

The Standard of Living Among German Industrial Workers, 1850-1914

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Between 1850 and 1914 Germany transformed itself from a congeries of agricultural states into one of the foremost industrial nations of the world. As a result, the country's prosperity increased enormously.¹ A number of studies have shown that industrial workers shared in this enhanced well-being. It is the purpose of this article to summarize the findings of these studies and to present a brief but comprehensive picture of what is presently known about the standard of living of the German working class during the second half of the nineteenth century.

One of the leading students of this subject is the communist scholar Jürgen Kuczynski. His most important contribution has been an index measuring the real wages of industrial workers.² This shows a steep drop in the standard of living of the laboring classes from an index number of 92 in 1850 (1900=100) to 56 in 1855, followed by a gradual, if uneven, rise to a high point of 104 in 1907 and then a slight dip to 102 in 1913.³ This index is far from perfect,⁴ but it probably gives a roughly accurate portrayal of developments for the period to 1900. Its principal defect is that its cost-of-living component includes only expenses for food and rent, combined in a ratio of three to one; it does not consider clothing and other less important outlays.

Two sections of Kuczynski's index merit special comment: its first six years and its last fourteen. The reason for the plunge real wages took between 1850 and 1855 was a sharp rise in prices from a very low level in 1850. That is to say, the high real wages in 1850 were not the result of high money wages which subsequently fell; rather, they were due to unusually low costs. Because of this, there is no reason to dispute Kuczynski's findings of unexpectedly high real wages in 1850 when industrialization had just begun; nor are there grounds for doubting what on the surface seems to be equally

surprising, a decline in real wages of such magnitude as that which occurred between 1850 and 1855 when the progress of industrialization should have produced the opposite effect.⁵ It is worth noting in this connection that not all workers were being swept along by the prevailing trend. In Prussia the percentage of the population receiving poor relief declined steadily from 5.1% in 1851 to 2.9% in 1866.⁶ Thus, whereas the average worker was suffering a decline in his standard of living, an increasing number of workers at the bottom of the wage scale must have been earning at least enough to keep them off the poor list.⁷

The stagnation shown by Kuczynski's index after 1900 was also the result of higher prices rather than the failure of money wages to rise.⁸ This tapering off of real wages does not seem plausible in view of the continued advance in real national income *per capita*,⁹ particularly since Ashok V. Desai has recently published a study indicating a different trend.¹⁰

Desai has developed a real wage index which is much more sophisticated than Kuczynski's. Its cost of living component is based upon the average expenditure proportions of thirteen families with incomes comparable to those of workers. Thus it takes into account factors such as clothing, fuel and lighting that were not considered by Kuczynski.

Desai's series is different from Kuczynski's in another respect. It attempts to measure earnings instead of wages. Unfortunately, its sources of information—reports made in conjunction with the German Empire's compulsory accident insurance program—are inaccurate before 1902 and non-existent before 1887. Desai adjusts the figures for 1887-1902 and uses other data for 1871-86, but the reliability of his index for the period prior to the turn of the century is questionable.¹¹ This does not present a serious problem, however, because his figures for real wages are close to Kuczynski's between 1875 and 1900. A significant divergence between the two indices does occur in 1871, when Desai shows an index number of 59 while Kuczynski indicates a level of 77 (1900=100).¹² In this instance, Kuczynski is probably closer

to the mark since Desai's sources and methods for this period are not very trustworthy.

The opposite is true of the difference between the two indices after 1900. Whereas Kuczynski shows a relative stagnation, Desai indicates a continued advance from 100 in 1900 to 113 in 1913. Here the latter is on firmer ground. His wage data for this period is at least as good as Kuczynski's and his cost of living index is more sensitive to the actual expenditures of working class families.¹³

Thus the best picture available to date of the real wages of German industrial workers from 1850 to 1913 is provided by a combination of Kuczynski's index for the years 1850 to 1900 and Desai's for 1900 to 1913. This hybrid shows a decline from an index number of 92 in 1850 to 56 in 1855, followed by an uneven rise to a level of 113 in 1913.¹⁴

A real wage index cannot, of course, depict the great variety of conditions that existed among the working classes. It can only portray the overall trends which affected their living standards. In virtually all industries real wages rose during the period, but in some the rate of increase was faster than others. This point can be illustrated by a comparison of the average weekly wages of printers in Berlin, Hanover and Munich with those of building workers in Berlin, Nuremberg and Rostock. The real wages of the former advanced only 54% between 1871 and 1913, whereas the latter's grew by 113% over the same forty-three years. Since the printers had started with a higher money wage, however, they were not much worse-off than the building workers in 1913. They were paid 33 marks, while the building workers were getting 38.8 marks.¹⁵

In general, producers' goods industries paid higher wages than did consumers' goods industries, but there were exceptions. For instance, breweries and printing establishments, both manufacturers of consumers' goods, were among the higher paying industries.¹⁶

Besides differences in wage levels between industries, there were important disparities between regions and even within individual factories. Geographic differences were sometimes

equalized by differences in rent and prices levels, as Chart I indicates. Berlin had the highest cost of living in Germany, but it also had the highest money wages and thus nearly the highest real wages in the country. Central Germany and Silesia both had relatively low wages, but since they also had low prices, they had the third highest and the highest respective real wages among the regions shown. South Germany, on the other hand, had low wages and high prices, hence the lowest real wages among the six regions studied by the Board of Trade.

Chart I
Index of Geographical Differences in Wages and Prices
(October, 1905)

Area	# Cities Studied	Rent and Prices	Wages/Skilled	
			Wkrs in Bldg., Engineering Printing	Real Wages
Berlin	1	100	100	100
Central Germany	4	86	85	99
Rhineland-Westphalia				
Textile Cities	4	94	87	93
Hardware Cities	6	93	89	96
South Germany	6	99	82	83
Saxony	5	91	83	91
Silesia	2	83	85	102

Source: Great Britain, Board of Trade, *Cost of Living in German Towns* (London, 1908), p. xxxiv.

No such compensatory factor as price differentials operated to balance disparities in wages between industries in the same region or among employees in the same factory. The latter could be quite large. In one rolling mill in Western Germany the highest paid workers were the first heaters, who earned between 4.8 and 6 marks per day in 1892. The lowest paid were the errand boys, who took in only 0.6 to 1.6 marks

per day. It is true that the latter were often teen-agers whose incomes served only to supplement those of the principal bread-winners in their families,¹⁷ but the eleven other categories of workers whose wages varied from 3.16 to 4 marks also earned significantly less than the first heaters.¹⁸

Throughout the period, women were paid only about one-half as much as men, sometimes less.¹⁹ As with the errand boys, the incomes of many women served only as increments to their families' principal means of support. However, some female workers were single and lived alone, or were married and had to support themselves and their children on their meager wages. Until these women married or remarried, they had to put up with a very low standard of living.²⁰

Married men labored under a somewhat similar incubus. They were not paid any less than their bachelor counterparts but they did have to stretch their wages much further. Since they did not usually reach their peak lifetime earnings until their children were old enough to go to work and further increase the family income,²¹ many unskilled workers lacked a sufficient wage to support their families during the first fifteen or so years of their married lives. Sometimes they were able to defray their extra expenses (*i.e.*, those over and above their wages) by tilling a plot of land and/or taking in boarders or lodgers, but all too frequently their wives had to work to provide the family with enough money to live on.²² When this happened, the children had to be looked after by someone else, often at the cost of most of what the mother could earn. Then, as soon as the children were able, they had to go to work themselves to help support the rest of the family and to free the mother for household chores. Because of this, they could not pursue their education very far and so had less chance to acquire a skill than skilled workers' children did. Fortunately, after about 1880 when real wages began to rise steadily,²³ unskilled workers were more frequently able to provide for their families' needs out of their own incomes alone.²⁴

An important factor affecting workers' standards of living in the short, if not the long run was the trade cycle. Down-

swings occurred in 1848-51, 1858-61, 1867-8, 1874-9, 1883-7, 1891-4, 1901-2, and 1908-9. Upswings, of course, followed each of these periods.²⁵ Kuczynski's real wage index provides some indication of the effects of these successive decreases and increases in general business activity upon workers' pay checks.²⁶ It shows real wages rising during every boom but that of 1852-7 and declining during all slumps except those of 1883-7 and 1891-4. Since it does not measure earnings, however, it cannot take into account such factors as overtime during the peaks and short shifts, work holidays, lay-offs and unemployment during the troughs of the trade cycle.²⁷ These developments accentuated the effects on earnings of the increases and decreases in real wages which occurred during most up- and downswings, so it is safe to conclude that periods of (business cycle) prosperity usually brought improvements in workers' standards of living,²⁸ while recessions brought deteriorations, very severe ones for those who were unemployed for very long.

Toward the end of the nineteenth century there were three changes which served to cushion these latter effects: recessions became shorter; increases in real wages helped workers to sustain them better; and social insurance was instituted. The last of these developments deserves further consideration. Between 1884 and 1891 a series of three laws were put into effect in Germany providing mandatory insurance for most categories of factory operatives against sickness, accidents, old age and invalidity. The workers were required to pay one-half of the premiums for old age and invalidity insurance and two-thirds of those for health insurance. Employers paid the entire cost of accident insurance and that part of the other two types not defrayed by their employees. The total cost to the workers varied considerably, but the predominant range of their contributions was three to four percent of their wages. In return for this outlay, they obtained considerable security against absolute poverty if and when they should be visited by disease, injury and senescence. Benefit payments usually were not sufficient to take care of all their needs in such cases, but they were a great advance over that situation which had

previously prevailed in Germany and which continued to exist in other industrial countries for some time to come.²⁹

Enough has now been said about the factors affecting the incomes of factory hands. But what of their expenses? What did they purchase with their money and how much were they able to buy? The most important expenditure was food. The diet of factory operatives and their families during the 1850's and 1860's was very starchy. It consisted mostly of bread and potatoes with the occasional addition of meat and dairy products.³⁰ But around 1870 the situation improved. Then, in most parts of Germany workers were eating at least some meat and frequently green vegetables each day in addition to rye bread and potatoes.³¹ The amounts of meat eaten were small, however, if reports for two categories of working class families in Stuttgart are at all representative. These indicate that each member of an unskilled worker's family got a little more than thirty pounds per year (1.3 ounces per day). In highly skilled workers' families consumption per head was a bit over 100 pounds per year (4.4 ounces per day),³² an amount which compared favorably with the national average of sixty-eight pounds per year (3 ounces per day) but was still below the presently recommended dietary level of 6 ounces or more each day.³³

Workers' diets continued to improve as the nineteenth century waned. A good picture of their composition early in the twentieth century is given by Chart II. The six levels of workers' incomes shown there correspond to the lower and middle ranges of worker wage-scales.³⁴ The workers in column I made slightly less than unskilled building workers in Nuremberg and Rostock; those in column VI earned almost as much as skilled building workers in Berlin.³⁵ The differences between worker and family incomes resulted from the earnings of wives and children. These were small in columns I-V, indicating only occasional work. Probably the families in column VI were at the stage where one of the children was old enough to work full time.

Chart II
Food Consumption per Head in German Working Families,
1906-7

	I	II	III	IV	V	VI
Average Weekly						
Income of Wkr.	20.3M	25.8M	30.4M	34.9M	38.5M	39.8M
Average Weekly						
Income of Fam.	21.2M	27.2M	32.5M	38.2M	44.0M	58.4M
Food Consumption						
	oz/day	oz/day	oz/day	oz/day	oz/day	oz/day
Meat	2.6	3.0	3.2	3.7	4.0	4.3
Bread & Flour	11.5	12.5	12.8	13.1	14.2	15.2
Cheese	0.2	0.2	0.2	0.3	0.3	0.3
Butter	0.3	0.5	0.6	0.7	0.7	0.7
Potatoes	14.7	13.6	12.2	12.0	11.7	13.2
	pt/day	pt/day	pt/day	pt/day	pt/day	pt/day
Milk	0.29	0.37	0.39	0.40	0.35	0.36
	#/wk	#/wk	#/wk	#/wk	#/wk	#/wk
Eggs	1.0	1.7	2.0	2.3	2.4	2.5

Source: Gt. Brt., Bd. of Trade, *Cost of Living*, p. xx. The chart there gives incomes in terms of British currency and food consumption in terms of family/week. On the basis of the average number of children in each group I have calculated consumption/head/day, assuming two parents in every family. I have converted incomes to marks at the rate of 6M=5s, given in A.L.B., "Wages and Cost of Living in Germany. The Board of Trade and Mr. Ellis Barker," *The Economic Journal*, XVIII (1908), p. 657. The conversion rate was the calculation of Professor Marshall for 1903.

The chart shows a considerable improvement in protein consumption since 1867,³⁶ but workers were still not getting an adequate diet by modern standards.³⁷ They did eat some foods not shown on the chart—"other vegetables and fruits", rice, barley, oatmeal, lard, beer, etc.—but the weekly costs of these items indicate that only very small quantities were pur-

chased.³⁸ It is clear, therefore, that the average working class family lacked sufficient protein, vitamin A and vitamin C to satisfy their normal bodily requirements.

The second most important outlay from the working class budget was rent.³⁹ Housing conditions varied considerably from region to region. In some places they were quite satisfactory in the late 1860's and early 1870's.⁴⁰ At that time, workers in a cotton spinnery near Esslingen (Württemberg) could rent four-room lodgings with kitchens from their employer for about one-fifth of their wages, and in the *Kreis* of Ottweilen in the Province of Westphalia the houses of some miners were described as "neat and cheerful".⁴¹ On the other hand, in Hamburg many workers lived in cramped and unhealthy, two- to three-roomed dwellings facing on back alleyways. And in Königsberg workmen's housing was mostly in bad condition and overcrowded. The only sewage was provided by the gutters in front of the street doors, so the "stench [was] frequently fearful" and there were many outbreaks of cholera and smallpox.⁴²

Housing conditions for factory hands in most industrial cities probably got worse instead of better down to the turn of the century because of the rapid growth of cities.⁴³ Construction of new homes and apartments did not keep pace with increases in the number of inhabitants, forcing rents to rise and some workers to live in such uncongenial environs as cramped attics and damp cellars.⁴⁴ Many of the families which were able to live on the intervening floors were overcrowded. The poorest could afford only one room, and in the more usual two room apartments lodgers were often accommodated. Some workers even slept in the factories where they worked.⁴⁵

Thankfully, the situation was not so grim everywhere. In Dortmund, dwellings in the older part of the city had probably deteriorated from the 1850's to the mid-eighties when many of them were in poor states of repair, but age and population growth had contributed nothing to the small size of their rooms and their low ceilings. And to compensate for their run-down state, there were many newer living quarters

in the more recently settled parts of the city which, according to the mayor, quite satisfactorily met the needs of the workmen.⁴⁶ Furthermore, even in some of the more crowded cities at least two improvements began to be made about 1875: a public water supply and a piped sewage system.⁴⁷

Sometime around the turn of the century new construction caught up with population growth and housing conditions improved. In 1885 the average number of residents per heatable room in Berlin, Hamburg, Breslau, Leipzig, Magdeburg, Altona and Gorlitz had been 3.8 in dwellings with only one heatable room and 2.3 in those with two. By 1905 the averages had begun to decline slightly to 3.5 and 2.1 respectively,⁴⁸ and for the same year the British Board of Trade noted that the predominant type of workers' dwelling consisted of a living room, bedroom and kitchen with the frequent additions of a share of the cellar for fuel storage, a place for doing laundry, and the use of a loft in the attic on a particular day for drying clothes. It stated that two-roomed tenements existed but were less frequent.⁴⁹ Large families were still very crowded with only three rooms, but they were better off than they had been not too long before. Besides, most of them probably did not have to live in lodgings of this size for very long because when the oldest child finished his required schooling at about age fourteen, he could go to work and raise the family income enough for them to afford bigger quarters.

None of the other single classes of expenditures of workers' families were so large as food and clothing, but together they constituted a sizeable portion of the family budget,⁵⁰ the most important item being wearing apparel. As early as 1870 German factory hands and their families were well clothed and and even had special suits and dresses which they saved to wear on Sundays and holidays.⁵¹ Moreover, many of them, even the married ones, were able to enjoy cheap amusements like small theaters, to buy beer and tobacco and to save a little money in the bargain.⁵² Bits and pieces of information from the first decade of the present century show that industrial laborers continued to maintain neat appearances and to spend a considerable portion of their incomes on "non-essen-

tial" items which may not have added anything to their physical well-being but helped make their lives a little less drab and dreary.⁵³

Throughout this article, emphasis has been placed upon the very real improvements in workers' living conditions between 1850 and 1914. At the same time, notice has been taken of the fact that these conditions were not very good even on the eve of the First World War. Working class families still did not have an adequate diet and many of their dwellings were not large enough to accommodate them comfortably. Thus there were many legitimate grounds for complaint and much ready fuel for socialist agitation. But at least the workers' standard of living was much better than their grandparents' had been, and they enjoyed a considerable measure of social security to boot. Such factors may have helped promote their readiness to march off to war in 1914, just as their grievances, aggravated by four years of combat, were to help feed the flames of revolution in 1918. But that is another story.

NOTES

1. W. G. Hoffmann and J. H. Müller with Heinz König and Others, *Das deutsche Volkseinkommen 1851-1957* ("Schriften zur angewandten Wirtschaftsforschung"; Tübingen, 1959), p. 14 shows that in terms of constant (1913) marks, *per capita* national income more than doubled in the period, rising from 295 marks in 1851-5 to 728 marks in 1911-13.

2. Regrettably, only pt. 3 of Jürgen Kuczynski, *Die Geschichte der Lage der Arbeiter unter dem Kapitalismus*, vol. I: *Die Geschichte der Lage der Arbeiter in Deutschland von 1789 bis zur Gegenwart* (Berlin, 1962) has been available to me. It is entitled *Darstellung der Lage der Arbeiter in Deutschland von 1871 bis 1900*. To reconstruct his index for the period 1850 to 1870, I have relied upon Jürgen Kuczynski, *A Short History of Labor Conditions under Industrial Capitalism*, vol. III, pt. 1: *Germany, 1800 to the Present Day* (London, 1945). For the first 13 years of the 20th century, I have used Gerhard Bry assisted by Charlotte Boschan, *Wages in Germany, 1871-1945* (Princeton, 1960), which reproduces Kuczynski's index for 1871-1913 on pp. 329 (money wages) and 354 (cost of living index). Besides his indices, Kuczynski's two books (cited above) provide a mass of reliable statistical evidence plus numerous examples of the unpleasant effects of industrialization upon the working classes. He does notice some of the benefits as well, but the overall picture he presents is far too bleak. He even argues against his own real wage index. It shows a general upward trend from 1850 to

1913 (see below in text), but he says that the pauperization of the workers only proceeded more slowly during this period; it did not stop. The evidence he adduces in support of this argument is that the production of consumer goods/worker declined from 1860 to 1902 (*Lage der Arbeiter*, pt. 3, pp. 339-342). The argument is specious for two reasons. The number of workers was growing more rapidly than the population as a whole, *i. e.*, the total number of consumers, and Germany imported many of its consumer goods. As a result, the prices workers had to pay for their consumer goods did not rise as fast as money wages, which is precisely what Kuczynski's real wage index reflects.

3. Kuczynski, *Lage der Arbeiter*, pt. 1, pp. 297-8, 302; Kuczynski, *Labor Conditions*, pp. 75, 77; Bry, *Wages in Germany*, pp. 329-30, 354.

4. As Kuczynski, himself, admits in *Lage der Arbeiter*, pt. 1, p. 324.

5. This statement assumes that industrialization brings about increased material well-being.

6. August Meitzen, *Der Boden und die landwirtschaftlichen Verhältnisse der preussischen Staates nach dem Gebietsumfang vor 1866* (4 vols.; Berlin, 1868-71), vol. III, p. 434.

7. Since Prussia was predominantly agricultural at mid-century, the majority of people on poor relief may have been farm hands or peasants. That the industrial workers on poor relief were declining, however, is suggested by statistics for the district of Düsseldorf, where industrialization was already well under way and where the number of people receiving alms declined from 100,067 in 1850 to 40,750 in 1867. Statistics from *ibid.*, p. 435.

8. Kuczynski's index of money wages climbed from 100 in 1900 to 119 in 1907 and 133 in 1913. His cost of living index went from 100 to 114 to 130 on the same respective dates, so real wages climbed from 100 in 1900 to 104 in 1907 and then dropped to 102 in 1913. Based on my calculations from figures in Bry, *Wages in Germany*, pp. 329, 354.

9. Hoffman and Müller, *Volkseinkommen*, p. 14 shows it rising from 538 marks (1913 purchasing power) in 1901-5 to 716 marks in 1911-13.

10. *Real Wages in Germany, 1871-1913* (Oxford, 1968).

11. Between 1887 and 1902 actual earnings were not reported for workers at the top and bottom of the income scale. Desai developed a distortion index based upon earnings reported after 1902 to account for this. His series for 1871-87 is based upon wage data taken from Kuczynski, Bry and other sources and adapted so as to be continuous with the rest of the index.

12. Kuczynski, *Lage der Arbeiter*, pt. 3, pp. 297-8, 302; Desai, *Real Wages*, p. 36. I have converted the latter's index from a base 1895=100 to 1900=100.

13. Cf. the similar view expressed by Gerhard Bry in his review of Desai's book in the *Journal of Economic History*, XXVIII (1968), 662-4.

14. *I.e.*, punctuated by declines. These will be discussed below in conjunction with a consideration of trade cycles.

15. Money wages from Bry, *Wages in Germany*, pp. 333, 339-40; real wages my calculations using the cost of living index in Desai, *Real Wages*, p. 117.

16. Bry, *Wages in Germany*, p. 117.

17. This pattern is indicated by many of the 196 brief but revealing family histories of Krupp workers in Richard Ehrenberg and Hugo Racine, *Krupp'sche Arbeiter-Familien. Entwicklung und Entwicklungsfaktoren von drei Generationen deutscher Arbeiter* ("Archiv für exakte Wirtschaftsforschung," 6th Ergänzungsheft; Jena, 1912).

18. Wages for whole paragraph from Bry, *Wages in Germany*, p. 117.

19. *Ibid.*, pp. 93-101.

20. See, e.g., the account of Minna Wettstein-Adelt, *3½ Monate Fabrik-Arbeiterin* (Berlin, 1893).

21. Cf., Ferdinand Oeter, "Familie und Gesellschaft unter dem Einfluss des Industriekapitalismus," *Schmollers Jahrbuch*, LXXVII (1957), 513-546; Ehrenberg and Racine, *Krupp'sche Arbeiter-Familien*, *passim*. The former study points out that in the pre-industrial joint household the high expenditure-low income period when a family's children were growing up had not presented a problem because of the earnings of other members of the extended family.

22. Lothar Schneider, *Der Arbeiterhaushalt im 18. und 19. Jahrhundert, dargestellt am Beispiel des Heim- und Fabrikarbeiters* ("Beiträge zur Ökonomie von Haushalt und Verbrauch," vol. IV; Berlin, 1967), pp. 98-108; [Great Britain, Foreign Office], *Further Reports from Her Majesty's Diplomatic and Consular Agents Abroad Respecting the Condition of the Industrial Classes and the Purchase Power of Money in Foreign Countries* (London, 1871), p. 602; [Great Britain, Foreign Office], *Reports from Her Majesty's Diplomatic and Consular Agents Abroad Respecting the Conditions of the Industrial Classes in Foreign Countries* (London, 1870), pp. 222, 227; Bry, *Wages in Germany*, p. 51; G. Berthold, "Die Wohnungsverhältnisse in Berlin, insbesondere in der ärmeren Klassen," *Schriften des Vereins für Socialpolitik* [henceforth, *SVS*], XXXI (1886), 206. The last source reveals that in Berlin in 1880 7.1% of all households had lodgers (*Einmietters*) and 15.3% had people who were entitled to sleep in a bed for the night but had no further privileges (*Schlafleute*). 38% of the people who took in the latter category of subtenant (5.8% of all households) disposed of only one room in which members of the family plus the lodgers all had to sleep.

23. Before this time, an upward trend had been in evidence, but it had not progressed very rapidly and had been punctuated by numerous short term declines.

24. Schneider, *Arbeiterhaushalt*, pp. 108-110.

25. Arthur Spiethoff, "Krisen," *Handwörterbuch der Staatswissenschaften* (4th ed., 8 vols.; Jena, 1923-8), VI, 53-60.

26. Desai's index is not useful in this connection because it is quinquennial, not annual.

27. The frequency of these practices during the recession of 1901-2, the only one for which such information seems to be available, can be seen in the two articles by R. Calwer and J. Jastrow, "Gewerbeinspektion," *SVS*, CIX (1903), 77-117, esp. 96, 105 and "Gewerkschaften-Einzelne Gewerbe," *ibid.*, 119-192, esp. 138-41.

28. This despite the price rises that accompanied many but not all of them. See cost of living indices in Kuczynski, *Labor Conditions*, pp. 77, 129 and Desai, *Real Wages*, p. 117.

29. In certain of the German states, among them Württemberg, and in certain occupations, most notably mining, some forms of insurance had been instituted prior to the passage of the imperial legislation. The details of the latter were very complex. For an admirable treatment of the subject, see William Harbutt Dawson, *Social Insurance in Germany, 1883-1911* (New York, 1912).

30. Theodore S. Hamerow, *Restoration, Revolution, Reaction, Economics and Politics in Germany, 1815-1871* (Princeton, 1958), p. 210; Gt. Brt., For. Off., *Further Reports* (1871), pp. 563-4.

31. Cf. Gt. Brt., For. Off., *Further Reports* (1871), pp. 575-6, 601-2; Gt. Brt., For. Off., *Reports*, p. 221; [Great Britain, Foreign Office], *Further Reports from Her Majesty's Diplomatic and Consular Agents Abroad Respecting the Condition of the Industrial Classes and the Purchase Power of Money in Foreign Countries* (London, 1872), p. 19.

32. Gt. Brt., For. Off., *Further Reports* (1872), pp. 195-7. The figures are based on my calculations using information contained therein as to expenditures and price levels for meat (beef, pork and veal combined in equal proportions) in 1867. I assume that the average family consisted of five members. The author of the particular report being used here states that the two household budgets upon which my calculations are based are those for the lowest and highest paid workers in Stuttgart. The budget for the lowest paid workers assumes an income of 300 florins (£25) per year. On p. 192 the author says that the most ordinary class of labor in the city earned 1s.8d. to 2s. (Brit.) per day, which works out to £25-30 per yr. (300 wkng. days), so the budget for the lowest paid worker must represent expenditures for a normal, unskilled worker rather than an exceptionally lowly paid one. The budget for the skilled workers assumes the very high income of £75 or 500 taler per year.

33. For present dietary standards, Michael G. Wohl and Robert S. Goodhart, eds., *Modern Nutrition in Health and Disease* (4th ed. rev.; Philadelphia, 1968), p. 1201. Average national consumption is computed from statistics in Walther G. Hoffmann with Franz Grumbach and Helmut Hesse, *Das Wachstum der deutschen Wirtschaft seit der Mitte des 19. Jahrhunderts* ("Enzyklopädie der Rechts- und Staatswissenschaft"; Berlin. Heidelberg, New York, 1965), pp. 173, 630.

34. The upper limits of workers' incomes rose to well above the level of column VI. See the many examples of much higher earnings among Krupp workers reported in Ehrenberg and Racine, *Krupp'sche Arbeiter Familien*, e.g. pp. 71-2.

35. Bry, *Wages in Germany*, p. 340.

36. Other less detailed studies of food consumption among workers show similar findings as to amounts consumed. See Otto Most, "Die Verteuerung der Lebensmittel in Düsseldorf während den letzten Jahrzehnts," *SVS*, CXLV, 2 (1914), 334-6; Heinrich Haake, "Die Gestaltung der Lebensmittelpreise und Mietpreise vom 1890 bis 1912 in Barmen und ihr Einfluss auf die Kosten der Lebenshaltung," *ibid.*, 80.

37. Cf. Chart II with the criteria for an adequate diet in Wohl and Goodhart, eds., *Modern Nutrition*, p. 1201. As might be expected from their growth in numbers—industrial laborers and their dependents constituted 35% of the population in 1882, 43% in 1907 [Karl Helfferich, *Germany's Economic Progress and National Wealth, 1888-1913* (New York, 1914), p. 19]—workers' meat consumption clustered more closely about the national average (3.8 Oz/day) than it had in 1867. (Average meat consumption/German calculated from figures in Hoffman, *Wachstum*, pp. 173, 632).

38. The Board of Trade did not provide the amounts in which these items were consumed.

39. The unskilled workers' families from Stuttgart mentioned above (p. 13) spent 54.8% of their money on food, 19% on rent. The skilled workers' families allotted 34% of their funds to food, 20% to rent. According to a national household budget inquiry conducted in 1907-8 (reported in Desai, *Real Wages*, p. 22) families with incomes between 600 and 1200 marks (annual income, column I of Chart II on p. 14=1055 marks) devoted 54.2% of their money to food, 20% to rent (including cleaning and decoration). Those who earned 1200 to 1600 marks spent 59.4% on food, 17.2% on rent.

40. No information is available for the 1850's.

41. Gt. Brt., For. Off., *Further Reports* (1872), p. 193; Gt. Brt., For. Off., *Reports*, p. 78.

42. Gt. Brt., For Off., *Reports*, p. 12; Gt. Brt., For Off., *Further Reports* (1872), p. 276.

43. Berlin increased its population almost tenfold in 80 years. In 1820 it had 199,510 people. In 1900 its inhabitants numbered 1,888,313. During the same time-frame Leipzig grew even more rapidly from 37,375 to 519,726, and Essen's growth was nothing short of spectacular. In 1820 it was a small town of 4,715; in 1900 its population numbered 290,208. Figures from Koppel S. Pinson, *Modern Germany, its History and Civilization* (2nd ed.; New York, 1966), p. 221.

44. Flesch, "Die Wohnungsverhältnisse in Frankfurt, a.M.," *SVS*, XXX (1886), 57; Berthold, "Wohnungsverhältnisse in Berlin," 209.

45. Ernst, "Die Wohnungsverhältnisse der ärmeren Bevölkerungsklassen in der Stadt Elberfeld," *SVS*, XXXI (1886), 244-6; Kuczynski, *Lage der Arbeiter*, pt. 3, pp. 388-93.

46. Bürgermeister Arnecke, "Die Arbeiterwohnungsfrage in Dortmund," *SVS* XXXI (1886), 172.

47. Berlin had provided both services to most buildings by 1886. At

least a public water supply was in operation in Elberfeld by 1879 and Dortmund by 1885. Berthold, "Wohnungsverhältnisse in Berlin," 211-12; Ernst, "Wohnungsverhältnisse in Elberfeld," 239; Arnecke, "Arbeiterwohnungsfrage in Dortmund," 170. Progress in this field was slow, however. Arthur Shadwell, *Industrial Efficiency. A Comparative Study of Industrial Life in England, Germany and America* (2 vols.; London, 1906), vol. II, pp. 210-11 notes that in the first decade of the twentieth century the German water supply generally varied from fair to good but that the conversion from cess pools to sewer systems was still in progress.

48. Desai, *Real Wages*, p. 26. The figures are for all classes of the population which happened to live in dwellings of these categories. They are not offered as proof of any improvement in workers' living quarters (for which, see below) but only of increased construction.

49. Grt. Brt., Bd. of Trade, *Cost of Living*, p. xii.

50. Between 23 and 46% for the four budgets discussed in fn. 39.

51. As virtually all the British ambassadors and consular representatives remarked. See, e.g., Gt. Brt., For. Off., *Reports*, p. 15; *Further Reports* (1871), p. 519.

52. Gt. Brt., For. Off., *Reports*, pp. 15, 201; *Further Reports* (1872), pp. 196-7.

53. Tariff Reform League, London, *Reports on Labor and Social Conditions in Germany* (3 vols.; London, 1910-11), vol. I, pp. 4, 10; Desai, *Real Wages*, pp. 21-3; William H Dawson, "Dresden Workingmen's Budgets," *The Economic Journal*, XV (1905), 266-7. Dawson reports on the findings of an inquiry into the budgets of 87 workmen. Forty-five of them had savings while forty-four had debts (two evidently having both), but the amounts saved were much larger than the amounts owed. Pictures, photographs, or other wall decorations were found in all but ten households. Eleven families owned musical instruments and hardly any were without books of some kind—political works, *belles-lettres*, dictionaries of foreign languages (!), etc., but no religious books. Desai gives the results of a more extensive study of 852 workers throughout the empire. The poorest group, those with incomes between 600 and 1200 marks, spent only 87.5% of their incomes on food, rent, cleaning, decoration, heating, fuel, lighting, and clothing, leaving 12.5% for luxuries, savings and insurance payments.