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Seven Centuries of the Prices of Consumables, compared with Builders' Wage-rates

By E. H. PHELPS BROWN and SHEILA V. HOPKINS¹

In an earlier paper² we gave an account of builders' wages in southern England from 1264 to 1954, and now we shall try to relate these to the prices of some of the main articles of consumption. In 1901 Steffen³ displayed the movements of two wage-rates in comparison with those of the prices of wheat and meat through the preceding six centuries and more: it was his Tafel II that first displayed the striking evidence for a great rise and fall in the real income of the wage-earner between 1300 and 1600, the level reached in 1450-1500 apparently not being regained until after 1860. We shall test these indications by bringing a wider range of prices to bear.

I

Nowadays, real wages are commonly estimated by comparing money earnings with an index of the cost of living, but there are several reasons why we cannot do that here. On the side of income, all we have is the rate of pay for a day, and we do not know how many days' work the builder was getting in the year from time to time, nor what other resources he had. On the side of outlay, we know little or nothing about some important costs, notably rent, and the prices we do have are more wholesale than retail. These things apart, we still could not attach much meaning to "the cost of maintaining a constant standard of living" through seven centuries of social change.

So we have not tried to construct any measure of real wages in the modern sense. Yet when we find the craftsmen who have been building Nuffield College in Oxford in our own day earning a hundred and fifty pennies in the time it took their forbears building Merton to earn one, the impulse to break through the veil of money becomes powerful: we are bound to ask, what sort of command over the things builders buy did these pennies give from time to time? It is this question we try to answer here.

Our answer takes the form of an aggregate price year by year for a composite commodity, made up always of the same amounts of some of the main heads of consumption: we can think of it as a package

¹ We owe to Mr. S. Ahmed, Dr. Gethyn Davies and Mr. J. Veverka much valued help in computing, and are further indebted to our colleagues Professors Carus-Wilson and Fisher and Dr. A. H. John for commenting on our work in galley.

² "Seven Centuries of Building Wages", *Economica*, XXII, 87 (August 1955).

³ G. F. Steffen, *Studien zur Geschichte der englischen Lohnarbeiter*, vol. I (Stuttgart, 1901), esp. Tafel I and II, at p. 112. Most of the materials of these two graphs are reproduced in Appx. I of H. O. Meredith, *Economic History of England*, 5th ed. 1949.

always containing the same sized bagfuls of bread-stuffs, meat, cloth, and so on. The contents of each bag have been made up variously from time to time: in our bread-stuffs, for instance, we give a greater place to wheat, and correspondingly less to rye and barley, as the eighteenth century wears on. But we have kept the bags themselves of the same size throughout, so that the package they make up should provide what is in the main a common composite physical unit, in which to express the purchasing powers of sums of money at different dates throughout our long period. Whenever the costs of the bagfuls move differently from one another, the changes in the cost of our composite unit will indicate those of the wage-earner's cost of living only to the extent that the make-up of our unit resembles that of his actual basketful. But this will certainly have varied from time to time, particularly when his purchasing power changed as much as this inquiry proves to suggest it did; and the evidence by which we chose the make-up of our unit is in any case fragmentary.

This evidence is set out in Table 1. William Savernak's account book¹ records seven years of the weekly expenditure of a small household—two priests and a servant—at Bridport in Dorset, in the 1450's:

TABLE I
DISTRIBUTION OF OUTLAY BETWEEN CERTAIN HEADS OF
HOUSEHOLD EXPENDITURE

	W. Savernak 1453-60	Davies & Eden 1790's	Board of Trade 1904-13	Weights taken here
1. Farinaceous	% 20	% 53	% 16	% 20
2. Meat, fish	35	12	21½	25
3. Butter, cheese	2	7	16	12½
4. Drink (malt, hops, sugar, tea)	23	9	24	22½
<i>Subtotal, Food</i>	80	81	77½	80
5. Fuel and light	7½	7½	9	7½
6. Textiles	n.a.	11½	13½	12½
<i>Total</i>	87½	100	100	100

within our scope here fall the entries for thirteen articles of food, and for candles and fuel, to the amount of some forty pence a week, or getting on for seven days' pay of a building craftsman at that time. But there is no sufficient record of outlay on clothes, and in showing the distribution of the outlay included in Table 1 over its first five heads, we have allowed them only the 87½ percentage points in all that they

¹ K. L. Wood-Legh, *A Small Household of the Fifteenth Century* (Manchester University Press, 1956).

get in the last column. The second column summarises the accounts of nearly sixty households in the villages or small towns of southern England, that two students of poverty recorded in the 1790's.¹ The third column rests on the estimate made, when the old Cost of Living Index was set up during the First World War, of the distribution of "average pre-war working-class expenditure", and so its detail for food derives mainly from the "1,944 urban working-class budgets collected by the Board of Trade in 1904",² but we have raised the weight of the fourth head and of food as a whole by adding outlay on beer, which we took to be a slightly greater part of all outlay in 1904-13 than in 1938.³

The most striking feature of the Table is the similarity between Savernak's budget and that of the wage-earners four-and-a-half centuries later: Savernak, it is true, spent much more on meat and fish and less on butter and cheese, but the combined weight of these two heads is almost the same in both columns. Davies and Eden portray poor people in hard times, and it is not surprising that they show so great a part of the outlay on food as spent on bread-stuffs: what again is striking is that the distribution of the recorded outlay over food and the two remaining heads should differ so little from the budgets of 1904-13. So it seemed not unreasonable at the outset to adopt the figures of the last column as weights with which to combine the price-indexes of the six heads, all through the centuries: though since this amounts to following the total cost of a package of unchanged physical make-up, it does imply changes from time to time in the proportionate distribution of *outlay*, to the extent that those price-indexes diverged from one another.

But the components under each of those six heads change their own subweights not a little from time to time. Sometimes we made these changes deliberately, to take account of shifting habits of consumption, or the entry of new products; more often our hand was forced by lack of materials. In general, we arranged the subweighting of such series as we selected or were all we had from time to time, according to the detail in the budgets already cited, and failing that, in the half-light of general knowledge: such were our only grounds, for instance, for giving beef and mutton equal weights, and meat of all kinds about five times the weight of fish.⁴

The upshot is illustrated by Table 2, which takes as the unit of our composite commodity what a hundred pence would buy in 1451-75, and shows the articles that made up this unit about the beginning

¹ David Davies, Rector of Barkham, Berks., *The Case of Labourers in Husbandry* (1795). Sir Frederic Morton Eden, Bart., *The State of the Poor* (1797).

² *The Cost of Living Index Number: Method of Compilation*. Ministry of Labour (June 1934).

³ Para. 12 of Supplement No. 2 (January 1948) to the *Industrial Relations Handbook* (Ministry of Labour, 1944).

⁴ The detail of the subweighting is set out, with a table giving separate indexes for the six heads, in a duplicated paper of which a limited supply is available to applicants.

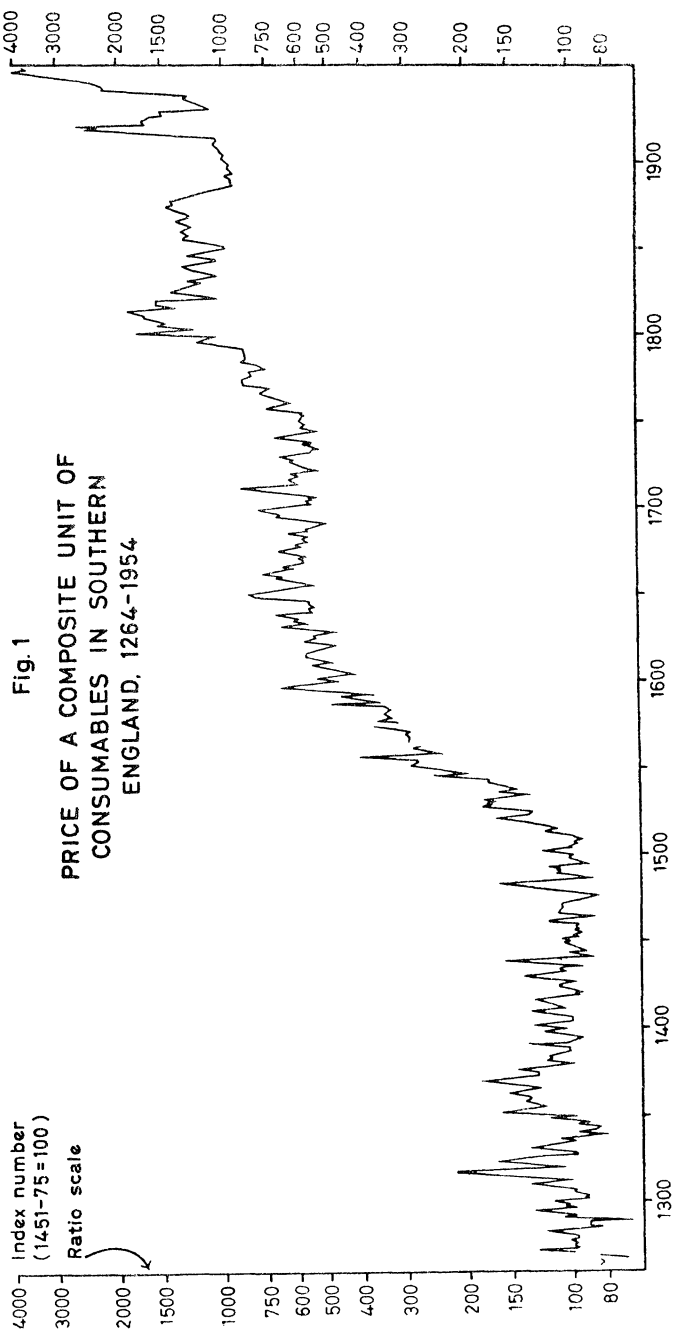


FIG. 2

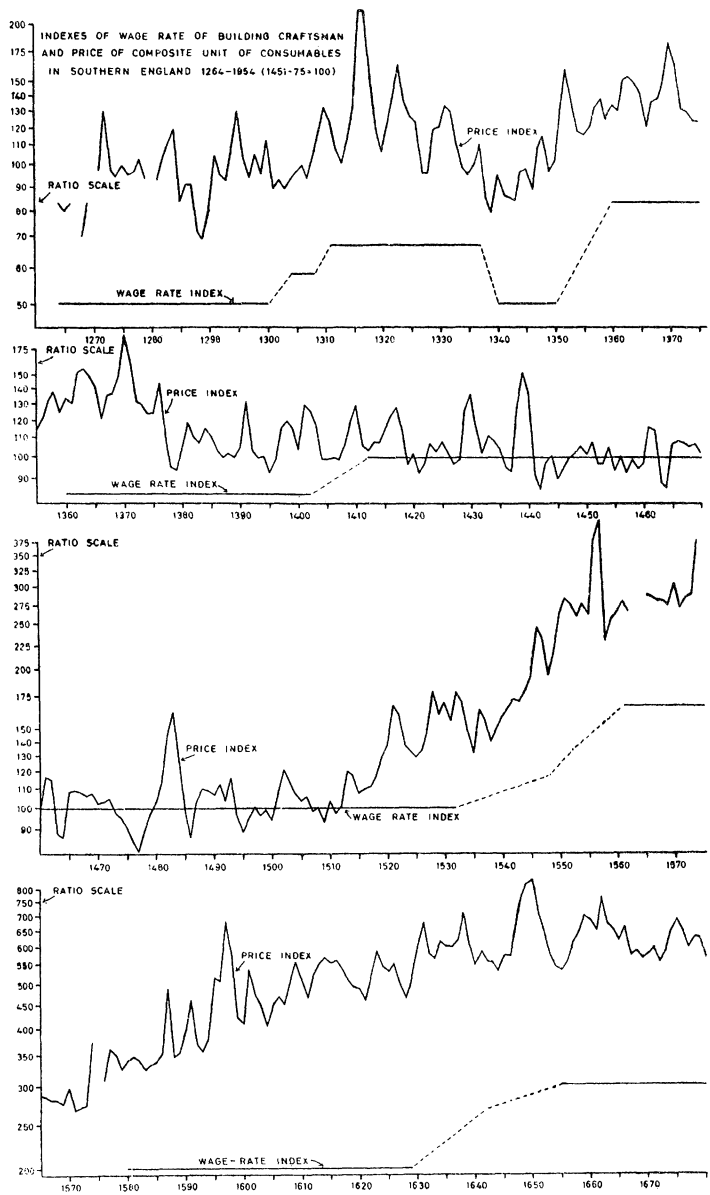
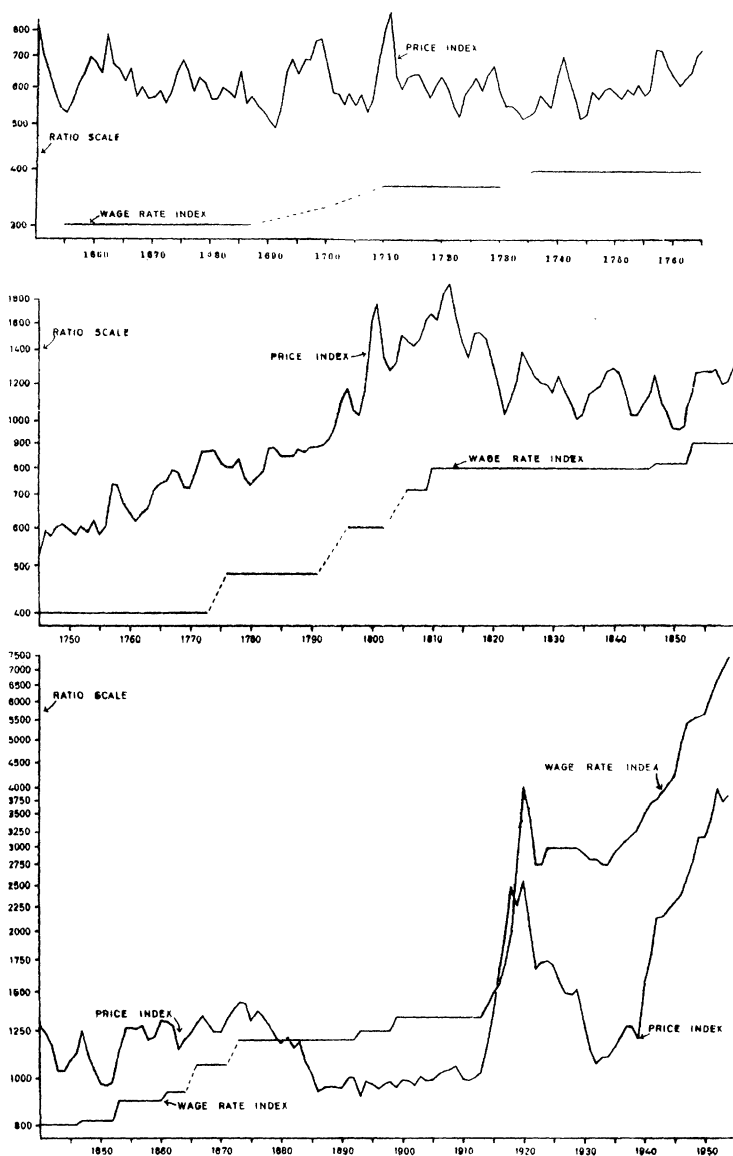
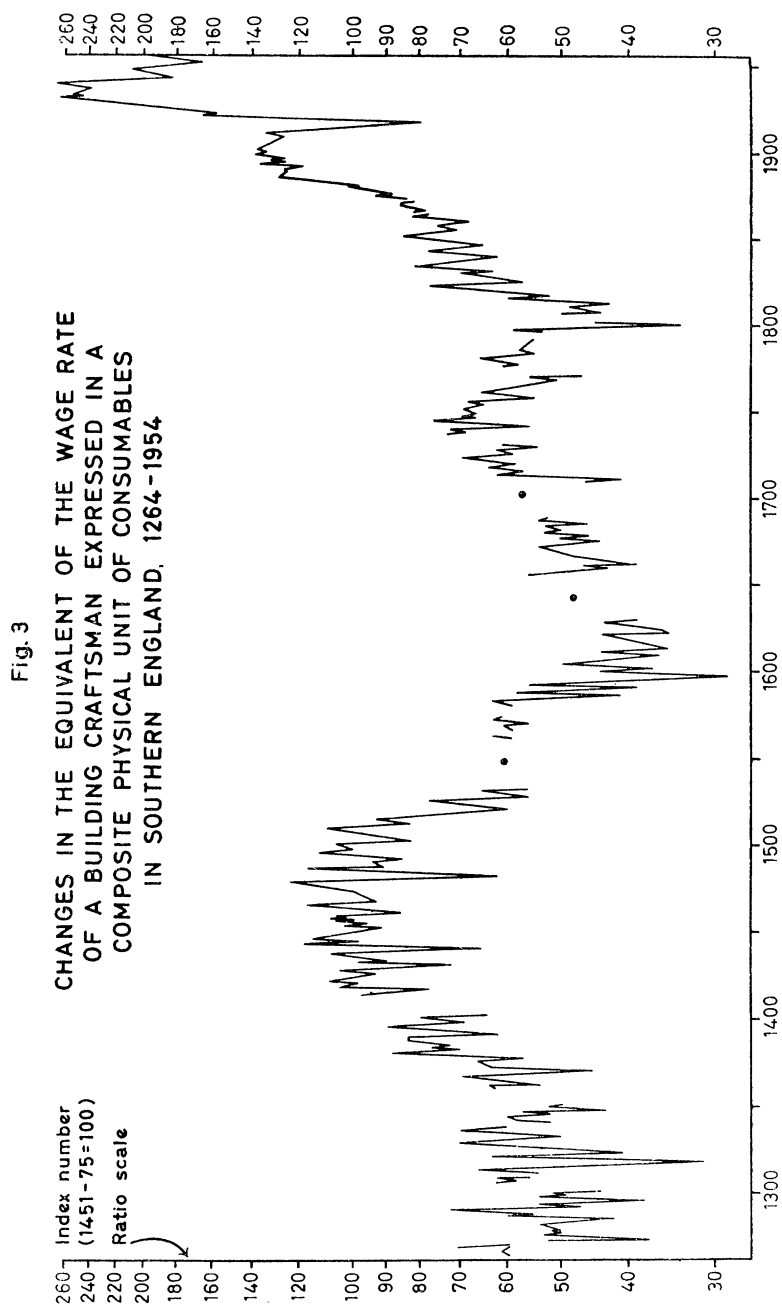


FIG 2 CONTINUED





and end of our period and at two equidistant points between. There is continuity between one year and another in two ways: the weights of the six heads remain the same; when one article takes over outlay from another under the same head, the place of each pennyworth withdrawn is taken by so much of the new article as a penny would

TABLE 2
APPROXIMATE QUANTITIES OF ARTICLES MAKING UP THE COMPOSITE UNIT
OF CONSUMABLES, AROUND FOUR DATES

	1275	1500	1725	1950
1. Farinaceous ..	1½ bush. wheat 1 bush. rye ½ bush. barley ⅔ bush. peas	1½ bush. wheat 1 bush. rye ½ bush. barley ⅔ bush. peas	1½ bush. wheat ¾ bush. rye ½ bush. barley ½ bush. peas	2 bush. wheat 1 cwt. potatoes
2. Meat, fish ..	The meat of ½ pig ½ sheep 40 herrings	The meat of 1½ sheep 15 white herrings 25 red herrings	The meat of ½ sheep 33 lb. beef 1½ salt cod	The meat of ⅔ sheep 28 lb. beef 1½ lb. cod 3 lb. herrings
3. Butter, cheese	10 lb. butter 10 lb. cheese	nil	10 lb. butter 10 lb. cheese	10 lb. butter 10 lb. cheese
4. Drink ..	4½ bush. malt	4½ bush. malt	3½ bush. malt 3 lb. hops 1½ lb. sugar	2½ bush. malt 2½ lb. hops 5 lb. sugar 4½ lb. tea
5. Fuel, light ..	nil	4½ bush. charcoal 2½ lb. candles ½ pt. oil	1½ bush. charcoal 1 cwt. coal 2½ lb. candles ½ pt. oil	2 cwt. coal 5½ pts. paraffin 300 cu. ft. coal gas
6. Textiles ..	3½ yd. canvas	⅔ yd. canvas ½ yd. shirting ⅔ yd. woollen cloth	½ yd. woollen cloth	¾ lb. wool yarn 3 yds. printer's cotton cloth

buy at its own price, or the price of its lineal forbear, in the base period. It is in this limited sense that we can regard our changing package as providing a common unit in different years: and even say, for instance, that in the 1930's the craftsman's rate would cover five of these units for every one it covered around 1300. This is far from measuring changes in the standard of living, but it tells us something about them. Yet the very size of the changes it suggests brings out one of its limitations: for it takes the relative quantities of the main heads as constant, whereas in such a fall, for instance, in the purchasing power of the wage as the sixteenth century brought, the proportion of meat to bread must surely have fallen.

II

The sources we have drawn on for our prices are set out in Appendix A. Two of them are outstanding. We are reaping where other men have sown, and for any interest this study may afford, the credit belongs to Thorold Rogers and Beveridge.

Until early in the nineteenth century, most of our prices record what was paid by buyers in a local market or annual fair, or what a local purveyor charged for supplies delivered to the consumer's door. Rogers' prices come mostly from the accounts of the manors of Oxford colleges, and the provisioning of Oxford and Cambridge colleges themselves, with the similar household accounts of some great lay and monastic landlords. Most of the prices we have taken from Beveridge come from the accounts of colleges and hospitals, and from the Navy Victualling service. In sum, these prices give the terms on which raw or partially processed materials were available to consumers who bought locally in some bulk. But after Beveridge's records end, in the early nineteenth century, we have gone on with prices that are wholesale in the modern sense—quotations from the organised produce markets, and average values of imports or exports. We know how these show more and bigger movements than the prices paid for small quantities at retail. It is a further limitation that we have been able to include few fabricated articles. So our prices are not those at which the craftsman's wage was spent with the butcher, the baker, the candlestick maker; they do measure changes in the command of money over some of the main materials of consumption, at points where these are bought in some bulk, and when such changes were substantial and sustained they would come through to the craftsman; but even so, our index is still not responsive enough to changes in the costs of fabrication.

There are other respects in which these materials fall short. For one thing, they make no allowance for changes in quality: how like or unlike were the three quarters of wheat that were sold at Easington near Thame and helped make up our index for 1264, to the Manitoba No. 1 that is the subject of our last quotations? Changes in quantity as well as quality may have crept in, when provisioning went on, as it often did, for a long run of years at an unchanging price; or other adjustments, not recorded in the price, would have been made in the payment from time to time: our only remedy was to avoid all such constant series as far as possible, though sometimes they will have meant what they said. The worst shortcoming is the absence of some annual records altogether: especially for fuel and light in the earliest years, butter and cheese in the fifteenth and sixteenth centuries, and fish in the eighteenth. There are also many gaps, here and there, of a year or two at a time. It has been a matter of judgment, place by place, which of three possible courses to follow: simply accept the gap and carry the index on with the remaining series; transfer the weight of the missing series to some other that is close akin to it; fill the gap by interpolation.

To give our price-series their place in the index for the composite commodity, we had to express each as a relative to its own average in a common base-period. This is 1451-75, chosen because it lies within a long period of stability in the trend of prices—though it turns out to have been a time of exceptional prosperity. But of course many series do not run through it, and these we have had to set in their right relation to those that do. Often this raised no problem: if a new series differed from an old only by giving the price of another grade or region, and the two moved together through a number of years of overlap, then splicing was straightforward. But if either of these conditions was absent, we had to be wary of falsifying the whole later course of the new index by including some abnormality in the splice, or misplacing a turning-point by choosing the wrong place at which to join two series of divergent trends. Again, when the new series was not merely a variant of some old one, but brought a new commodity in—when hops appeared in the sixteenth century, for example, or potatoes in the eighteenth—we had to select the old series that seemed most akin to it, to join it to: so we joined hops to malt, and potatoes to peas. This involved the absurdity, if you will, of saying that potatoes cost four times as much in 1785 as in 1451-75, when there were none: but we can give an intelligible cast to this if we take potatoes and peas as two spokesmen, so to speak, for the one class of vegetables, and think of the one being brought in to supplement or take over from the other, just as when a series for beef becomes available we bring it in to supplement the price of mutton and fill out the index for meat.

III

Our findings are summarised in Appendix B and displayed in the three figures. Many of them will be familiar to the economic historian. It is to his knowledge, and to the more detailed study of our present materials period by period, that we must look for answers to the questions they seem to raise.

The index of prices has two periods each of about 130 years, 1380-1510, and 1630-1760, throughout which there is constancy in the general level, and this surprising stability, as it seems to us, was maintained through fluctuations of two or three years' span, due no doubt mostly to the harvest, whose violence seems no less extraordinary: what was the secret of this stability, and how was it held through such vibration? There are also two periods, about 1270-1380, and 1815-1914, when a trend that is fairly level from end to end is modulated by "secondary secular movements", as we call them now: what makes the difference between the two sorts of period? The most marked feature of Fig. 1 is the extent, and persistence, of the Tudor inflation: what carried it on so far, and why did it end when it did? For a century and more. it seems, prices will obey one all-powerful law; it changes, and a new law prevails; a war that would have cast the trend up to new heights in one dispensation is powerless to deflect it in another. Do

we yet know what are the factors that set this stamp on an age; and why, after they have held on so long through such shakings, at last they give way, quickly and completely, to others?

The simplest impression of the physical equivalent of the wage-rate, that Fig. 3 displays, is of a level much the same throughout, broken through only by a time of much greater prosperity from 1380 to 1510, and a rise that sets in at the last, from 1820 onwards, and carries us up to a new region altogether. We can go on to notice some differences in the level: the depths, for instance, to which it fell at the ends of the sixteenth century and the eighteenth, and the substantial rise from the Civil War to the 1740's. In considering all these things we want to know how far our building craftsman was representative of working men generally, whether wage-earners or not, and it is relevant here that the building labourer's rate did change in the same proportion as the craftsman's with great consistency from the Black Death to the First World War. If the movements of Fig. 3 were indeed not confined to certain crafts but were of some generality, then their size and shape mark deepgoing economic changes. Was it an advance in productivity, deserving the title of revolution, that about doubled the commodity equivalent between the Black Death and Agincourt, and held it at its new level for nearly a century? A drastic fall set in about 1510: the level enjoyed at the accession of Henry VIII was not to be reached again until 1880; the lowest point we record in seven centuries was in 1597, the year of the *Midsummer Night's Dream*. Do we not see here a Malthusian crisis, the effect of a rapid growth of population impinging on an insufficiently expansive economy; such as perhaps we see also in the fall that set in again around 1750, until this time a commercial and industrial revolution came to save Britain from the fate of Ireland?

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APPENDIX A

LIST OF PRICE SERIES

ABBREVIATIONS

AS: Annual Statements of the Trade of the U.K.

B: Sir Wm. Beveridge and others: Prices and Wages in England from the Twelfth to the Nineteenth Century. Vol. I.

BPP: British Parliamentary Papers.

JRSS: Journal of the Royal Statistical Society, annual reports on wholesale prices by the Editor of *The Statist*.

PWH: Price and Wage History Research, manuscript materials, collected under the direction of Sir Wm. Beveridge, in the Institute of Historical Research, University of London.

R: J. E. Thorold Rogers: A History of Agriculture and Prices in England.

TN: Tooke and Newmarch: A History of Prices and of the State of the Circulation from 1792 to 1856.

WRP: Report on Wholesale and Retail Prices in the U.K., BPP 1903, LXVIII, 321.

DATES

Dates given for series record the length used here, either as a component of the final index or for splicing; the original is sometimes longer. We have entered the average price for a harvest year against the calendar year beginning during that harvest year, e.g. against Mich. 1400—Mich. 1401 we put the calendar year 1401.

SERIES

(01) *Wheat 1264–1703*: average of prices recorded, mostly in manorial and college accounts, in Southern England. R, I, 226–234; IV, 282–290; V, 268–274. (02) *Wheat 1583–1770*: mean of prices at Lady Day and Michaelmas, found in Oxford college accounts of payments of rent in kind. TN, VI, 427–436, from W. F. Lloyd, 1830. (03) *Wheat 1595–1826*: mean of prices at Lady Day and Michaelmas, taken by Eton College from the Windsor market, for the purpose of rent audit. 1595–1770, TN, VI, 352. 1646–1826, TN, II, 387–9. (04) *Wheat 1631–1818*: annual averages of prices paid by Winchester College. B, 18, 81–84. (05) *Wheat 1771–1954*: Gazette Average prices, England and Wales, weekly since 24 Nov. 1770 in the London Gazette, here from: 1771–1841, "Porter's Tables", XI, 69 (BPP 1843, LVI): 1842–1902, WRP, 70–71; 1903–54, Statistical Abstract of the U.K. (06) *Wheat 1854–1907*: average value of wheat imported into the U.K.: 1854–70, "computed real values"; 1871+, "declared values". WRP, 80; and AS. (07) *Wheat 1905–52*: market quotations for Northern Manitoba Wheat, No. 1 except 1924–38, when No. 2. Price at 1st Jan. 1906–12; thereafter at "end year"; price at 1st Jan., 1906 taken here as for end year 1905, and so on. *The Economist*, Annual Commercial History and Review, through 1953, then British Wholesale Prices. (08) *Barley 1264–1833*: average of prices recorded, mainly in manorial, college and church accounts, and in southern and eastern counties, but Durham included 1341–1541, and some northern counties 1771–1822. Entries sparse 1542–1728. PWH. (09) *Rye 1264–1540, 1688–1782*: same origins as 08; mainly Winchester manors and eastern counties down to 1454: 1455–1540 Dorset and Durham only; from 1688 Kent and Middlesex. PWH. (10) *Peas 1264–1685*: same origins as 01. R, I, 227–235; IV, 283–291; V, 269–275. (11) *Peas 1686–1790*: average price at which Navy Victualling bought peas under short-period contracts. B, 538–9, 567–9. (12) *Peas 1791–1809*: presumably for England and Wales; from "An Account of the Average Price of all sorts of Grain in each Year", 1791–1821, BPP 1821, XVII, 11. (13) *Peas 1810–1833*: London Gazette Average prices, England and Wales, taken here from "Porter's Tables", XI, 69 (BPP, 1843, LVI). (14) *Potatoes 1762–1830*: average price of old potatoes bought by the Lord Steward's department. B, 374–6, 427. (15) *Potatoes 1832–45*: 1832–36, middlings and middling whites from Borough and Spitalfields markets; 1837–45 Yorkshire reds, 1846–50 Yorkshire Regents, at Southwark Waterside. Averages of weekly quotations for October in each year, given in *The Christian Advocate and Mark Lane Express*. (16) *Potatoes 1846–84*: average of prices in Jan.-Apr. and Sept.-Dec. annually, of good English, mostly Kent Regents. A. Sauerbeck, "Prices of Commodities and the Precious Metals", JRSS, XLIX (1886), 636. (17) *Potatoes 1885–1954*: London wholesale prices, grade A or good English. *The Economist*. (18) *Porci 1264–1460*: same origins as 01. 1264–1401, annual averages from R, I, 342–50. 1402–60, median or mean of entries from southern and eastern

counties, in R, III, 122–202. (19) *Muttons 1265–1582*: same origins as 01. 1265–1401, median of entries from southern and eastern counties, in R, II, 184–269. 1402–1582, 3-year moving average of highest price found in each year, reduced by a quarter throughout; a few exceptionally high entries omitted. R, IV, 346–54. (20) *Beef 1584–1659*: purchases by King's College, Cambridge; apparently annual averages. R, V, 347–51. (21) *Beef 1587–1767*: purchases by St. Bartholomew's Hospital, Sandwich, in August of each year. B, 219–21, 236–7. (22) *Beef 1602–21*: purchases by estate of Theydon Gernon, Essex; apparently annual average. R, V, 356. (23) *Mutton 1602–1700*: purchases of mutton by Eton College from the college butcher; annual averages. B, 112, 144–6. (24) *Mixed beef and mutton 1613–87*: purchases by Winchester College; weighted average of prices for the two kinds, including *ex gratia* payments to the butcher to compensate for losses. B, 33–5, 81–3. (25) *Beef 1683–1797*: Beef for salting bought by Navy Victualling, London. 1683–1747, from Arthur Young, Political Arithmetic, pp. 139–141, apparently annual averages; 1748–97, annual average of varying number of monthly entries in B, 548–53, 568–72. (26) *Beef 1688–1833*: purchases by St. Thomas's Hospital, Southwark; average of prices at Lady Day and Michaelmas. "Porter's Tables", BPP, 1835, XLIX, 390. (27) *Mutton 1701–1831*: market prices used to fix the money payments due from tenants of Eton College farms in lieu of rent sheep; average of prices at Lady Day and Michaelmas. B, 112, 146–7. (28) *Mutton 1725–1833*: as for 26. (29) *Beef 1789–1865*: annual average of monthly price (from 1792 mean of highest and lowest price on a day near end of month) at Smithfield market, London: extracted by Dr. A. H. John from contemporary sources (from 1796 onwards, the *Gentleman's Magazine*). (30) *Mutton 1796–1865*: as for 29 from 1796 onwards. (31) *Beef 1858–1954*: 1858–1914, mean of highest and lowest prices of inferior middling butcher's meat, Newgate or Smithfield, at beginning of each year; 1913–27, mean of prices of middling and prime at end of year; 1924–47, imported chilled hindquarters (Argentine 1924–38, New Zealand 1939–47); 1948 onwards, "beef imported". *The Economist*, Annual Commercial History and Review through 1953, then British Wholesale Prices. (32) *Mutton 1858–1954*: 1858–90, mean of highest and lowest prices for middling butcher's meat, Newgate or Smithfield, and 1891–1914, price of middling, at beginning of year throughout; 1913–27, mean of middling and prime at end of year; 1924–54, imported (1924–38 New Zealand frozen wethers) at end of year. *The Economist*, Annual Commercial History and Review through 1953, then British Wholesale Prices. (33) *Herrings 1264–1400*: kind not specified; most of earlier entries from E. Anglia, and of later from monastic accounts esp. Wolrichston in Warwickshire. R, I, 635–640. (34) *White Herrings 1404–1590*: generally bought at Stourbridge fair. Through 1583, R, IV, 540–544; 1584–90, from entries in R, VI, 392–4. (35) *Red Herrings 1405–1561*: generally bought at Stourbridge fair. R, IV, 540–544. (36) *Haberdens (salt cod) 1584–1703*: mostly from King's College, Cambridge, and probably mostly bought at Stourbridge fair. R, V, 427–8. (37) *Crimped (dried) cod 1783–1830*: Lord Steward's dept. B, 369–71, 370. (38) *Fresh cod 1783–1830*: Lord Steward's dept. B, 369–71, 420–1. (39) *Herrings 1827–1902*: average declared value per barrel exported, 1827–39, from "Porter's Tables" in various BPP, 1836–43; 1840–1902, WRP, 158. (40) *Herrings 1898–1938, 1945–54*: average value per cwt. of British takings landed. Annual Reports on Sea Fisheries,

later Sea Fisheries Statistical Tables, of Board, later Ministry, of Agriculture. (41) *Cod 1898-1938, 1945-54*: as for 40. (42) *Cheese 1264-1429*: same origins as 01; numerous gaps in 14th century; 1401-1429, Hornchurch (Essex) only. R, I, 430-5; III, 209-212. (43) *Cheese 1573-1752*: Suffolk cheese bought by St. Bartholomew's Hospital, Sandwich. Numerous gaps. B, 223-5, 238-40. (44) *Cheese 1684-1758*: Suffolk cheese bought by Navy Victualling, London. B, 555-6, 576. (45) *Cheese 1703-96*: Gloucester cheese bought by Chelsea Hospital, London. B, 308, 313. (46) *Cheese 1713-1824*: Gloucester cheese bought by Greenwich Hospital. B, 261, 293, 295. (47) *Cheese 1756-1827*: Cheshire cheese bought by Navy Victualling, London. B, 555-6, 576. (48) *Cheese 1815-1902*: cheese (unspecified) bought by Bethlem Royal Hospital, London. Contract price 1815-71, thereafter open market. WRP, 150. (49) *Cheese 1854-1954*: average value per cwt. of cheese imported into U.K. AS. (50) *Butter 1264-1379*: same origins as 01. R, I, 430-434. (51) *Butter 1561-1702*: 1561-83, Oxford city accounts; 1584-1702, average of prices recorded mostly by New College Oxford, King's College, Cambridge, and Winchester. R, III, 217-8; V, 372-8. (52) *Butter 1659-1767*: fresh butter bought by St. Bartholomew's Hospital, Sandwich. B, 222-3, 236. (53) *Butter 1684-1827*: purchases by Navy Victualling, London. B, 555, 576. (54) *Butter 1805-1902*: contract prices paid by Royal Hospital, Greenwich. WRP, 139. (55) *Butter 1815-1902*: contract prices 1815-71, market prices 1872-1902, paid by Bethlem Royal Hospital, London. WRP, 140. (56) *Butter 1886-1954*: average value of butter imported into the U.K. AS. (57) *Malt 1266-1703*: specified as "first quality" through 1401, unspecified afterwards; same origins as 01. R, I, 227-235; IV, 283-291; V, 268-274. (58) *Malt 1596-1832*: Windsor market prices, average of Michaelmas and Lady Day, recorded by Eton College for assessing money due in lieu of malt rents. B, 111, 144-147. (59) *Malt 1684-1827*: price paid by Navy Victualling, London. B, 547-8, 574-5. (60) *Malt 1805-65*: contract price paid by Royal Hospital, Greenwich. J. R. McCulloch, Dictionary of Commerce (1882 edn.), 1138-40. (61) *Malt 1863-1954*: average declared value of exports. AS. (62) *Hops 1559-1594*: mainly Flemish; price paid by Eton College. B, 108, 143-4. (63) *Hops 1584-1703*: English; mainly Eton and King's College, Cambridge, with Winchester coming in from 1644. R, V, 289-301. (64) *Hops 1684-1827*: kind unspecified; bought by Navy Victualling, London. B, 539-40, 567-569. Some gaps filled according to movement of Greenwich Hospital price, B, 254-5, 292, 294. (65) *Hops 1805-64*: average contract price paid by Royal Hospital, Greenwich. WRP, 88. (66) *Hops 1854-1914*: average declared value of imports. AS. (67) *Hops 1906-54*: index no. of average price of home-grown hops. Ministry of Agriculture: Agricultural Statistics. (68) *Sugar 1689-1771*: brown, bought by Navy Victualling, London. Gaps after 1750 filled by reference to Navy Victualling, Plymouth. B, 557-8, 565. (69) *Sugar 1765-1831*: powder or Lisbon, bought by Lord Steward's dept. B, 383-5, 429-431. (70) *Sugar 1820-1954*: average declared export value. 1820-1902, WRP, 165; 1903-54, AS. (71) *Tea 1801-71*: average price in bond. WRP, 176-7. (72) *Tea 1854-1954*: average declared value of imports. 1854-1902, WRP, 173; 1903-54, AS. (73) *Charcoal 1441-1583*: mostly at Oxford and Cambridge. R, IV, 383-7. (74) *Charcoal 1442-1583*: as for 73. R, IV, 383-7. (75) *Charcoal 1551-1785*: price paid by Eton College. B, 119-22, 143-7. (76) *Charcoal 1584-1703*: at Oxford or Winchester. R, V, 398-405. (77) *Charcoal*

1584-1703: at Cambridge, mainly King's College. R, V, 398-405. (78) *Charcoal 1609-47*: at Oxford. R, V, 398-401. (79) *Charcoal 1576-1785*: price paid by Westminster (School and Abbey). B, 177-8, 193-5. (80) *Coal 1584-1703*: usually Newcastle coal, bought at Cambridge, mostly by King's College. R, V, 398-404. (81) *Coal 1586-1831*: bought for Westminster (School and Abbey) brewery 1586-1619, College 1620-1831. B, 173-7, 193-6. (82) *Coal 1654-1832*: bought for Eton College brewery. B, 116-9, 145-7. (83) *Coal 1717-1902*: Newcastle coal delivered Royal Naval Hospital, Greenwich. B, 264-7, 294-5. (84) *Coal 1846-1954*: price in London of Wallsend Hetton, 1846-1916, best Yorkshire house coal after 1916: JRSS. (85) *Candles 1321-1703*: same origins as 01. R, I, 439-44; IV, 376-80; V, 398-404. (86) *Candles 1645-1831*: price paid by Eton College, less tax. B, 128-9, 145-7. (87) *Candles 1703-1811*: price paid by Chelsea Hospital, less tax. B, 311-2, 313. (88) *Candles 1713-1868*: price paid by Greenwich Hospital, less tax. B, 271, 293-5. J. R. McCulloch, Dictionary of Commerce, 1138-40. (89) *Tallow 1846-1910*: town. JRSS. (90) *Oil 1402-1535*: olive and rape oil, mainly at Oxford and Cambridge. R, IV, 376-9. (91) *Oil 1567-1783*: train-oil bought for Naval Stores. B, 633-4, 670-4, 680. (92) *Oil 1783-1853*: Northern (1783-1839), Southern (1840-53), oil, without casks. TN, II, 394-5, 407; III, 297; IV, 430; VI, 504. (93) *Oil 1854-1880*: price exclusive of duty of train or blubber oil, from the Northern whale fishery and British North America: AS. (94) *Oil 1856-1912*: average import value of petroleum, illuminating and lubricating: AS. (95) *Oil 1903-54*: average import value of petroleum, lamp oil, later called Kerosene (burning oil): AS. (96) *Gas 1876-1954*: price paid by domestic consumers: 1876-1937, mean of prices of three London gas companies. Report from the Select Committee on Gas Undertakings, BPP, 1918, III, appx. 4. 1949-54, price of North Thames Gas Board, from Annual Reports; rise 1937-49 distributed by years according to rise in price of coal. (97) *Canvas 1265-1583*: same origins as 01. R, I, 587-92; IV, 583-88. (98) *Shirting 1402-1583*, *Sheeting or Shirting 1584-1701*: same origins as 01. R, IV, 583-88; V, 561-4. (99) *Linen and Canvas 1506-1673*: price paid by Eton College. B, 131-2, 143-5. (100) *Cloth 1394-1624*: bought by Winchester College for scholars and servants. B, 45-6, 85-89, 90. (101) *Cloth 1394-1554*: bought by Winchester College for fellows, stewards and others. B, 46-7, 85-7. (102) *Cloth 1402-1583*: average of three qualities of cloth, bought mainly by New College, Oxford and King's College, Cambridge. R, IV, 583-8. (103) *Cloth 1576-1757*: broad cloth bought for scholars of Westminster School. B, 182, 193-6. (104) *Cloth 1615-1757*: bought for scholars and choristers of Eton College. B, 130-1, 144-7. (105) *Cloth 1748-1829*: blue cloth bought by Greenwich Hospital. B, 273, 293, 295. (106) *Yarn, woollen and worsted, 1831-1954*: average declared value of exports. 1831-9, "Porter's Tables" in BPP; then AS. (107) *Cotton cloth 1812-60*: average price paid by printers per piece of 7/8-72 reed printing cloth. JRSS, 1861, 491-7. (108) *Cotton cloth 1858-1954*: 1858-1906, mean of 26 in. 66 reed printer's cloth and 40 in. 66 reed shirting; 1897-1950, 38 in. or 39 in. shirting; 1949-54, a printer's cloth. *The Economist*, Annual Commercial History and Review.

APPENDIX B

INDEXES (1451-75 = 100) OF (1) PRICE OF COMPOSITE UNIT OF CONSUMABLES ; (2) EQUIVALENT OF WAGE-RATE OF BUILDING CRAFTSMAN, EXPRESSED IN THE ABOVE COMPOSITE PHYSICAL UNIT ; IN SOUTHERN ENGLAND, 1264-1954.

	(1)	(2)		(1)	(2)		(1)	(2)		(1)	(2)
1260			1300	113	44	1340	96	52	1380	106	78
1261			1301	89	—	1341	86	58	1381	119	70
1262			1302	93	—	1342	85	59	1382	111	75
1263			1303	89	—	1343	84	60	1383	108	77
1264	83	60	1304	94	62	1344	97	52	1384	116	72
1265	80	63	1305	97	60	1345	98	51	1385	112	74
1266	83	60	1306	100	58	1346	88	57	1386	104	80
1267	—	—	1307	94	62	1347	109	46	1387	100	83
1268	70	71	1308	105	55	1348	116	43	1388	102	81
1269	83	60	1309	119	—	1349	97	52	1389	100	83
1270	—	—	1310	135	—	1350	102	49	1390	106	78
1271	98	51	1311	123	54	1351	134	—	1391	133	62
1272	130	38	1312	108	62	1352	160	—	1392	104	80
1273	98	51	1313	101	66	1353	138	—	1393	100	83
1274	95	53	1314	112	60	1354	117	—	1394	101	82
1275	100	50	1315	132	51	1355	115	—	1395	93	89
1276	96	52	1316	216	31	1356	121	—	1396	99	84
1277	97	52	1317	215	31	1357	133	—	1397	116	72
1278	103	49	1318	154	44	1358	139	—	1398	121	69
1279	94	53	1319	119	56	1359	126	—	1399	113	73
1280	94	53	1320	106	63	1360	135	61	1400	104	80
1281	93	54	1321	121	55	1361	131	63	1401	130	64
1282	104	48	1322	141	48	1362	153	54	1402	127	65
1283	111	45	1323	165	41	1363	155	54	1403	119	—
1284	120	42	1324	137	49	1364	151	55	1404	99	—
1285	83	60	1325	127	53	1365	143	58	1405	99	—
1286	91	55	1326	124	54	1366	121	69	1406	100	—
1287	91	55	1327	96	70	1367	137	61	1407	99	—
1288	72	69	1328	96	70	1368	139	60	1408	107	—
1289	69	72	1329	119	56	1369	150	55	1409	120	—
1290	80	63	1330	120	56	1370	184	45	1410	130	—
1291	106	47	1331	134	50	1371	164	51	1411	106	—
1292	96	52	1332	131	51	1372	132	63	1412	103	97
1293	93	54	1333	111	60	1373	131	63	1413	108	93
1294	110	45	1334	99	68	1374	125	66	1414	108	93
1295	131	38	1335	96	70	1375	125	66	1415	115	87
1296	104	48	1336	101	66	1376	146	57	1416	124	81
1297	93	54	1337	111	60	1377	112	74	1417	129	78
1298	106	47	1338	85	—	1378	95	87	1418	114	88
1299	96	52	1339	79	—	1379	94	88	1419	95	105

APPENDIX B—*Continued*

	(1)	(2)		(1)	(2)		(1)	(2)		(1)	(2)
1420	102	98	1470	102	98	1520	137	73	1570	300	56
1421	93	108	1471	103	97	1521	167	60	1571	265	63
1422	97	103	1472	104	96	1522	160	63	1572	270	62
1423	108	93	1473	97	103	1523	136	74	1573	274	61
1424	103	97	1474	95	105	1524	133	75	1574	374	—
1425	109	92	1475	90	111	1525	129	78	1575	—	—
1426	103	97	1476	85	118	1526	133	75	1576	309	—
1427	96	104	1477	81	123	1527	147	68	1577	363	—
1428	99	101	1478	89	112	1528	179	56	1578	351	—
1429	127	79	1479	97	103	1529	159	63	1579	326	—
1430	138	72	1480	103	97	1530	169	59	1580	342	58
1431	115	87	1481	115	87	1531	154	65	1581	347	58
1432	102	98	1482	145	69	1532	179	56	1582	343	58
1433	112	89	1483	162	62	1533	169	—	1583	324	62
1434	109	92	1484	128	78	1534	145	—	1584	333	60
1435	105	95	1485	99	101	1535	131	—	1585	338	59
1436	95	105	1486	86	116	1536	164	—	1586	352	57
1437	93	108	1487	103	97	1537	155	—	1587	491	41
1438	128	78	1488	110	90	1538	138	—	1588	346	58
1439	154	65	1489	109	92	1539	147	—	1589	354	56
1440	140	71	1490	106	94	1540	158	—	1590	396	51
1441	93	108	1491	112	89	1541	165	—	1591	459	44
1442	85	118	1492	103	97	1542	172	—	1592	370	54
1443	97	103	1493	117	85	1543	171	—	1593	356	56
1444	102	98	1494	96	104	1544	178	—	1594	381	52
1445	87	115	1495	89	112	1545	191	—	1595	515	39
1446	95	105	1496	94	106	1546	248	—	1596	505	40
1447	100	100	1497	101	99	1547	231	—	1597	685	29
1448	102	98	1498	96	104	1548	193	61	1598	579	35
1449	106	94	1499	99	101	1549	214	—	1599	474	42
1450	102	98	1500	94	106	1550	262	—	1600	459	44
1451	109	92	1501	107	93	1551	285	—	1601	536	37
1452	97	103	1502	122	82	1552	276	48	1602	471	42
1453	97	103	1503	114	88	1553	259	—	1603	448	45
1454	105	95	1504	107	93	1554	276	—	1604	404	50
1455	94	106	1505	103	97	1555	270	—	1605	448	45
1456	101	99	1506	106	94	1556	370	—	1606	468	43
1457	93	108	1507	98	102	1557	409	—	1607	449	45
1458	99	101	1508	100	100	1558	230	—	1608	507	39
1459	95	105	1509	92	109	1559	255	—	1609	559	36
1460	97	103	1510	103	97	1560	265	—	1610	503	40
1461	117	85	1511	97	103	1561	283	59	1611	463	43
1462	115	87	1512	101	99	1562	266	63	1612	524	38
1463	88	114	1513	120	83	1563	—	—	1613	549	36
1464	86	116	1514	118	85	1564	—	—	1614	567	35
1465	108	93	1515	107	93	1565	290	58	1615	561	36
1466	109	92	1516	110	90	1566	287	58	1616	562	36
1467	108	93	1517	111	90	1567	282	59	1617	537	37
1468	106	94	1518	116	86	1568	281	59	1618	524	38
1469	107	93	1519	129	78	1569	276	61	1619	494	40

APPENDIX B—*Continued*

	(1)	(2)		(1)	(2)		(1)	(2)		(1)	(2)
1620	485	41	1670	577	52	1720	635	58	1770	714	56
1621	461	43	1671	595	50	1721	604	61	1774	775	52
1622	523	38	1672	557	54	1722	554	66	1772	858	47
1623	588	34	1673	585	51	1723	525	70	1773	855	47
1624	543	37	1674	650	46	1724	589	62	1774	863	—
1625	534	37	1675	691	43	1725	610	60	1775	815	—
1626	552	36	1676	652	46	1726	637	58	1776	797	61
1627	496	40	1677	592	51	1727	596	62	1777	794	61
1628	466	43	1678	633	47	1728	649	57	1778	826	58
1629	510	39	1679	614	49	1729	681	54	1779	756	64
1630	595	—	1680	568	53	1730	599	61	1780	730	66
1631	682	—	1681	567	53	1731	553	—	1781	760	64
1632	580	—	1682	600	50	1732	557	—	1782	776	62
1633	565	—	1683	587	51	1733	544	—	1783	869	56
1634	611	—	1684	570	53	1734	518	—	1784	874	55
1635	597	—	1685	651	46	1735	529	—	1785	839	58
1636	593	—	1686	559	54	1736	539	74	1786	839	58
1637	621	—	1687	580	52	1737	581	69	1787	834	58
1638	707	—	1688	551	—	1738	563	71	1788	867	56
1639	607	—	1689	535	—	1739	547	73	1789	856	56
1640	546	—	1690	513	—	1740	644	62	1790	871	55
1641	586	—	1691	493	—	1741	712	56	1791	870	55
1642	557	48	1692	542	—	1742	631	63	1792	883	—
1643	553	—	1693	652	—	1743	579	69	1793	908	—
1644	531	—	1694	693	—	1744	518	77	1794	978	—
1645	574	—	1695	645	—	1745	528	76	1795	1091	—
1646	569	—	1696	697	—	1746	594	67	1796	1161	52
1647	667	—	1697	693	—	1747	574	70	1797	1045	57
1648	770	—	1698	767	—	1748	599	67	1798	1022	59
1649	821	—	1699	773	—	1749	609	66	1799	1148	52
1650	839	—	1700	671	—	1750	590	68	1800	1567	38
1651	704	—	1701	586	57	1751	574	70	1801	1751	34
1652	648	—	1702	582	—	1752	601	67	1802	1348	45
1653	579	—	1703	551	—	1753	585	68	1803	1268	—
1654	543	—	1704	587	—	1754	615	65	1804	1309	—
1655	531	56	1705	548	—	1755	578	69	1805	1521	—
1656	559	54	1706	583	—	1756	602	66	1806	1454	49
1657	612	49	1707	531	—	1757	733	55	1807	1427	50
1658	646	46	1708	571	—	1758	731	55	1808	1476	49
1659	700	43	1709	697	—	1759	673	59	1809	1619	44
1660	684	44	1710	798	46	1760	643	62	1810	1670	48
1661	648	46	1711	889	41	1761	614	65	1811	1622	49
1662	769	39	1712	638	58	1762	638	63	1812	1836	44
1663	675	44	1713	594	62	1763	655	61	1813	1881	43
1664	657	46	1714	635	58	1764	713	56	1814	1642	49
1665	616	49	1715	646	57	1765	738	54	1815	1467	55
1666	664	45	1716	645	57	1766	747	54	1816	1344	60
1667	577	52	1717	602	61	1767	790	51	1817	1526	52
1668	602	50	1718	575	64	1768	781	51	1818	1530	52
1669	572	52	1719	609	60	1769	717	56	1819	1492	54

APPENDIX B—*Continued*

	(1)	(2)		(1)	(2)		(1)	(2)		(1)	(2)
1820	1353	59	1860	1314	68	1900	994	134	1940	1574	222
1821	1190	67	1861	1302	72	1901	986	135	1941	1784	206
1822	1029	78	1862	1290	72	1902	963	138	1942	2130	176
1823	1099	73	1863	1144	82	1903	1004	133	1943	2145	183
1824	1193	67	1864	1200	78	1904	985	135	1944	2216	184
1825	1400	57	1865	1238	—	1905	989	135	1945	2282	186
1826	1323	60	1866	1296	82	1906	1016	131	1946	2364	208
1827	1237	65	1867	1346	79	1907	1031	129	1947	2580	210
1828	1201	67	1868	1291	82	1908	1043	128	1948	2781	198
1829	1189	67	1869	1244	86	1909	1058	126	1949	3145	178
1830	1146	70	1870	1241	86	1910	994	134	1950	3155	180
1831	1260	63	1871	1320	81	1911	984	135	1951	3656	170
1832	1167	69	1872	1378	—	1912	999	133	1952	3987	167
1833	1096	73	1873	1437	84	1913	1021	131	1953	3735	187
1834	1011	79	1874	1423	84	1914	1147	124	1954	3825	194
1835	1028	78	1875	1310	92	1915	1317	114			
1836	1141	70	1876	1370	88	1916	1652	94			
1837	1169	68	1877	1330	90	1917	1965	87			
1838	1177	68	1878	1281	94	1918	2497	80			
1839	1263	63	1879	1210	99	1919	2254	126			
1840	1286	62	1880	1174	102	1920	2591	154			
1841	1256	64	1881	1213	99	1921	2048	167			
1842	1161	69	1882	1140	105	1922	1672	164			
1843	1030	78	1883	1182	102	1923	1726	159			
1844	1029	78	1884	1071	112	1924	1740	172			
1845	1079	74	1885	1026	117	1925	1708	176			
1846	1122	71	1886	931	129	1926	1577	190			
1847	1257	65	1887	955	126	1927	1496	201			
1848	1105	74	1888	950	126	1928	1485	202			
1849	1035	79	1889	948	127	1929	1511	199			
1850	969	84	1890	947	127	1930	1275	229			
1851	961	85	1891	998	120	1931	1146	247			
1852	978	84	1892	996	120	1932	1065	266			
1853	1135	79	1893	914	137	1933	1107	248			
1854	1265	71	1894	982	127	1934	1097	251			
1855	1274	71	1895	968	129	1935	1149	254			
1856	1264	71	1896	947	132	1936	1211	248			
1857	1287	70	1897	963	130	1937	1275	242			
1858	1190	76	1898	982	127	1938	1274	249			
1859	1214	74	1899	950	140	1939	1209	269			