- 13) The same photo 251 (?).
- 14) missing.
- 15) missing.
- 16) Drought, 1960.
- 17) Rogue (?) Spring 1958. Mildew.
- 18) Qual. 56872 (?) hr.
- 19) Winter Barley trial, Seale Hayne 1960 (table).
- 20) Quality trial.
- 21) missing.
- 22) Proctor R.A.(?) Grain.

**GDH Bell Collection**

**Boxes of Slides: Box 1: [Contd.]**

- 23) Proctor '65.
- 24) Varieties (Barley) 1953-61.
- 25) missing.
- 26) Barley varieties, 1955-62.
- 27) Barley varieties, 1960-64.
- 28) Barley, 1959-65.
- 29) Varieties, 1939-1959.
- 30) missing.
- 31) Barley grain. L.S.
- 32) Quality & environment.
- 33) Micro-malting.
- 34) Micro-malting.
- 35) Micro-malting.
- 36) Micro-malting.
- 37) Missing.
- 38) M.Badger '65.
- 39) No label.
- 40) No label - ? micro-malting.
- 41A) No label - ? micro-malting.
- 41B) No label.
- 42) No label.
- 43) No label.
- 44) Earl, 1965.
- 45) Provost, 1965



## GDH Bell Collection

### Boxes of Slides: Box 1 [Contd.]

- 46) Baldric, 1965.
- 47) Missing.
- 48) Winter Barley, trial II, 1957.
- 49) Weekly harvest, 1966.
- 50) Proctor: Proctor x Wisa.
- 51) Grain: Plumage Archer, Proctor.
- 52) Proctor x BNP 55.
- 53) Rika x BNP 55.
- 54) BNP 55: Rika.
- 55) Proctor x BNP 55.
- 56) Proctor x BNP 55.
- 57) Rika x BNP 55; Domen x BNP 55.
- 58) Dup. Rika x BNP 55.
- 59) Rika x BNP 55; Domen x BNP 55.
- 60) Domen x BNP 55.
- 61) Boron toxicity Proctor.
- 62) Brown rust, barley: France 7 x H.B.246.
- 63) Loose smut.
- 64) Missing.
- 65) Closed and open ?Poll.
- 66) Barley, loose smut.
- 67) missing.
- 68) Barley ?Domany.
- 69) Micro-malting 1957, ?H.A.293.

**GDH Bell Collection**

**Boxes of Slides: Box 1 [Contd.]**

- 70) Hot water extract.
- 71) Hot water extract B7/7.
- 72) Proctor x Rika, 1961.
- 73) Missing.
- 74) TYTH 2/6/60. TRI Low. A= Proctor E=K196, F=X281.
- 75) TYTH TRIAL 1, 1960. A=Proctor, E=X196, F=X261.
- 76) missing.
- 77) Winter Barley.
- 78) Winter Barley: New Hybrids.
- 79) Missing.
- 80) Dry matter increment.
- 81) Missing.
- 82) 3 diseased leaves - no label.
- 83) No label.
- 84) Missing.
- 85) 3 diseased leaves.
- 86) Missing.
- 87) Missing.
- 88) Proctor x 169 x 246, 1963.
- 89) Missing.
- 90) No label.
- 91) Pioneer - Winter 1962/3.
- 92) 2925 Winter.
- 93) Pioneer H.B.292/91/2, HB 293/15/2, Pioneer 26/3/763.

**GDH Bell Collection: Boxes of Slides: Box 1: [Contd.]**

- 94) Missing.
- 95) No label: HB, Pi, Pr, St.
- 96) Proctor = Winter 1962/63.
- 97) Oats? - label illegible.
- 98) Winter Barley.
- 99) B 3/24 Dup.
- 100) Missing.
- 101) Herbicide damage: Proctor.
- 102) Missing.
- 103) Proctor & Bonus Mutants.'63.
- 104) Proctor x ?Wisa '63.
- 105) Domen x Rika; Proctor x Rika.
- 106) Wisa: Proctor x Wisa.
- 107) Domen x Proctor; Domen x ?Kagthafel.
- 108) Missing.
- 109) B3/23, dup.
- 110) TYTH. 1960. TRIAL.2. Large Scale. High fertility. A=Proctor, E=X196, F=X281.
- 111) No label.
- 112) No label.
- 113) July 1964.
- 114) Missing.
- 115) Missing.
- 116) Greenhouse Cul. Sol.
- 117) Weekly harvest, 1964.
- 118) Factorial Qual.

**GDH Bell Collection**

**Boxes of Slides: Box 1: [Contd.]**

119) Factorial Lab. Malting.

120) No label. Table: micro-malting.

**GDH Bell Collection: Boxes of Slides. [Contd.]**

**Box 2: Barley: Tables, etc.**

Nos.1-2) Missing.

3) Pedigrees: Varieties based on Balder-1.

4) Barley: yield.

Nos.5-7) Missing.

8) Pedigrees: Varieties based on Balder-2.

Nos.9-13) Missing.

14) Yield tables.

15) Missing.

16) F<sub>3</sub> Rika x Proctor: weight distribution, single plant.

No.17) Missing.

18) Table: micro-malting.

19) Missing.

20) F<sub>3</sub> Proctor x Rika.

21) Weight distribution: F<sub>3</sub> Rika x Proctor.

Nos.22-76) Missing.

77) Yield of Proctor given as percentage of Kenia during 3 years of National Trials.

78) The origins of two-row Spring-malting barleys.

79) Leaf-Rust and Powdery Mildew Breeding Programme.

80) Yield in tons per acre.

81) Spring Barley Hybrids.

82) Spring Yellow rust.

83) Barley: succession of sowings, 1955.

84) Spring Barley.

85) Barley: successional sowings, 1957.

GDH Bell Collection

Boxes of Slides: Box 2: [Contd.]

86) Tables.

Nos.87-98) Missing.

99) View over field of cereals.

100) Seedlings in incubator.

GDH Bell Collection: Boxes of Slides: [Contd.]

Box 3: Wheat.

*The numbers in brackets at the end of some of the descriptions of slides are Dr. Bell's own numbers.*

- 1) Monococcum. (36).
- 2) Evolution of *Triticum*.
- 3) Diploid ?Spiket.
- 4) *T.dicoccoides*.
- 5) *T.monococcum*.
- 6) Evolution of *Triticum*.
- 7) *T.aegilopoides*.
- 8) ?4 k Spiket?
- 9) ?Dalsha Spiket.
- 10) Barley: wild species.
- 11) 4 k ?spiket.?
- 12) Barley Bot. ?Found. (11)
- 13) T.398: *Aeg.speltoides* x *T.aegilopoides*.
- 14) Label illegible (wheat ears). (10)
- 15) Transfer of Rye chromosomes to Wheat.
- 16) T.371: *T.vulgare* (Wilhelmina) x *S.cereale* (King II).
- 17) Wheat evolution.(8)
- 18) T72. *T.dicoccum* x *Aeg.caudata*.
- 19) T396 *Aeg.speltoides* x *T.monococcum*.
- 20) *T.aegilopoides*. (30)
- 21) Label illegible: chromosomes.
- 22) T.19.247. (?*turgidum* x *caudata*).
- 23) Addition of rye chromosomes to wheat.

**GDH Bell Collection**

**Boxes of Slides: Box 3: [Contd.]**

- 24) ?Amphidiploid x *T. vulgare*.
- 25) T.A.215: (?*pyramidiala* x *aegilopoides*).
- 26) 215: (*pyramid.* x *aegilo.*)
- 27) ?H.215: (?*Pyramidiala* x *aegilop*?)
- 28) T. E4 - 1: addition of rye chromosomes to wheat.
- 29) Label illegible: 4 cereal plants.
- 30) T.A.247: (*turgidum* x *caudata*).
- 31) T. B6-9. TA.241 *Aeg. speltoides* x *T. durum*.
- 32) Missing.
- 33) Winter Wheat diallel F<sub>4</sub> 1956/57.
- 34) Label illegible: F<sub>4</sub> yields: Holdfast, Yeoman, Cappelle, etc.
- 35) Winter wheat diallel 1953/54?
- 36) Winter Wheat diallel.
- 37) Missing.
- 38) Yield distribution in wheat crosses.
- 39) Missing.
- 40) ---? , Cappelle?, Professor Marchal?, Maris Widgeon. (2)
- 41) Missing.
- 42) Winter Wheat trial IV 1962.
- 43) Sp. Wheat pedigree. (13)
- 44) Winter Wheat harvest analysis 1966. (19)
- 45) Winter Wheat harvest analysis 1966.
- 46) Polythene shading experiment (general) 1961.
- 47) Missing.



**GDH Bell Collection: Boxes of Slides: Box 3: [Contd.]**

- 48) *R. Perdia?* : *Raza?* 60. (19)
- 49) Eyespot: Grain size.
- 50) Wheat: eyespot.
- 51) Cereal plants ?suffering from disease? (6)
- 52) Missing.
- 53) Seedling reaction of wheat varieties to 4 races of yellow rust. (6)
- 54) Cappelle awned mutant & Cappelle.
- 55) Polythene shading experiment 1961.
- 56) 14 CO<sub>2</sub> Technique in field.
- 57) Polythene shading experiment 1961.
- 58) Polythene shading experiment 1961.
- 59-60) Missing.
- 61) Winter Wheat pedigree. (10)
- 62) Missing.
- 63) Winter Wheat pedigree. (9)
- 64) Winter Wheat selection: Yellow Rust.
- 65) Missing.
- 66) Laboratory apparatus (through which reels of film are being passed)?
- 67) Field Physiol.? W12/27.
- 68) Partition of assimilates.
- 69) Field Physiology. (22)
- 70) Winter Wheat: Disease.
- 71-72) Missing.
- 73) Y.R.(?Yellow Rust) inoculation.
- 74) Missing.

**GDH Bell Collection**

**Boxes of Slides: Box 3: [Contd.]**

- 75) In species wheat crosses - chart.
- 76) Use of CI 12633 Hybrid 46.
- 77) Eyespot.
- 78) Missing.
- 79) Y.R. (?Yellow Rust) Field inoculation.
- 80) Winter Wheat Disease.
- 81) Black Rust: differences Race 21.
- 82) Wheat. Disease ? charts.
- 83) Mildew resistant - susceptible - resistant.
- 84) Ergot on TA 458.
- 85) Yellow Rust.
- 86) Label illegible: King II. Rye; *T.durum*.
- 87) *T.persicum*.
- 88) Eyespot: Holdfast, Yeoman, Cappelle.
- 89) Eyespot: Holdfast, Cappelle, ?Hald.?
- 90) Yield and grain quality of TB.106/40 in 1959 trials.
- 91) 1961: ?Extensometer. Irrigation trial 1961.
- 92) Label illegible: Svenno, Holdfast, Koga 1, Hybrid 46, Peko, Minister.
- 93) 1961 grain.
- 94) Label faded: 1959 trials: Cambridge, Norfolk, Yorks., Devon: Holdfast, Cappelle, TB 106/40.  
(11).
- 95) Commercial samples.
- 96-98) Missing.

**GDH Bell Collection: Boxes of Slides: Box 3: [Contd.]**

- 99) W 1311 Soil moisture balance 1961.
- 100) W.W./*Erysiphe graminis*. (11)
- Nos.101-102) Missing.
- 103) PBI Varieties 1970-71.
- 104) Winter Wheat: Juvenile Habit.
- 105) Winter Wheat: shoot survival.
- 106: Winter Wheat: 1961 irrigated.
- 107) Missing.
- 108) W 13/23: Winter wheat irrigation x nitrogen x variety trial, 1967.
- 109) Disease & Yield. (15)
- 110) W.W./Y.R.: Winter Wheat: *Puccinia striiformis*. (8)
- 111) Missing.
- 112) Winter Wheat: PBI Yields, 1970.
- 113) I.W.W. Y.N. 1969: Var.Y/Mean Y.
- 114) Missing.
- 115) PBI Varieties 1965/68. Var Y/Mean Y.
- 116) Missing.
- 117) 1000 grain wheat distribution on wheat hybrids.
- 118) General view of Winter Wheat trials 1966.
- 119) W6/14. Flour protein content % dry weight.
- 120) Missing.

**GDH Bell Collection: Boxes of Slides: Box 4.**

**Box 4: Crop Statistics.**

*Numbers in brackets on the right of the description of some of the slides indicate Dr.Bell's own numbers.*

- 1) Crop yields 1946-1966.
- 2) Yield: barley, 1929-1963.
- 3) Growth in demand for certain foods, 1964-1970.
- 4) Imported food, 1964.
- 5) Crops, 1961-1965.
- 6) Wheat, barley, oats: divisional yields.
- 7) Sales of wheat, barley, oats in countries.
- 8) Wheat, barley, oat yields, 1956, 1961.
- 9) Production: cereals, 1939-1963.
- 10) Average cereals: 1939-1962/63.
- 11) Wheat, barley oats: production: 1939, 1963.
- 12) Cereals production U.K.
- 13) Wheat, barley, oats acreage 1939, 1963.
- 14) Wheat, barley, oats: acreage: 1939-63.
- 15) Wheat, barley, oats: UK yields: 1961.
- 16) Wheat: % occurrence of wheat varieties.
- 17) Cereal production: 1939-67.
- 18) Cereal acres: 1939-67.
- 19) Yields: wheat, barley, oats, potatoes: 1948-65.
- 20) Yields: wheat, barley, oats, potatoes, sugar beet: 1946-67. (1)
- 21) Agricultural land, UK, 1965.
- 22) % contribution to Britain's temperate food supply.

## GDH Bell Collection

### Boxes of Slides: Box 4: [Contd.]

- 23) Yields: wheat, barley, oats, potatoes: 1948-52; 1965.
- 24) Population, 1965.
- 25) Land utilisation: 1960-65.
- 26) Potato yields: 1940's-1950's.
- 27) Sugar beet yield: 1930-65.
- 28) Sugar beet yields: 1912-1959.
- 29) Wheat: variety and yield.
- 30) Spring wheat list: 1968. (14)
- 31) Winter Barley list: 1968. (8)
- 32) Maincrop potatoes list: 1967. (27)
- 33) Spring Oats: list: 1968. (16)
- 34) Winter Wheat list: 1968. (12)
- 35) Spring Barley list: 1968. (6)
- 36) 2nd early potatoes list: 1967. (26)
- 37) Winter Oats list: 1968. (15)
- 38) Effect of nitrogen on Yellow Rust & yield: 1967.
- 39) Winter Wheat, 1968.
- 40) Barley yield: county division: 1961.
- 41) Wheat, barley, oats: highest county yields: 1961.
- 42) Barley yields: 1939, 1949, 1959, 1961.
- 43) Barley yields: countries of British Isles: 1939-63.
- 44) Barley acreages: 1939, 1949, 1959, 1961.
- 45) Barley acreages: 1939-63.
- 46) Increase in barley yields: 1920-59.

**GDH Bell Collection: Boxes of Slides: Box 4 [Contd.].**

- 47) Barley utilisation: 1956-60.
- 48) Barley utilisation: 1939, 1949, 1959, 1961.
- 49) Barley production: 1939-63.
- 50) Increase in barley yield: 1929-50.
- 51) Barley: cwt./acre: 1941-70. (759)
- 52) Oats: cwt./acre: 1941-70. (757)
- 53) UK: N fertilizer: 1913-65.
- 54) Oat yields: 1896-1968. (3)
- 55) Sugar beet yields: 1926-65. (5)
- 56) Potatoes: yield: 1920-67.
- 57) Oats: yield: 1960-66.
- 58) Oats: yield: 1943-59.
- 59) Oats: increase in yields: 1943-59.
- 60) Barley: yields: 1896-1968.
- 61) % consumption of oats varieties: 1959-60.
- 62) % consumption of oats varieties: 1960-64.
- 63) % consumption of oats varieties: 1955-59.
- 64) Oats: utilisation: 1956-60.
- 65) Oats: yield: 1920-67.
- 66) Wheat varieties: 1959-64.
- 67) % wheat varieties: 1959/60.
- 68) Increase in wheat yields: 1943-59.
- 69) Increase in wheat yields: 1943-59.
- 70) Increase in wheat yields: 1943-59.
- 71) Wheat utilisation, UK: 1956-60.

## GDH Bell Collection

### Boxes of Slides: Box 4: [Contd.]

- 72) Wheat, barley, oats: highest yielders: counties.
- 73) Wheat yield: 1920-67.
- 74) Potatoes: yield: 1896-1965. (4)
- 75) Fertilizer: UK: 1939-65. (7)
- 76) Winter & Spring Barley, *Erisyphe graminis*: 1954-68. (13)
- 77) Spring wheat, *Erisyphe graminis*: 1954-68. (12)
- 78) PBI wheat varieties: 1967-68. (10)
- 79) Spring wheat: *Puccinia striiformis*: 1954-68. (9)
- 80) Potatoes: tons/acre: 1941-70. (772)
- 81) Winter Wheat: amounts of seed of leading varieties handled by seed-houses: 1968-70. (767)
- 82) Winter Wheat: cereal sales census: Norfolk: 1957-69. (765)
- 83) Wheat cwt/acre: 1941-70. (769)
- 84) Acreages as % of crops and grass: 1865?-1976? (751)
- 85) Wheat, barley, oats: yield: cwt/acre: 1956-70. (771)
- 86) Oats: ?1869-1970. (752)
- 87) Wheat varieties: sales: 1959-70. (778)
- 88) Wheat varieties: sales in Norfolk: 1957-69. (756)
- 89) Wheat, barley oats: yields: 1956-70. (699)
- 90) Wheat, barley: ?1865-?1970. (753)
- 91) Winter Barley: amounts of seed handled by seed houses: 1968-70. (761)
- 92) Spring Wheat: amounts of seed handled by seed houses: 1968-70. (762)
- 93) Oats: cereal sales census: Norfolk: 1957-69. (763)
- 94) Spring Barley: amounts of seed handled by seed houses: 1968-70. (764)
- 95) Spring Oats: amounts of seed handled by seed houses: 1968-70. (760)

**GDH Bell Collection: Boxes of Slides: Box 4 [Contd.]**

96) Winter Oats: amounts of seed handled by seed houses: 1968-70. (768)

97) Barley: cereal sales census: Norfolk: 1957-69. (770)

98) Acreage annual increase in size of enterprise: 1960-69. (758)

99) Crops: Norfolk: total area: 1969-70. (754)

100) Livestock: Norfolk: 1969-70. (755)



**GDH Bell Collection: Boxes of Slides: Box 5.**

- 1-2) Missing.
- 3) PBI. SB 1.
- 4) Missing.
- 5) Label illegible: ?Sugar beet plants
- 6) PBI SB 2.
- 7) PBI: Sugar Beet Virus Yellows Trial.
- 8) VY strain trial: sugar beet. 1963.
- 9) Sugar Beet Virus Yellows.
- 10) Oats, barley: grain yields: 1964.
- 11-12) Missing.
- 13) PBI SB 5.
- 14-17) Missing.
- 18) ?Sugar beet seeds; March 1964.
- 19-21) Missing.
- 22) Sugar beet in field.
- 23) ?Sugar beet seeds. March 1964.
- 24) Missing.
- 25) Label illegible: apple fruit.
- 26) Missing.
- 27) Red and yellow flower of a plant of the Compositae: 26.10.65.
- 28) as above.
- 29) as above.
- 30) as above.
- 31) missing.
- 32) Label illegible: seedlings in flower pot.

GDH Bell Collection

Boxes of Slides: Box 5: [Contd.]

- 73) Male sterility: general.
- 74) Beans; Male sterility, yield v. commercials.
- 75) Possible use of the 447 male sterility bean.
- 76) Male-steriles: yields.
- 77) Dry weight, pound per acre.
- 78) Test cross: Winter Bean lines.
- 79) Missing.
- 80) 1963 sward plots.
- 81) Grass trials: spacing/nitrogen.
- 82) ? Pollinating a wheat flower.
- 83) Missing.
- 84) Herbage breeding programme.
- 85-91) Missing.
- 92) Stem species: *A.fatua*.
- 93) Stem species: *A.sterilis*.
- 94) Oats: ?halzens.
- 95) 03/12.
- 96) Label illegible: cereal crop.
- 97) Spring Oat hybrids.
- 98-102) Missing.
- 103) Field of oats (ready for harvest).
- 104) F<sub>2</sub> CA 148 x Regal.
- 105) Maris Quest.
- 106-107) Missing.

**GDH Bell Collection**

**Boxes of Slides: Box 5: [Contd.]**

108) Oats-1960.

109) 06/5.

110-114) Missing.

115) Label illegible: cereal grains.

116) Missing.

117) *Sec. ?cumb.*

118) Classification of rye.

119) Classification of rye.

120) Label illegible: chromosomes.

**GDH Bell Collection: Boxes of Slides: Box 6.**

*The number in brackets on the left of the description of some of the slides is Dr. Bell's own number.*

- 1) View of stables, garages, gateway and land rover.
- 2) View across field of stables and hangars.
- 3) Wooden shed with farm vehicle.
- 4) View of path, glasshouses and shed.
- 5) View of flat-roofed brick-built shed, barn and field with crop.
- 6) View of flat-roofed brick-built shed, other sheds and hangars. (In colour).
- 7) View of sheds, hangars and crop. (In colour). (464)
- 8) View of sheds, hangars and a farm machine. (In colour). (465)
- 9) Implement shed: PBI. (In colour). (463)
- 10) Cereal crop, implement shed, hangars and flat-roofed, brick-built shed.
- 11) Crops in fields.
- 12) Missing.
- 13) View of ploughed field and crop. (In colour) (462)
- 14) View of crop and flat-roofed, brick-built shed. (In colour) (461)
- 15) View of glasshouses and shed.
- 16) ?Floor plan of PBI.
- 17) Aerial view of ?PBI, labelled AHZ 62.
- 18) Aerial view of ?PBI. (In colour). (2096 0)
- 19) PBI, March 1967: aerial view. (In colour).
- 20) PBI, March 1967: aerial view. (In colour).
- 21) Missing.
- 22) Wheat, 1960 (?PBI buildings in background). (In colour).
- 23) ?Kale damaged by wind? (PBI buildings in background). (In colour).
- 24) Crop and PBI glasshouses.

**GDH Bell Collection**

**Boxes of Slides: Box 6: [Contd.]**

- 25) Missing.
- 26) Greenhouse Cu.Sol.? (In colour).
- 27) Glasshouses. (In colour).
- 28) Glasshouse air condition. (In colour).
- 29) Winter crossing in glasshouse. (In colour).
- 30) Glasslock? illegible. (In colour). (3)
- 31) Path glasshouse. (In colour).
- 32) Path glasshouse. (In colour).
- 33) Glasshouse (label illegible). (In colour).
- 34) Glasshouse. (In colour).
- 35) Glasshouse. (In colour).
- 36) Glasshouse interior. 10.12.58. (In colour).
- 37) Glasshouse interior, 10.12.58. (In colour).
- 38) Glasshouse interior. (In colour).
- 39) Refrigerated cabinets. (In colour)
- 40-41) Missing.
- 42) Root growth experiment. (In colour).
- 43) Wheat 1960. (In colour)
- 44) Plan of growth room.
- 45) Missing.
- 46) Worker with agricultural implement. (In colour).
- 47) N.I.A.E. drill. (In colour).
- 48) Farm implement on plots. (In colour).
- 49) Worker sowing seed. (In colour). (4)

**GDH Bell Collection. Boxes of Slides: Box 6: [Contd.]**

- 50) Worker drilling. (In colour).
- 51-52) Missing.
- 53) Assyrian pollination date: (view of a bas-relief frieze).
- 54-66) Missing.
- 67) Assyrian pollination.
- 68) Assyrian pollination date.
- 69) Ancient coins, showing cereals.
- 70) Coins, showing cereals.
- 71) Crop Marking? planting? type.
- 72) Missing.
- 73) Crop markings. (In colour)
- 74) Crop Marking, Trumpington. (In colour).
- 75) Barley, crop ?mark, Trumpington, (In colour).

GDH Bell Collection

Card Indexes (two boxes).

Bell, GDH: Subject bibliography on cards, subjects covered include:

Acquired Characters;

Agriculture;

Apples;

Banana Breeding;

*Beta;*

*Brassica;*

Cereals;

Disease;

Dormancy;

Drought Resistance;

Earliness;

Ecology;

Economic Plants;

Evolution;

Hops;

Hydroponics.