

Grain Price Analysis and Harvest Qualities, 1465-1634¹

By C. J. HARRISON

THE first systematic calculation of annual harvest qualities, between 1480 and 1619, was made by Professor Hoskins and in a later article he extended his list to 1759.² He has provided an example of a statistical method by which harvest qualities can be calculated from price lists. He has pointed out the importance of knowing the annual quality of harvests if one is to understand properly the economic and social changes in pre-Industrial England. He has argued convincingly that in sixteenth-century England "the harvest was the most fundamental fact of life" in an economy which could never be certain of providing adequate food supplies in every year.³ The main part of this article consists of an introduction to an alternative list of harvest designations to Hoskins's. My debt to him for providing a statistical method and for stimulating an interest in the topic is gratefully acknowledged.

Hoskins's method is fully explained in the main body and Appendix I of his first article. He took a series of annual average wheat prices and a series, calculated from them, of 31-year moving average prices. He assumed the moving price to be the norm for the year, that is the price at which wheat would have sold if the harvest had been an ordinary one. He then calculated the percentage difference between the annual average and the moving average price for each year and labelled the harvest for each year according to how far, in terms of the percentage difference, the annual average price was above or below the moving average price. The points of demarcation used were described as follows. "Where the average price for any given year was 30 per cent or more below the norm for that year, I classified the harvest as 'abundant'. Where it was between 10 and 30 per cent below the norm I termed it 'good'. Where the average price for the harvest-year was within ± 10 per cent of the norm, the harvest was classed as 'average'. Average prices between 10 and 25 per cent above the norm were taken to indicate a 'deficient' harvest; between 25 and 50 per cent above the norm were called 'bad'; and an average of 50 per cent and more above the norm was termed a 'dearth'."⁴

¹ The main part of this article was awarded the Wedgwood Memorial Prize, an undergraduate History essay prize at the University of Keele, in 1968.

² W. G. Hoskins, 'Harvest Fluctuations and English Economic History 1480-1619', *Agric. Hist. Rev.*, xii (1), 1964, pp. 28-46 and 'Harvest Fluctuations and English Economic History 1620-1759', *Agric. Hist. Rev.*, xvi (1), 1968, pp. 15-31. Further footnote references will be to the first article.

³ Hoskins, *op. cit.*, p. 29.

⁴ *Ibid.*, p. 43.

Hoskins claimed that "when we look at the graph of the fluctuations in the average price of wheat from year to year we are looking at an electro-cardiogram of a living organism." He denied that he attached "too much importance to a single crop which was not of universal consumption" and he argued that "the movements of wheat prices reflected fairly closely the movements of other food-prices."¹ The publication of Dr Bowden's price indexes makes it possible, by applying Hoskins's method to different sets of data and comparing his results with the new ones, to test his assumption that wheat price movements reflected the movement of other food prices (in this article we are concerned only with grain prices) and, therefore, could be used on their own to designate harvest qualities.² The following preliminary remarks are introduced in order to answer some of the possible objections to this approach and to prevent confusion.

The original sets of data are given in different units: Hoskins's in shillings per quarter, Bowden's in terms of a price index, having as a base 100 which relates to the period 1450-99. The same statistical processes have been applied to both sets. What is being compared is not the original data but the percentage differences and harvest qualities calculated from them. It does not matter, therefore, that the original sets of data are given in different units.

It is difficult to decide exactly where Hoskins is drawing the line between one harvest designation and the next.³ The harvest-year 1505 which has a percentage difference of -10.1 is labelled 'average' whilst that for 1749 which is 10.3 per cent below the norm is called 'good'. The number of occasions on which any problem arises is small. The following points of demarcation are used in APPENDIX II and are given in order to avoid any ambiguity. (Hoskins's figures, reproduced in APPENDIX II, are corrected to the nearest whole number.)⁴ Those harvests 30 per cent or more below the norm are termed 'Abundant' (A).⁵ Those harvests between -29 and -11 per cent inclusive are termed 'Good' (G), and those which lie ± 10 per cent inclusive of the norm are termed 'Average' (Av.). Those which are 11 to 25 per cent inclusive above the norm are termed 'Deficient' (D); those between 26 and 49 per cent inclusive are termed 'Bad' (B), and those 50 per cent or more above the norm are termed 'Dearth' (Dth).

Bowden's data relate to harvest years and each one of these is labelled by reference to the calendar year in which it begins. "Thus harvest year 1620, for

¹ Hoskins, *op. cit.*, p. 40. See FIG. 1 for a similar graph.

² P. Bowden, 'Statistical Appendix' in Joan Thirsk, ed., *The Agrarian History of England and Wales, IV, 1500-1640*, pp. 814-70. I would like to thank Dr Bowden for permission to use these figures.

³ See the quotation from Hoskins on p. 135.

⁴ I would like to thank Dr Hoskins for permission to use these figures.

⁵ The letters in brackets are the abbreviations used in APPENDIX II.

example, related to the period 29th September 1620 to 28th September 1621."¹ Hoskins indicates, in his first appendix, that he is using harvest years but he does not state explicitly how he is labelling them. However, from his use of Beveridge's Exeter wheat price series where "the price for each year relates to the harvest of that year" it can be seen that he is using the same method as Bowden.² The set of data on prices and wages by E. Phelps Brown and S. Hopkins, which is much used by historians, is labelled differently, namely, by reference to "the calendar year beginning during the harvest year e.g. against Michaelmas 1400 to Michaelmas 1401 [they] put the calendar year 1401."³ Failure to recognize this difference can lead to confusion and error.⁴ M. Drake, in his examination of demographic changes in the West Riding of Yorkshire in the late sixteenth and early seventeenth century, notes that his general theory is not supported by Phelps Brown and Hopkins's figures. The problem arises, in part, because he failed to take into account the above differences in labelling.⁵

Bowden's price series provided complete lists of the annual average prices (expressed as a price index) for wheat, oats, and an average of all grains, the latter being the annual average price of wheat and oats, and of barley and rye where they were known. In APPENDIX I Bowden's annual average prices for wheat, oats, and his average of all grains are reproduced along with the 31-year moving averages and the percentage differences calculated from them. Unfortunately, the barley series is not a complete one but the two main blocks of continuous data and the calculations made from them are also listed in APPENDIX I.⁶ FIGURES I to IV illustrate the changing relation each year between the annual average and moving average price for each of these commodities. (The moving average provides not only a norm against which the annual average may be seen but also a simple and direct illustration of the general price rise in this period.) In APPENDIX II, the main results of the computations are listed together with Hoskins's results in a simplified form. Under each heading, the first column lists the percentage differences, the second the

¹ Bowden, *op. cit.*, p. 869.

² W. H. Beveridge, 'A Statistical Crime of the Seventeenth Century', *Jnl of Econ. and Business Hist.*, I, 1929, p. 530.

³ E. H. Phelps Brown and Sheila V. Hopkins, 'Seven Centuries of the Prices of Consumables compared with Builders' Wage Rates', *Economica*, n.s., xxiii, 1956, p. 307.

⁴ For a critical discussion of the use of the term 'harvest year' and of which method of labelling is the most appropriate, see J. Z. Titow, *English Rural Society, 1200-1350*, 1969, pp. 27-9.

⁵ M. Drake, 'An Elementary Exercise in Parish Register Demography', *Econ. Hist. Rev.*, ser. 2, xiv, 1961-2, p. 434, n. 3. Drake's argument that it was economic depressions rather than harvest failures which had the most direct effect on mortality in the area of the West Riding he was studying, is further weakened by his apparent failure to take into account the differences involved when comparing data based on harvest years with that based on 'church years', where the two will coincide for only six months.

⁶ I would like to thank Mr A. G. Barrand who organized all the computations, the results of which form the main part of this article. I also acknowledge the assistance of Dr H. H. Greenwood, Director of the Keele University Computer Centre.

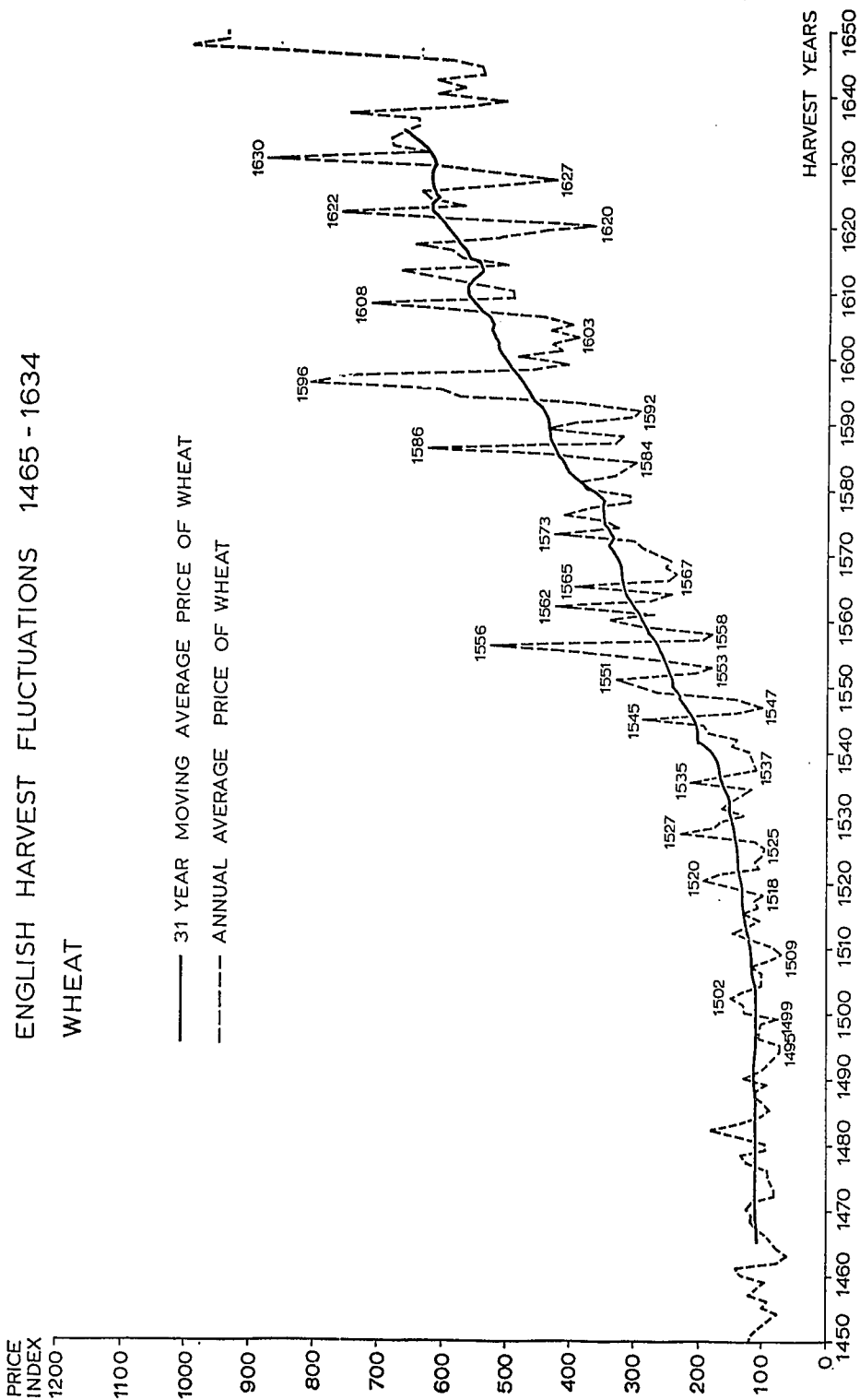
designations of harvest quality. It is hoped that this will facilitate comparisons between the two sets of data.

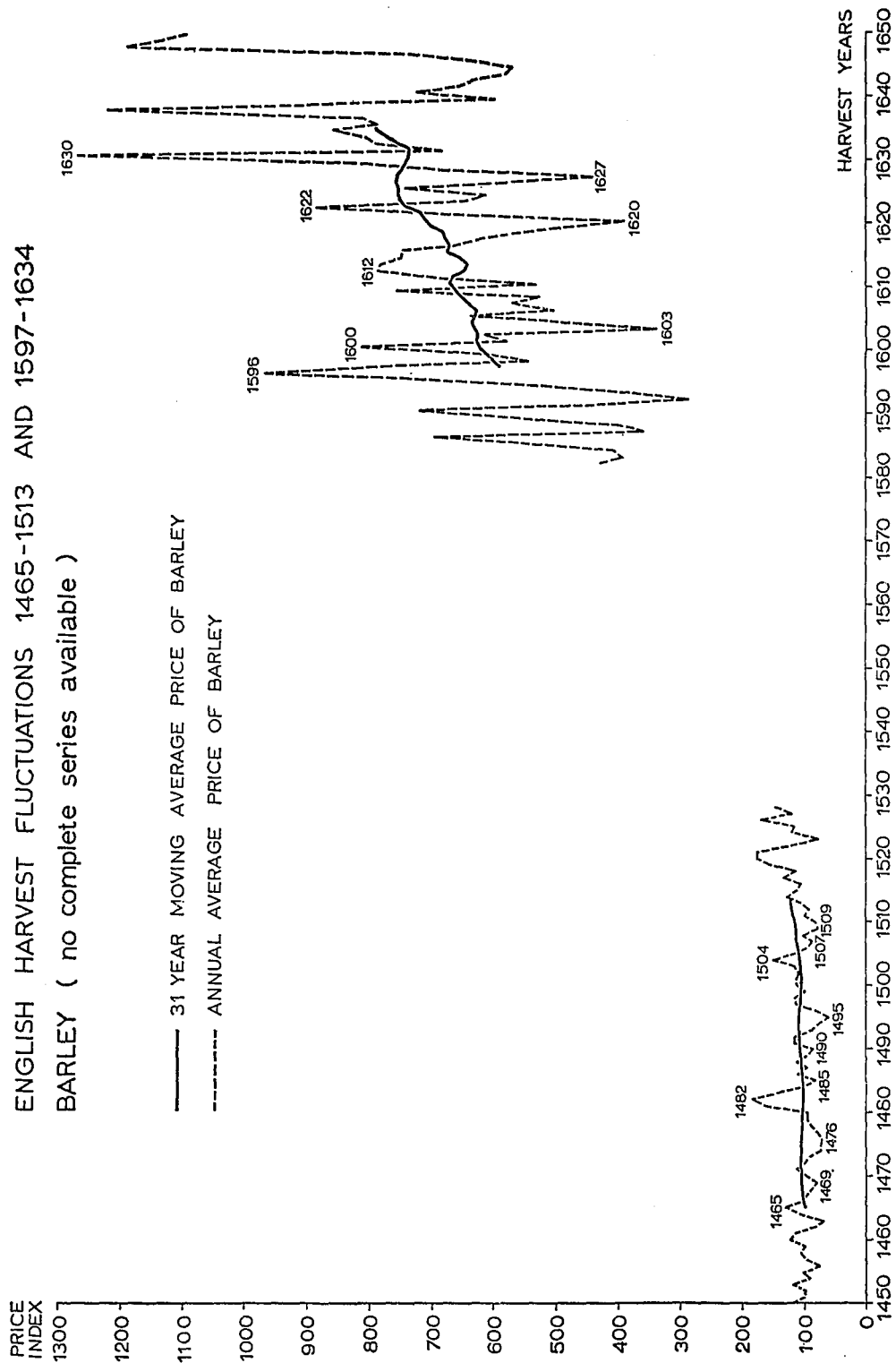
Was Hoskins correct in assuming that "the movements of wheat prices reflected fairly closely the movements of other food prices?"¹ Turning first to the graphs it can be seen that wheat prices did not rise as much as other grains, but one price series may reflect another without being the same, and an examination of the general trends shown by the moving averages seems to support Hoskins's assumption. However, if one compares the annual price movements important differences can be seen. There are much larger differences in the year-to-year price of barley than in that of wheat. An examination of the peaks and troughs in the annual average prices of the various grains reveals not only similarities but also differences between them.

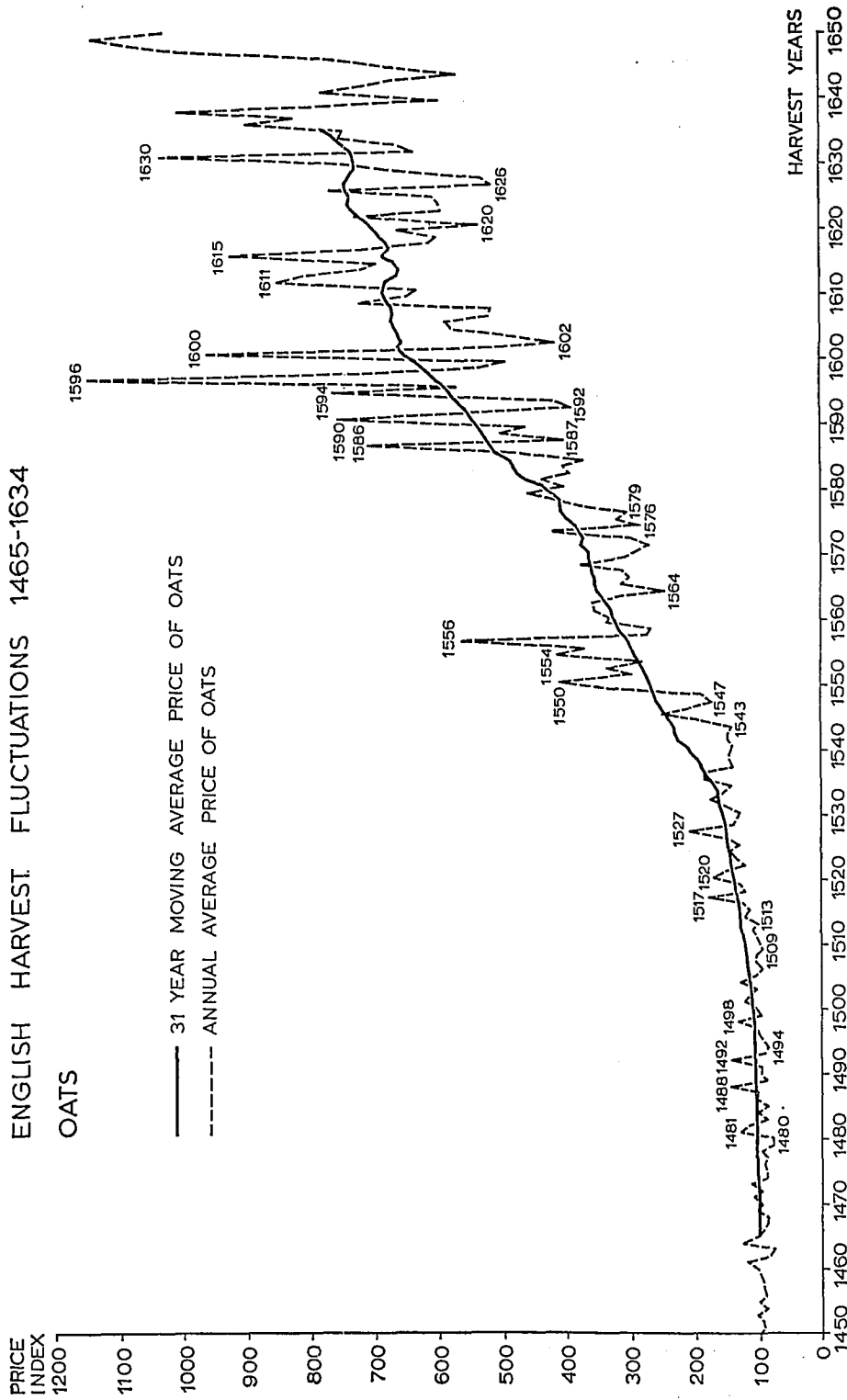
The graphs show a *prima facie* case for questioning Hoskins's assumption. It can be tested by comparing his list of harvest designations with those calculated from the individual grains and the average of all grains, because, if he was correct, there should be no significant difference between them. Comparing Hoskins's wheat list with the average of all grains between 1480 and 1619, one finds that 67 out of 140 comparisons are different. This is a difference of 48 per cent or 1 in every 2 between the two lists. Hoskins's list of harvest qualities differs from the one calculated from Bowden's wheat prices, but if one compares the latter with the average of all grains, 66 out of the 140 comparisons between 1480 and 1619 are different, a 47 per cent difference between the two lists. If one compares Hoskins's list with that for oats for the same period, 87 out of 140 comparisons are different, giving a 62 per cent difference. If one compares the list of harvest qualities calculated from the barley prices, where known, with the list calculated from Bowden's wheat prices, then out of 87 possible comparisons, 48 are different, giving a 55 per cent difference between the lists. There is, then, a significant difference between Hoskins's list of harvest qualities and those calculated from the other grains. He was wrong, therefore, to assume that wheat prices reflected other grain prices, let alone other food prices in general.

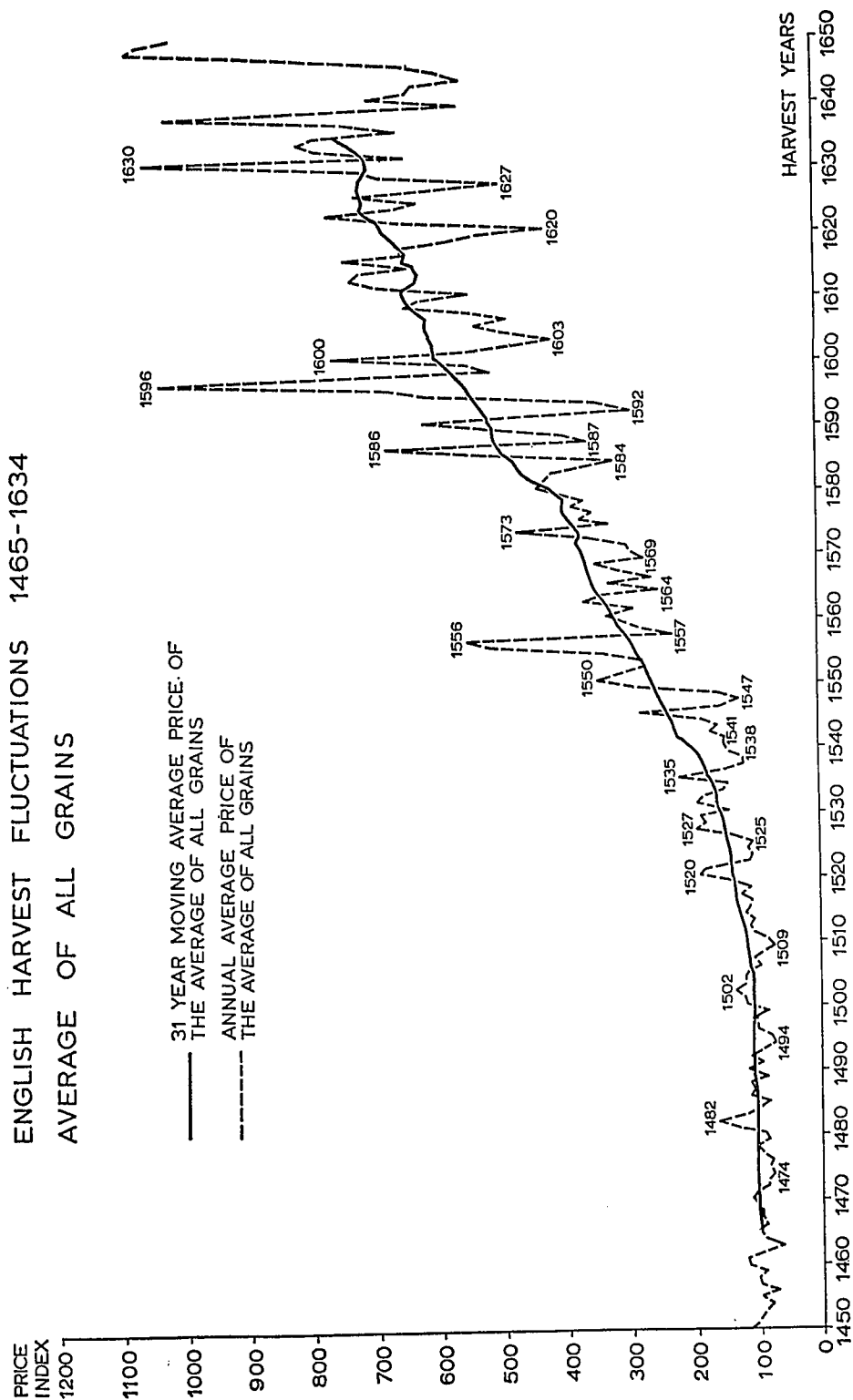
An examination of those occasions when Hoskins's list differs from that based on the average of all grains shows that 41 of the 67 instances occur within the three harvest designations centred around the norm, namely, 'Good', 'Average', and 'Deficient'. This is not surprising since most harvest designations fall within this group but it does indicate that these designations about the norm are the most suspect. Most of the differences show a shift of one grade; for example, Hoskins lists the 1483 harvest as 'Bad' whereas on the basis of Bowden's average of all grains it would be classed as 'Deficient'. In only seven instances is there a difference of more than one grade; thus Hoskins lists 1558 as 'Abundant' whilst the average of all grains would list it as 'Average'. It cannot

¹ Hoskins, *art. cit.*, p. 40.









be argued that, because most of the differences involve only one move up or down the scale of harvest qualities, the difference of 48 per cent between the two lists is not important. What is being tested is not how much but how often the two lists differ. Just how different a picture one can get, can be seen if one compares, in APPENDIX II, the two lists for the decade beginning 1510.

A detailed examination of the two lists and the inferences which can be drawn from them are revealing. If one takes the period 1480-1619 inclusive and compares the harvest pattern from each list of a typical decade no significant difference can be seen although there are more really bad harvests, i.e. 'Bad' and 'Dearth' according to Hoskins. In a typical decade, 2 in 5 harvests were good, 1 in 3 average, and 1 in 4 poor.

TABLE I
THE TYPICAL DECADE, 1480-1619 INCL.

	<i>Wheat (Hoskins)</i>		<i>Average of all grains (Bowden)</i>	
	<i>Number</i>	<i>%</i>	<i>Number</i>	<i>%</i>
Abundant	12	60	12	59
Good	48		47	
Average	45	32	49	35
Deficient	10	35	20	32
Bad	18		8	
Dearth	7		4	

If one takes a slightly longer period each side of the central point of 1549-50 a less dismal picture of the typical decade emerges with 2 in 5 harvests good, 2 in 5 average, and 1 in 5 poor.

TABLE II
THE TYPICAL DECADE, 1465-1634 INCL.

	<i>Average of all grains</i>	
	<i>Number</i>	<i>%</i>
Abundant	14	69
Good	55	
Average	68	40
Deficient	20	33
Bad	9	
Dearth	4	

Hoskins examined Utterström's view "that there may have been a fundamental climatic change in the mid-sixteenth century over most of north-west Europe which adversely affected the quality of harvests in the second half of the sixteenth century."¹ Others also have identified the mid-sixteenth century as a period of change for the worse in Britain's climate. Thus Lamb calls the period between 1550 and 1700 the 'Little Ice Age' and notes the wet summers and dry or snowy winters.² Manley, although more cautious makes the same point. "Later in the fifteenth century there is a little evidence towards quieter and warmer conditions. . . In Elizabethan days, however, the climate as a whole appears to have turned a little colder."³ Hoskins divided his list and compared the harvest patterns of the two halves and rightly inferred from his list that there was no significant difference between the two halves. TABLE III shows his results in detail. It should be noted that there are more 'abundant' harvests in the first half.

TABLE III
A COMPARISON OF HARVEST PATTERNS BETWEEN
THE TWO HALVES OF THE SIXTEENTH CENTURY
USING HOSKINS'S DATA

	1480-1549 incl.		1550-1619 incl.	
	Number	%	Number	%
Abundant	10	30	2	30
Good	20		28	
Average	22	31	23	33
Deficient	7	18	3	17
Bad	8		10	
Dearth	3		4	

If one does the same operation with the average of all grains a different picture emerges. As many as 1 in 2 harvests in the first half were good compared with 1 in 3 in the second, and only 1 in 5 were poor compared with 1 in 4 in the second. The same proportions are revealed whether one uses the average of all grains for 1480-1619 or the whole list. If one chooses to use the average of all grains, as opposed to Hoskins's, then the accounts of the climatic history by Utterström, Lamb, and Manley are given some support.

¹ Hoskins, *op. cit.*, p. 30. See G. Utterström, 'Climatic Fluctuations and Population Problems', *Scandinavian Econ. Hist. Rev.*, III, 1955, pp. 3-47.

² H. H. Lamb, 'Britain's Changing Climate', *Geogr. Jnl.*, vol. 133, 1967, p. 453.

³ G. Manley, *Climate and the British Scene*, 1952 (references to the Fontana edition, 1962), p. 290.

TABLE IV

THE HARVEST PATTERNS IN THE TWO HALVES
OF THE SIXTEENTH CENTURY BASED ON THE
AVERAGE OF ALL GRAINS

	1480-1549 incl.		1550-1619 incl.	
	Number	%	Number	%
Abundant	8	34	4	25
Good	26		21	
Average	21	30	28	40
Deficient	10	21	10	17
Bad	4		4	
Dearth	1		3	

A comparison of the harvest pattern by decades, given by the two lists, shows considerable differences, and this despite the fact that many differences cancel each other out; that is, within a single decade one can have a year which the two

TABLE V

THE HARVEST PATTERN BY DECADES

Decade	Wheat (Hoskins)		Average of all grains (Bowden)	
	Abundant & Good	Deficient, Bad, & Dearth	Abundant & Good	Deficient, Bad, & Dearth
1470-9	—	—	6	0
1480-9	1	3	3	3
1490-9	5	1	5	0
1500-9	3	4	3	2
1510-9	5	2	6	0
1520-9	5	5	4	5
1530-9	5	1	5	3
1540-9	6	2	8	2
1550-9	4	4	1	5
1560-9	5	3	4	0
1570-9	4	2	4	1
1580-9	5	1	4	2
1590-9	4	4	5	3
1600-9	6	1	6	1
1610-9	2	2	3	3
1620-9	4	1	4	0

lists designate 'Good' and 'Average' respectively and another year which they list as 'Average' and 'Good'.

The above is a comparison of the trends which can be seen and the inferences which can be drawn from the two lists. There remain the central questions, namely, which set of data should be used for deciding the harvest quality of any particular year and what reliance can be put on such a list?

It has been shown that wheat prices did not closely reflect the movement of other grain prices and that there are significant differences in the harvest qualities calculated from the different lists. Hoskins's basic assumption justifying his use of wheat prices on their own to evaluate harvest qualities has been shown to be false. (It should be noted that when he made his list, the additional data used in this article were not available.) The average of all grains is based upon the broadest possible price data for grains. There are, therefore, good *a priori* reasons to prefer this list of harvest qualities to any other made from the price list of a single grain. Whether it is, in fact as well as in theory, more reliable than Hoskins's list can only be known as historians test both lists against other evidence, both statistical and literary.

The use of any price list to calculate, by whatever method, the quality of a harvest in a particular year is, of course, open to question. The national average price or price index either of a single grain or of all grains is an abstraction. Prices varied according to the season of year. They varied from region to region and market to market and within the same market they varied according to the differing quantities and qualities of the grain being bought and sold. The national annual average price is a necessary simplification of the surviving data.¹ Hoskins tried to take account of this by listing Beveridge's Exeter wheat prices and comparing the national picture with that of the south-west. Ideally, lists of annual harvest qualities should be constructed for all the major regions. But for some regions, at least, the data surviving will prove insufficient to justify the use to which they must be put. The problem of regional variations can be met, to a limited extent, by selecting the harvest list which reflects the special farming practices of the region being studied. Thus the barley harvest may be crucial in East Anglia and the oats harvest in the north. For some questions, in pastoral regions, the grain harvest will be less important than the hay harvest.

The regional and local historian will be able to provide sufficient criteria on some occasions to justify the use of a list of a particular grain. The historian concerned with the national picture may be able, on some occasions, to select a list by using criteria arising out of the question being asked. Whilst the grain which the farming community sold was often wheat (and this was done to raise cash) the grain which they bought to eat was barley or, especially in bad

¹ See Bowden, *op. cit.*, pp. 868-70.

years, rye or oats. The state of the wheat harvest may be relevant when one is considering the effect of the harvest on the general economy but it will be less relevant when one is dealing with the demographic effects of the harvest.

No lists of harvest qualities can be used uncritically. They give an indication rather than a proof of the harvest quality of a particular year. Sometimes it will be possible to select a list according to the region being studied or the question being asked. Where no criteria of selection can be made or no such specific list exists then the historian should use the average of all grains because, despite all its limitations, it is based on the broadest collection of data possible and is, therefore, the list most likely to reflect the quality of the harvest.

APPENDIX I

GRAIN PRICE ANALYSIS, 1450-1649

Year	Wheat			Barley			Oats			Average of all grains		
	Price (Index no.)	Mov- ing average	% Diff.	Price (Index no.)	Mov- ing average	% Diff.	Price (Index no.)	Mov- ing average	% Diff.	Price (Index no.)	Mov- ing average	% Diff.
1450	116	0	0	116	0	0	100	0	0	119	0	0
1451	112	0	0	100	0	0	94	0	0	107	0	0
1452	99	0	0	97	0	0	97	0	0	101	0	0
1453	87	0	0	116	0	0	106	0	0	94	0	0
1454	73	0	0	92	0	0	91	0	0	83	0	0
1455	94	0	0	102	0	0	102	0	0	99	0	0
1456	89	0	0	77	0	0	91	0	0	76	0	0
1457	116	0	0	99	0	0	94	0	0	103	0	0
1458	105	0	0	105	0	0	95	0	0	106	0	0
1459	93	0	0	100	0	0	100	0	0	94	0	0
1460	132	0	0	124	0	0	105	0	0	122	0	0
1461	138	0	0	115	0	0	120	0	0	124	0	0
1462	74	0	0	81	0	0	86	0	0	89	0	0
1463	60	0	0	70	0	0	79	0	0	67	0	0
1464	74	0	0	106	0	0	127	0	0	95	0	0
1465	83	103	-19	130	99	31	106	101	4	104	101	2
1466	92	103	-10	102	101	0	94	102	-7	92	101	-8
1467	106	105	0	97	104	-6	88	102	-13	98	103	-4
1468	114	106	7	88	105	-16	88	102	-13	98	104	-5
1469	114	107	6	80	105	-23	103	102	0	105	104	0
1470	121	107	13	95	105	-9	98	102	-3	114	104	9
1471	112	107	4	112	105	6	109	102	6	108	105	2
1472	79	108	-26	99	105	-5	98	102	-3	88	106	-16
1473	79	107	-26	93	106	-12	113	104	8	87	106	-17
1474	82	107	-23	72	106	-32	90	104	-13	80	106	-24
1475	89	108	-17	71	105	-32	90	104	-13	86	107	-19
1476	89	107	-16	72	105	-31	93	104	-10	82	106	-22
1477	122	105	16	78	105	-25	89	104	-14	96	105	-8
1478	130	106	22	90	105	-14	97	104	-6	105	105	0
1479	92	106	-13	95	105	-9	79	105	-24	88	106	-16

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Year	Wheat			Barley			Oats			Average of all grains		
	Price (Index no.)	Mov- ing average	% Diff.	Price (Index no.)	Mov- ing average	% Diff.	Price (Index no.)	Mov- ing average	% Diff.	Price (Index no.)	Mov- ing average	% Diff.
1480	94	106	-11	95	104	-8	79	104	-24	92	105	-12
1481	132	107	23	163	102	59	130	103	26	136	105	29
1482	177	107	65	184	102	80	116	104	11	168	106	58
1483	132	107	23	141	103	36	90	105	-14	121	106	14
1484	98	105	-6	105	103	1	102	106	-3	100	105	-4
1485	86	106	-18	82	105	-21	89	106	-16	85	106	-19
1486	96	106	-9	109	105	3	103	106	-2	117	106	10
1487	108	107	0	95	105	-9	105	106	0	110	107	2
1488	106	109	-2	113	106	6	144	107	34	116	108	7
1489	91	109	-16	95	108	-12	90	107	-15	90	110	-18
1490	127	110	15	86	109	-21	98	108	-9	120	111	8
1491	100	110	-9	116	110	5	98	108	-9	97	111	-12
1492	89	111	-19	117	110	6	143	108	32	113	112	0
1493	81	110	-26	88	111	-20	90	109	-17	89	112	-20
1494	70	108	-35	77	111	-30	87	109	-20	76	111	-31
1495	70	107	-34	59	110	-46	93	109	-14	81	111	-27
1496	103	108	-4	79	110	-28	101	110	-8	102	112	-8
1497	102	108	-5	113	108	4	104	109	-4	105	111	-5
1498	99	107	-7	114	105	8	134	109	22	105	109	-3
1499	72	106	-32	100	105	-4	97	110	-11	86	109	-21
1500	126	106	18	113	105	7	104	110	-5	120	109	10
1501	128	107	19	113	106	6	119	111	7	124	110	12
1502	147	108	36	109	107	1	111	114	-2	138	110	25
1503	130	107	21	117	107	9	105	114	-7	123	111	10
1504	98	108	-9	152	109	39	127	114	11	122	111	9
1505	99	112	-11	116	111	4	104	116	-10	117	115	1
1506	98	113	-13	95	114	-16	95	118	-19	98	117	-16
1507	113	113	0	88	115	-23	104	119	-12	107	118	-9
1508	85	114	-25	102	113	-9	105	119	-11	94	118	-20
1509	69	114	-39	77	115	-33	94	121	-22	77	118	-34
1510	81	115	-29	82	116	-29	97	122	-20	87	120	-27
1511	111	117	-5	99	119	-16	103	124	-16	106	122	-13
1512	144	121	19	93	121	-23	108	127	-14	114	125	-8
1513	121	123	-1	104	122	-14	101	128	-21	107	127	-15
1514	102	125	-18	127	0	0	121	128	-5	121	130	-6
1515	127	127	0	112	0	0	115	129	-10	113	132	-14
1516	105	128	-17	106	0	0	124	131	-5	111	135	-17
1517	109	129	-15	132	0	0	178	133	33	129	137	-5
1518	97	129	-24	114	0	0	121	134	-9	113	137	-17
1519	140	128	9	154	0	0	127	136	-6	144	138	4
1520	191	132	44	175	0	0	170	138	23	193	142	35
1521	166	134	23	176	0	0	153	140	9	183	143	27
1522	104	134	-22	124	0	0	121	142	-14	116	144	-19
1523	109	134	-18	77	0	0	135	143	-5	110	144	-23
1524	99	135	-26	121	0	0	142	144	-1	116	146	-20
1525	95	137	-30	116	0	0	129	146	-11	110	149	-26
1526	110	139	-20	168	0	0	146	147	0	141	151	-6
1527	227	140	62	121	0	0	207	149	38	198	153	29
1528	175	142	23	146	0	0	138	150	-8	182	155	17
1529	165	144	14	0	0	0	134	153	-12	189	158	19

HARVEST QUALITIES, 1465-1634

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Year	Wheat			Barley			Oats			Average of all grains		
	Price (Index no.)	Mov- ing average	% Diff.	Price (Index no.)	Mov- ing average	% Diff.	Price (Index no.)	Mov- ing average	% Diff.	Price (Index no.)	Mov- ing average	% Diff.
1530	130	150	-13	0	0	0	129	157	-17	148	163	-9
1531	162	151	7	0	0	0	152	160	-5	196	165	18
1532	150	150	0	0	0	0	173	162	6	188	165	13
1533	133	151	-11	0	0	0	156	162	-3	155	167	-7
1534	116	157	-26	0	0	0	145	169	-14	148	173	-14
1535	213	162	31	0	0	0	184	179	2	225	180	25
1536	156	167	-6	0	0	0	182	183	0	154	184	-16
1537	108	168	-35	0	0	0	139	189	-26	123	187	-34
1538	113	170	-33	0	0	0	144	194	-25	124	192	-35
1539	116	176	-34	0	0	0	144	204	-29	148	200	-26
1540	122	185	-34	0	0	0	140	211	-33	154	214	-28
1541	146	200	-27	0	0	0	147	226	-34	153	228	-32
1542	139	202	-31	0	0	0	147	230	-36	175	232	-24
1543	185	201	-7	0	0	0	143	232	-38	164	234	-29
1544	192	205	-6	0	0	0	192	239	-19	192	239	-19
1545	288	210	37	0	0	0	251	245	2	286	244	17
1546	139	215	-35	0	0	0	200	253	-20	160	249	-35
1547	99	224	-55	0	0	0	172	260	-33	130	255	-49
1548	138	228	-39	0	0	0	186	265	-29	162	260	-37
1549	265	232	14	0	0	0	330	268	23	298	263	13
1550	294	241	21	0	0	0	411	273	50	353	269	31
1551	329	242	35	0	0	0	297	277	7	313	271	15
1552	204	245	-16	0	0	0	337	282	19	281	276	1
1553	179	250	-28	0	0	0	282	290	-2	279	284	-1
1554	267	254	5	0	0	0	413	295	39	340	289	17
1555	383	259	47	0	0	0	374	300	24	521	294	77
1556	528	264	100	0	0	0	564	304	85	558	299	86
1557	194	270	-28	0	0	0	275	309	-11	235	306	-23
1558	179	279	-35	0	0	0	270	318	-15	284	317	-10
1559	291	284	2	0	0	0	336	323	4	314	322	-2
1560	339	289	17	0	0	0	331	327	1	337	328	2
1561	271	293	-7	0	0	0	356	329	8	296	331	-10
1562	426	301	41	0	0	0	358	335	6	372	339	9
1563	275	308	-10	0	0	0	317	343	-7	343	347	-1
1564	244	314	-22	0	0	0	247	352	-29	258	355	-27
1565	394	317	24	0	0	0	313	355	-11	335	360	-6
1566	247	320	-22	0	0	0	302	355	-14	267	363	-26
1567	235	321	-26	0	0	0	313	359	-12	321	366	-12
1568	252	324	-22	0	0	0	378	361	4	355	369	-3
1569	243	328	-25	0	0	0	310	364	-14	277	371	-25
1570	265	334	-20	0	0	0	291	366	-20	299	378	-20
1571	288	342	-15	0	0	0	272	377	-27	305	383	-20
1572	301	335	-10	0	0	0	298	372	-19	368	377	-2
1573	427	339	25	0	0	0	417	379	10	478	383	24
1574	328	348	-5	0	0	0	285	386	-26	334	391	-14
1575	348	351	0	0	0	0	319	400	-20	378	401	-5
1576	411	350	17	0	0	0	306	408	-25	359	405	-11
1577	369	351	5	0	0	0	375	409	-8	391	405	-3
1578	309	350	-11	0	0	0	407	411	0	372	404	-7
1579	310	360	-13	0	0	0	461	426	8	414	413	0

THE AGRICULTURAL HISTORY REVIEW

Year	Wheat			Barley			Oats			Average of all grains		
	Price (Index no.)	Mov- ing average	% Diff.	Price (Index no.)	Mov- ing average	% Diff.	Price (Index no.)	Mov- ing average	% Diff.	Price (Index no.)	Mov- ing average	% Diff.
1580	379	372	1	0	0	0	405	437	-7	444	427	3
1581	381	386	-1	0	0	0	439	465	-5	434	451	-3
1582	333	402	-17	429	0	0	396	479	-17	422	468	-9
1583	316	410	-22	394	0	0	406	486	-16	370	474	-21
1584	299	415	-27	409	0	0	374	490	-23	324	481	-32
1585	427	423	0	547	0	0	472	512	-7	556	498	11
1586	626	428	46	697	0	0	709	520	36	684	506	35
1587	331	433	-23	361	0	0	403	525	-23	365	512	-28
1588	320	436	-26	399	0	0	502	531	-5	407	514	-20
1589	437	436	0	568	0	0	465	537	-13	531	514	3
1590	394	439	-10	720	0	0	757	547	38	624	521	19
1591	304	442	-31	451	0	0	573	554	3	443	525	-15
1592	295	447	-34	287	0	0	392	561	-30	296	532	-44
1593	388	459	-15	379	0	0	417	572	-27	350	540	-35
1594	578	465	24	520	0	0	765	580	31	621	549	13
1595	607	471	28	740	0	0	574	586	-2	681	554	22
1596	811	477	70	971	0	0	1148	601	91	1039	562	84
1597	746	484	54	779	590	32	718	614	16	778	572	36
1598	462	495	-6	545	602	-9	535	624	-14	518	582	-10
1599	407	502	-18	617	614	0	498	634	-21	557	592	-5
1600	485	511	-5	816	625	30	962	652	47	768	606	26
1601	416	516	-19	583	629	-7	526	660	-20	555	609	-8
1602	432	517	-16	617	627	-1	419	657	-36	480	608	-21
1603	391	523	-25	338	633	-46	502	664	-24	420	616	-31
1604	434	527	-17	487	636	-23	581	669	-13	501	620	-19
1605	401	525	-23	639	631	1	589	672	-12	543	617	-11
1606	447	532	-15	506	629	-19	523	671	-22	492	618	-20
1607	571	547	4	571	643	-11	519	672	-22	554	629	-11
1608	715	556	28	527	655	-19	721	679	6	654	642	1
1609	493	564	-12	759	663	14	648	685	-5	633	651	-2
1610	495	566	-12	534	671	-20	633	685	-7	554	655	-15
1611	545	563	-3	698	665	4	853	683	24	699	652	7
1612	606	551	9	792	648	22	810	663	22	736	634	16
1613	667	543	22	788	645	22	721	661	9	725	631	14
1614	504	548	-8	752	654	14	695	668	4	650	638	1
1615	574	564	1	749	676	10	924	686	34	749	655	14
1616	590	569	3	664	672	-1	717	675	6	657	651	0
1617	647	578	11	624	679	-8	616	679	-9	659	659	0
1618	517	586	-11	565	685	-17	603	691	-12	586	670	-12
1619	450	595	-24	493	703	-29	661	699	-5	535	683	-21
1620	366	603	-39	391	713	-45	539	709	-23	432	688	-37
1621	598	611	-2	670	719	-6	730	717	1	666	695	-4
1622	763	621	22	886	743	19	596	733	-18	773	713	8
1623	573	621	-7	648	754	-14	599	741	-19	666	720	-7
1624	625	614	1	614	756	-18	607	737	-17	634	718	-11
1625	637	618	3	745	755	-1	768	742	3	729	720	1
1626	521	621	-16	577	759	-23	517	744	-30	603	723	-16
1627	427	623	-31	443	757	-41	532	738	-27	504	721	-30
1628	525	621	-15	690	750	-8	667	730	-8	693	716	-3
1629	609	617	-1	825	743	11	741	729	1	723	711	1

HARVEST QUALITIES, 1465-1634

151

Year	Wheat			Barley			Oats			Average of all grains		
	Price (Index no.)	Mov- ing average	% Diff.	Price (Index no.)	Mov- ing average	% Diff.	Price (Index no.)	Mov- ing average	% Diff.	Price (Index no.)	Mov- ing average	% Diff.
1630	881	620	42	1277	739	72	1034	731	41	1064	712	49
1631	630	627	0	689	739	-6	639	734	-12	653	715	-8
1632	684	641	6	795	757	5	663	746	-11	793	730	8
1633	686	651	5	812	774	4	754	763	-1	819	743	10
1634	668	665	0	862	791	8	745	778	-4	794	758	4
1635	645	0	0	792	0	0	900	0	0	667	0	0
1636	645	0	0	817	0	0	824	0	0	752	0	0
1637	750	0	0	1225	0	0	1004	0	0	1031	0	0
1638	575	0	0	899	0	0	764	0	0	762	0	0
1639	507	0	0	602	0	0	597	0	0	569	0	0
1640	615	0	0	728	0	0	781	0	0	708	0	0
1641	574	0	0	657	0	0	717	0	0	649	0	0
1642	616	0	0	637	0	0	666	0	0	640	0	0
1643	542	0	0	582	0	0	571	0	0	565	0	0
1644	546	0	0	574	0	0	680	0	0	600	0	0
1645	590	0	0	634	0	0	764	0	0	663	0	0
1646	804	0	0	736	0	0	1000	0	0	847	0	0
1647	997	0	0	1191	0	0	1085	0	0	1091	0	0
1648	943	0	0	1135	0	0	1140	0	0	1073	0	0
1649	942	0	0	1097	0	0	1030	0	0	1023	0	0

APPENDIX II

TABLE SHOWING PERCENTAGE DIFFERENCES BETWEEN ANNUAL AND 31-YEAR MOVING AVERAGES OF GRAIN PRICES, 1465-1634

% Diff. = Percentage Difference; HQ = Harvest Quality; A = Abundant; G = Good; Av = Average; D = Deficient; B = Bad; Dth = Dearth.

Year	Wheat (Hoskins)		Wheat (Bowden)		Barley (Bowden)		Oats (Bowden)		Average of all grains (Bowden)	
	% diff.	H.Q.	% diff.	H.Q.	% diff.	H.Q.	% diff.	H.Q.	% diff.	H.Q.
1465			-19	G	31	B	4	Av	2	Av
66			-10	Av	0	Av	-7	Av	-8	Av
67			0	Av	-6	Av	-13	G	-4	Av
68			7	Av	-16	G	-13	G	-5	Av
69			6	Av	-23	G	0	Av	0	Av
1470			13	D	-9	Av	-3	Av	9	Av
71			4	Av	6	Av	6	Av	2	Av
72			-26	G	-5	Av	-3	Av	-16	G
73			-26	G	-12	G	8	Av	-17	G
74			-23	G	-32	A	-13	G	-24	G
75			-17	G	-32	A	-13	G	-19	G
76			-16	G	-31	A	-10	Av	-22	G
77			16	D	-25	G	-14	G	-8	Av
78			22	D	-14	G	-6	Av	0	Av
79			-13	G	-9	Av	-24	G	-16	G

Year	Wheat (Hoskins)		Wheat (Bowden)		Barley (Bowden)		Oats (Bowden)		Average of all grains (Bowden)	
	% diff.	H.Q.	% diff.	H.Q.	% diff.	H.Q.	% diff.	H.Q.	% diff.	H.Q.
1480	-9	Av	-11	G	-8	Av	-24	G	-12	G
81	32	B	23	D	59	Dth	26	B	29	B
82	75	Dth	65	Dth	80	Dth	11	D	58	Dth
83	27	B	23	D	36	B	-14	G	14	D
84	-3	Av	-6	Av	1	Av	-3	Av	-4	Av
85	-14	G	-18	G	-21	G	-16	G	-19	G
86	-5	Av	-9	Av	3	Av	-2	Av	10	Av
87	9	Av	0	Av	-9	Av	0	Av	2	Av
88	1	Av	-2	Av	6	Av	34	B	7	Av
89	-10	Av	-16	G	-12	G	-15	G	-18	G
1490	23	D	15	D	-21	G	-9	Av	8	Av
91	-4	Av	-9	Av	5	Av	-9	Av	-12	G
92	-17	G	-19	G	6	Av	32	B	0	Av
93	-22	G	-26	G	-20	G	-17	G	-20	G
94	-31	A	-35	A	-30	A	-20	G	-31	A
95	-32	A	-34	A	-46	A	-14	G	-27	G
96	-1	Av	-4	Av	-28	G	-8	Av	-8	Av
97	-2	Av	-5	Av	4	Av	-4	Av	-5	Av
98	-2	Av	-7	Av	8	Av	22	D	-3	Av
99	-27	G	-32	A	-4	Av	-11	G	-21	G
1500	21	D	18	D	7	Av	-5	Av	10	Av
01	27	B	19	D	6	Av	7	Av	12	D
02	39	B	36	B	1	Av	-2	Av	25	D
03	23	D	21	D	9	Av	-7	Av	10	Av
04	-5	Av	-9	Av	39	B	11	D	9	Av
05	-10	Av	-11	G	4	Av	-10	Av	1	Av
06	-14	G	-13	G	-16	G	-19	G	-16	G
07	3	Av	0	Av	-23	G	-12	G	-9	Av
08	-26	G	-25	G	-9	Av	-11	G	-20	G
09	-38	A	-39	Av	-33	A	-22	G	-34	A
1510	-31	A	-29	G	-29	G	-20	G	-27	G
11	2	Av	-5	Av	-16	G	-16	G	-13	G
12	25	D	19	D	-23	G	-14	G	-8	Av
13	2	Av	-1	Av	-14	G	-21	G	-15	G
14	-15	G	-18	G			-5	Av	-6	Av
15	1	Av	0	Av			-10	Av	-14	G
16	-13	G	-17	G			-5	Av	-17	G
17	-11	G	-15	G			33	B	-5	Av
18	-21	G	-24	G			-9	Av	-17	G
19	14	D	9	Av			-6	Av	4	Av
1520	54	Dth	44	B			23	D	35	B
21	29	B	23	D			9	Av	27	B
22	-21	G	-22	G			-14	G	-19	G
23	-16	G	-18	G			-5	Av	-23	G
24	-23	G	-26	G			-1	Av	-20	G
25	-25	G	-30	A			-11	G	-26	G
26	-18	G	-20	G			0	Av	-6	Av
27	66	Dth	62	Dth			38	B	29	B
28	27	B	23	D			-8	Av	17	D
29	18	D	14	D			-12	G	19	D

HARVEST QUALITIES, 1465-1634

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Year	Wheat (Hoskins)		Wheat (Bowden)		Barley (Bowden)		Oats (Bowden)		Average of all grains (Bowden)	
	% diff.	H.Q.	% diff.	H.Q.	% diff.	H.Q.	% diff.	H.Q.	% diff.	H.Q.
1530	-12	G	-13	G			-17	G	-9	Av
31	7	Av	7	Av			-5	Av	18	D
32	2	Av	0	Av			6	Av	13	D
33	-9	Av	-11	G			-3	Av	-7	Av
34	-23	G	-26	G			-14	G	-14	G
35	36	B	31	B			2	Av	25	D
36	-5	Av	-6	Av			0	Av	-16	G
37	-34	A	-35	A			-26	G	-34	A
38	-32	A	-33	A			-25	G	-35	A
39	-31	A	-34	A			-29	G	-26	G
1540	-24	G	-34	A			-33	A	-28	G
41	-24	G	-27	G			-34	A	-32	A
42	-27	G	-31	A			-36	A	-24	G
43	-7	Av	-7	Av			-38	A	-29	G
44	-4	Av	-6	Av			-19	G	-19	G
45	43	B	37	B			2	Av	17	D
46	-34	A	-35	A			-20	G	-35	A
47	-52	A	-55	A			-33	A	-49	A
48	-31	A	-39	A			-29	G	-37	A
49	15	D	14	D			23	D	13	D
1550	33	B	21	D			50	Dth	31	B
51	41	B	35	B			7	Av	15	D
52	-11	G	-16	G			19	D	1	Av
53	-23	G	-28	G			-2	Av	-1	Av
54	9	Av	5	Av			39	B	17	D
55	50	Dth	47	B			24	D	77	Dth
56	105	Dth	100	Dth			85	Dth	86	Dth
57	-29	G	-28	G			-11	G	-23	G
58	-41	A	-35	A			-15	G	-10	Av
59	4	Av	2	Av			4	Av	-2	Av
1560	26	B	17	D			1	Av	2	Av
61	-13	G	-7	Av			8	Av	-10	Av
62	44	B	41	B			6	Av	9	Av
63	-8	Av	-10	Av			-7	Av	-1	Av
64	-8	Av	-22	G			-29	G	-27	G
65	34	B	24	D			-11	G	-6	Av
66	-16	G	-22	G			-14	G	-26	G
67	-20	G	-26	G			-12	G	-12	G
68	-19	G	-22	G			4	Av	-3	Av
69	-21	G	-25	G			-14	G	-25	G
1570	-21	G	-20	G			-20	G	-20	G
71	-12	G	-15	G			-27	G	-20	G
72	-7	Av	-10	Av			-19	G	-2	Av
73	28	B	25	D			10	Av	24	D
74	2	Av	-5	Av			-26	G	-14	G
75	9	Av	0	Av			-20	G	-5	Av
76	11	D	17	D			-25	G	-11	G
77	6	Av	5	Av			-8	Av	-3	Av
78	-14	G	-11	G			0	Av	-7	Av
79	-13	G	-13	G			8	Av	0	Av

THE AGRICULTURAL HISTORY REVIEW

Year	Wheat (Hoskins)		Wheat (Bowden)		Barley (Bowden)		Oats (Bowden)		Average of all grains (Bowden)	
	% diff.	H.Q.	% diff.	H.Q.	% diff.	H.Q.	% diff.	H.Q.	% diff.	H.Q.
1580	0	Av	1	Av			-7	Av	3	Av
81	0	Av	-1	Av			-5	Av	-3	Av
82	-20	G	-17	G			-17	G	-9	Av
83	-26	G	-22	G			-16	G	-21	G
84	-25	G	-27	G			-23	G	-32	A
85	10	Av	0	Av			-7	Av	11	D
86	42	B	46	B			36	B	35	B
87	-21	G	-23	G			-23	G	-28	G
88	-25	G	-26	G			-5	Av	-20	G
89	1	Av	0	Av			-13	G	3	Av
1590	-5	Av	-10	Av			38	B	19	D
91	-27	G	-31	A			3	Av	-15	G
92	-32	A	-34	A			-30	A	-44	A
93	-13	G	-15	G			-27	G	-35	A
94	29	B	24	D			31	B	13	D
95	36	B	28	B			-2	Av	22	D
96	83	Dth	70	Dth			91	Dth	84	Dth
97	64	Dth	54	Dth	32	B	16	D	36	B
98	-3	Av	-6	Av	-9	Av	-14	G	-10	Av
99	-13	G	-18	G	0	Av	-21	G	-5	Av
1600	0	Av	-5	Av	30	B	47	B	26	B
01	-14	G	-19	G	-7	Av	-20	G	-8	Av
02	-15	G	-16	G	-1	Av	-36	A	-21	G
03	-24	G	-25	G	-46	A	-24	G	-31	A
04	-16	G	-17	G	-23	G	-13	G	-19	G
05	-20	G	-23	G	1	Av	-12	G	-11	G
06	-11	G	-15	G	-19	G	-22	G	-20	G
07	8	Av	4	Av	-11	G	-22	G	-11	G
08	35	B	28	B	-19	G	6	Av	1	Av
09	-7	Av	-12	G	14	D	-5	Av	-2	Av
1610	-10	Av	-12	G	-20	G	-7	Av	-15	G
11	0	Av	-3	Av	4	Av	24	D	7	Av
12	9	Av	9	Av	22	D	22	D	16	D
13	24	D	22	D	22	D	9	Av	14	D
14	-2	Av	-8	Av	14	D	4	Av	1	Av
15	4	Av	1	Av	10	Av	34	B	14	D
16	2	Av	3	Av	-1	Av	6	Av	0	Av
17	12	D	11	D	-8	Av	-9	Av	0	Av
18	-15	G	-11	G	-17	G	-12	G	-12	G
19	-25	G	-24	G	-29	G	-5	Av	-21	G
1620	-37	A	-39	A	-45	A	-23	G	-37	A
21	1	Av	-2	Av	-6	Av	1	Av	-4	Av
22	26	B	22	D	19	D	-18	G	8	Av
23	-3	Av	-7	Av	-14	G	-19	G	-7	Av
24	8	Av	1	Av	-18	G	-17	G	-11	G
25	6	Av	3	Av	-1	Av	3	Av	1	Av
26	-13	G	-16	G	-23	G	-30	A	-16	G
27	-29	G	-31	A	-41	A	-27	G	-30	A
28	-14	G	-15	G	-8	Av	-8	Av	-3	Av
29	5	Av	-1	Av	11	D	1	Av	1	Av

Year	Wheat (Hoskins)		Wheat (Bowden)		Barley (Bowden)		Oats (Bowden)		Average of all grains (Bowden)	
	% diff.	H.Q.	% diff.	H.Q.	% diff.	H.Q.	% diff.	H.Q.	% diff.	H.Q.
1630	48	B	42	B	72	Dth	41	B	49	B
31	4	Av	0	Av	-6	Av	-12	G	-8	Av
32	11	D	6	Av	5	Av	-11	G	8	Av
33	9	Av	5	Av	4	Av	-1	Av	10	Av
34	4	Av	0	Av	8	Av	-4	Av	4	Av
35	-2	Av								
36	-3	Av								

Notes and Comments

FORTHCOMING CONFERENCES

WINTER 1971

The winter conference will be held on Saturday, 27 November 1971 at the Geography Department, University College, Gower Street London. It will discuss the historical background to the European Common Agricultural Policy and its implications for British agriculture. Papers will be read by Michael Tracy and Ray Rickard, and the Dutch and Danish agricultural attachés will contribute to the discussion.

SPRING 1972

The annual conference will be held from Monday, 10 April to Wednesday, 12 April, at Wye College, near Canterbury, Kent. The conference will concentrate on the history of Kentish agriculture and will include an excursion, but it is hoped to have some more general papers as well on comparisons between English and European agriculture, including one by Professor E. Leroy Ladurie of the Sorbonne. It is hoped to include papers on Kentish agriculture by Professor Alan Everitt (background to the excursion which he will lead), Norah Carlin (medieval estates of Canterbury Cathedral priory), Dennis Baker (history of the hop industry), and Margaret Tyler (rural social structure in the nineteenth century).

THE 1971 ANNUAL CONFERENCE

The Annual Conference was held at Bodington Hall, University of Leeds, from Monday, 5 April to Wednesday, 7 April 1971. Papers were read by Mr Ian Kershaw (The agrarian crisis of 1315-1317: some evidence from the West Riding of Yorkshire), Mr David Grace (The agricultural processing industries, 1750-1850), Mr David Hey (The rural communities of South Yorkshire, 1660-1820), and Professor Herman Freudenberger (Bohemian and Moravian aristocracies). On the afternoon of 7 April, Mr Bernard Jennings led an excursion to Nidderdale, visiting Harrogate, Ripley (an attractive nineteenth-century estate village), the field systems and enclosures of Forest Moor, and the lead mines of Greenhow on Bewerley Moor.

THE ANNUAL GENERAL MEETING

The Society's nineteenth AGM was held at Bodington Hall, University of Leeds on 6 April 1971, with Professor W. E. Minchinton in the Chair. Professor W. G. Hoskins was elected President and Mr C. A. Jewell and Mr M. A. Havinden were re-elected Treasurer and Secretary respectively. Professor A. M. Everitt, Mr George Ordish, and Dr W. J. Rowe were re-elected to the Executive Committee.

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