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# Variations in Meat Consumption in Germany

By H.-J. Teuteberg



Methods for establishing the average meat consumption per head and per year have been under discussion by German scholars for over a century[1]. It is agreed that the relative amounts of meat consumed can be worked out by taking the number of animals of each type slaughtered, and multiplying this figure by the average contemporary carcase weight. The number thus obtained is then divided by the corresponding population figure. The amounts of meat imported and exported must be added and subtracted respectively. The difficulties begin in establishing the number of animals slaughtered. Till now, four methods have been evolved, as follows:

1. Analysis of the relationship between the actual numbers of stock and the average estimated quota for slaughtering in a given year. This appears to be the only possible method for earlier periods. Complete counts of stock were made in Germany in 1872/73, 1882/83, 1892, 1900, and thereafter at regular intervals. There had been previous checks in Prussia, Saxony, Hesse, Baden, and Bavaria, with at most three-year intervals, and to some extent these regional counts can be regarded as representative for the whole of Germany. Naturally, the evidence becomes less reliable the farther back one goes in time.
2. The number of animals slaughtered can be precisely established where consumption taxes were levied on meat. There was a tax on carcases in Prussia in 1820, though only in the big towns. In Saxony a special tax was levied in 1835 on beef and pork, which was later extended to veal and mutton for some decades.
3. Since the year 1904 in the area of the "German Reich" there have appeared annual slaughter figures from the obligatory meat and carcase inspection, in connection with which in 1904, 1907, 1912, and regularly thereafter the number of animals slaughtered at home, which was not covered by the regulations, was considerably increased. This source, however, is not of use prior to 1904.
4. Finally, it is possible to consult lists from the abattoirs that were established by the towns after the discovery of animal parasites (trichinae) and the tubercle bacillus.

The difficulties are no less in establishing the actual weight of dead meat in the past. The suggestion that the carcase weight should be expressed as a percentage of the average weight on the hoof must be rejected since it may give false results. Most authors, therefore, have generalised the regional statistics on carcase weights for the whole of Germany.

Which of these methods can be most profitably used depends on the period under review and on the availability of statistical material. Results obtained in such ways inevitably include many uncertain factors. Thus it was only in 1900 that it was settled which parts of the carcase should be retained for human consumption and which rejected as offal[2]. All data on consumption prior to this date must always be carefully examined to see what is understood by the term, carcase weight. The importance of this is stressed by the fact that at earlier periods practically all

usable meat and not only the muscular meat was eaten. The amount of useless offal was much smaller. In addition the surplus of imported or exported meat can considerably affect home consumption. Thus in the 1890s, in Saxony, the meat import surplus amounted to 40 % of the total meat consumption and in other German states to at least 5—10 % of the total amount of beef and pork consumed. In the main the trading in animals was only between the individual German states, and altogether in nineteenth century Germany more meat was exported than imported[3]. Further possibilities for inaccuracy are created by the spoiling of slaughtered meat, the uncertainty of earlier population figures, and the difficulty of assessing the proportion of poultry and game eaten. It is also likely that the tax on dead meat does not cover all the slaughtering that ought to have been declared.

It can be seen, therefore, that no really trustworthy figures are available for the period before 1900, and only rough estimates can be obtained. The per capita statistics, often based on generalisations of regional estimates, give only a broadly approximate picture of the actual meat-consumption. Rich and poor, young and old, male and female, Jew and Catholic, north and south, are lumped together under an idealised average, from which it is impossible to ascertain the differential consumption in the separate social levels. Nevertheless, these averaged-out per capita figures must be regarded as an indispensable aid to ethnological food research in earlier centuries, and can be supplemented and controlled by reference to the statements of knowledgeable contemporaries and from observation of the eating habits of particular professional and social groups. In short, until the end of the nineteenth century, the home production of meat was dominant. The keeping of animals, especially sheep, cattle and goats, was commonplace not only in the country and small towns, but also in the bigger towns. This urban practice only began to fall into desuetude with the rapid growth of large industrial towns after 1880. Also, ready money was far from playing the part it does today in the many tasks dependent on the production of the daily means of nourishment. In place of money wages there was often "board and lodgings." Eating from a common dish still prevailed everywhere in the country right up till the twentieth century. Lord and servant, master, journeyman and apprentice ate at the same table. As a result it is difficult to sort out differences in consumption from the evidence available.

What are the main outlines of meat consumption before the modern period, i.e. prior to the nineteenth century? German scholars are unanimous in thinking that the Germanic period was characterised by an almost nomadic form of pastoral economy, with rich stocks of animals. Surviving terms show that horses, sheep, pigs, goats and geese were certainly known in Indogermanic times. From this one may assume, in relation to the present time, a high meat consumption along with a milk and cheese diet. Meat formed the chief element in the diet of Germanic Europe, with game at times also playing a considerable role alongside domesticated animals. At any rate, hunting appears to have been a matter of privilege from early times, and game was the "food of lords".

To make meat more fibrous, fatter, and tastier, it appears, from the research carried out by Moriz Heyne, that already at an early date not only fourfooted domestic animals, but also fish and fowl, were systematically fattened[4]. Cramming, blinding and castrating were practised in order to promote fattening. Roast meat was the food of the upper classes, cooked meat that of the ordinary folk. The favourite dishes of the lower social strata included the feet, throats, mouths, tongues, lungs, liver, hearts, kidneys, brains and entrails up until the nineteenth century. Even in better class houses, however, such "innards" were not looked down on. After oriental spices became known in the late Middle Ages, meat was made more tasty by the addition of pepper, nutmeg, saffron, etc. The pig surpassed all other meat-producing animals in usefulness, for not only the pork and all the tender parts, but also the skin and the blood could be used for food. Pork chopped into small pieces formed the basis for all sausages, amongst which, into the sixteenth century, those composed of brains, blood, liver and roast meat preponderated. There are numerous town regulations against the contamination of sausages, which probably often contained low quality meat, such as cattle livers. The ordinary man packed the pig's skin and blood into the pig's stomach or into a linen bag and cooked them together, often along with meal or groats.

A number of great German scholars have estimated that at the end of the Middle Ages around 100 kg of meat were still being eaten per head per year, i.e. over two pounds a day for a three-unit family[5]. This is a tremendous amount, for in the German Federal Republic, in spite of today's high living standards, only 73.7 kg per head is consumed per annum. The difference is even more marked when the late medieval consumption is related to the period around 1800.According to Wilhelm Abel's reckoning, in the crisis years after the Napoleonic Wars, in 1816, the use of meat in the area of the later "German Reich" was roughly seven times less than in the Late Middle Ages[6].

Other scholars have had serious doubts about the high meat consumption postulated for the medieval period, based on the limited possibilities for keeping animals in the towns, the diminishing extent of fodder cultivation, the lack of purchasing power for expensive imported meat, and the constant alternation between feast and fast days, which makes an average estimate completely illusory. It is not denied that a lot of meat was eaten on feast days in the towns and on manorial estates in the country, but it is thought that these short periods of indulgence must be separated from the correspondingly barren periods when meat was lacking. The lower classes have almost always, perhaps even on high holidays, fed on broth and vegetables. The frequently pictured feasts with their prodigal consumption of meat reflected the exceptions rather than the reality. Recurrent famines of short duration must always have brought a quick end to these periods of carousal. The assertion is made that it was chiefly only perhaps between Michaelmas and Christmas, when the animals were slaughtered, that people ate well, and for the rest of the year they had little or no fresh meat. In reality there is plenty of evidence that until the introduction of artificial fodder crops in the late eighteenth

century, many farmers found it difficult to fodder their whole stock of animals throughout the winter. A big proportion, therefore, was slaughtered and pickled each year after a summer on the grass. In spring, the remaining animals were often so weak with hunger, that they had to be dragged to the meadow by their tails, since they had not the strength to walk by themselves. These were nicknamed "tail cattle."

A survey of the scholastic argument allows one to establish provisionally, however, that until the sixteenth century meat was the principal item of diet in Germany. At all events the consumption of meat was appreciably higher than in the nineteenth century, simply because many other kinds of victuals were not available. Of course, it must also be said that there were considerable social, temporal, and regional differences in the use of meat. The eating of meat was undoubtedly spread very irregularly throughout the week, the year, and good and bad times. A regular meat supply such as exists at the present day could not have been assured because of difficulties in transport and conservation as well as the lack of a unified political economy. The less valued parts of the home-slaughtered animals went to the lower classes in both town and country. Even at the not very numerous feasts given when the pig was killed, meat came to the table only in smoked, dried, or salted form. All things considered, it is extraordinarily difficult to level the whole pattern of change under one common denominator, since meat eating habits clearly differed locally much more than at present. The consumption of 100 kg per head per annum in the Late Middle Ages is calculated on the evidence from individual towns and gives only a very imaginary estimate. It should, therefore, be regarded only as an approximate calculation.

The results of present-day research show absolutely clearly, however, that about the beginning of the sixteenth century, animal and meat prices rose sharply and that the relative meat consumption in the ensuing centuries fell back steadily. This was not due to a diminution in the overall demand, but to a per capita decline. The reasons lay on the one hand in the population increase between 1450 and the Thirty Year's War, and on the other on the lessening of the purchasing power of money. At the same time there was a tendency towards a reduction in the amount of meat processed by the people at home[7]. The lack of cultivated fodder, and with it adequate stall feeding, had a particularly disadvantageous effect. At the same time, the expanding cultivation of grain demanded a greater acreage, and restricted the extent of pasture. Gustav Schmoller, one of the leading German economists of the nineteenth century, has expressed the opinion that from the end of the sixteenth century meat has slowly changed from an everyday to a luxury food[8]. The disproportion between the ground kept for pasture and the rising population increased steadily. Bad harvests, local feuds, wars and cattle sickness combined to reduce further the dietary range. Animal food was replaced by the more easily produced vegetable foods. This decline in the relative meat consumption between the Late Middle Ages and the nineteenth century, called the "Depekoration-Phase" (when the amount of meat in the diet decreased), naturally varied from

province to province. As Günter Wiegelmann has established, the dominance of meal in the diet of South Germany is linked with the fact that the scarcity of meat made itself felt here, earlier and more strongly than in the rest of Germany.[9] The methods of preparing meal for food have increased drastically in numbers there since the seventeenth century. Since that period dumplings, steamed dumplings, etc. have been in evidence. On the other hand, however, there was a real upswing in animal husbandry in the second half of the sixteenth century in North Germany. Due to an extension in the amount of animal husbandry near the coast, the lack of meat became less marked. At the same time, rising meat prices brought big profits to both farmers and cattle dealers[10].

The restriction in the availability of this important and basic food was also related to the transformation of transport techniques. In the Germanic Period horses were highly esteemed, but relatively few in number. The ox was the main draught animal. Still in the Carolingian Period, as during the Migration Period, the entire military reinforcements were moved in ox-drawn vehicles[11]. In the full Middle Ages the replacement of the ox by the horse in war and for draught purposes signified a growing demand for horses. The rearing of horses was far more expensive, requiring more pasture land and a greater financial outlay. At the same time, a horse could least of all endure a winter's famine on leaf fodder. The eating of horse meat, in which the early Christian Church saw the remnants of heathen sacrificial practices, became a matter for penance in the Church from the tenth century, so that this type of animal, and later the donkey and mule as well, went out completely as a source of food, except when its use was enforced by one of the numerous famine periods[12]. It was only after the weakening of religious taboos in the late nineteenth century in Germany that abattoirs for the slaughter of horses were built on the English model, but these were patronised only by the poorest of the poor.

What is the pattern of change in the consumption of meat in Germany since statistics became available in the nineteenth century? As already stated, the evidence for Prussia and Saxony has been most closely studied to date, and this must now be examined.

In Prussia, a tax on dead meat provides an additional source of information on the relative consumption of meat prior to the development of communal abattoirs. This was levied only in the big towns between 1820 and 1861, and in this connection the accounts are very much scantier at the end than at the beginning of the period. Even if the differences between eating habits in town and country were not as marked then as they were later, and even if all the big Prussian towns, including Berlin, still had the character of "agricultural citizen" towns, nevertheless one must not overlook the fact that the consumption in towns included that of the entire monarchy. The figures prior to 1820 must be treated with great caution, since they are based only on local generalisations. In spite of minor differences of opinion, all the authors who have been concerned with the question of meat consumption in Prussia, come to the same following conclusions:

1. Meat consumption in Prussia apparently declined considerably during the Napoleonic Wars between 1800 and 1815 and only came back to its turn of the century level fifteen years later.
2. The amount of meat eaten scarcely altered for a whole generation after 1830, till around 1860.
3. There ensued a striking, swift upsurge in the eating of meat, concomitant with the development of industrialisation.
4. Above all there was an upsurge in the consumption of pork, accounting for almost 70 % of the increase. Though the eating of pork in relation to the total cosumption amounted to only 26.2 % in 1816, it rose to 41.1 % by 1861. The proportion of beef fell, on the other hand, from 45.3 % to 37.3 %.

The statistics from Saxony are more reliable, because the tax on carcases was levied over the whole country, though the accounts refer only to pork and beef. The consumption of veal and mutton only rose between 1835 and 1840, and 1851 and 1857, before the introduction of the national regulations for meat inspection in 1903. The accounts from Saxony are regarded by many scholars as so reliable that they have been taken as a touchstone for the results from all of Germany. The drawback about Prussia is that statistics begin only in 1835. An examination of the tables makes it clear straightaway that just as in Prussia after 1830, at best only a minimal increase in the use of meat can be established. However, whilst no appreciable increase was recorded in Prussia for almost thirty years, already by 1855 there was a considerable rise in the consumption of beef and pork in Saxony, climbing quite abruptly between 1855 and 1858 by 7.1 kg, i.e. from 14.9 kg to 22 kg per head per annum.[13] Here the early industrialisation of Saxony clearly had an effect. Even in the manufacturing towns more animal food was eaten than in the country. Emigration, urbanisation, industrialisation and increased meat consumption appear to have gone hand in hand. All the descriptions of the country dwellers who left their well filled meat jars to work in the towns as a wage-earning proletariat living on much poorer food with little meat are refuted by the figures from Saxony. Between 1875 and 1895 an average of 5 kg more meat was eaten per person per year than in the whole of the "German Reich."[14] The relationship between the consumption of pork and beef in also significant in a comparison such as this: about 1840 the ratio was 60 : 40 in Prussia, 50 : 50 in Germany as a whole and only 45 : 54 in Saxony. It was not until about 1900 that the average for the Reich approached a ratio equivalent to that in Saxony, when nearly twice as much pork as beef was eaten. In a period of twenty years, from the middle of the century, the consumption of the two main meat varieties practically doubled in Saxony. Where shortly before 1855 it stood at over 15 kg, in 1875 it already amounted to 30 kg, and reached 40 kg by the turn of the century, a figure that remained steady until the period of the First World War. If the tables are looked at apart from chance influences, the average decennial values show a steady upward trend. The increase up to 1854 is only a little under-proportional and between 1855 and 1864 somewhat over-proportional. Inclusive of entrails, game, and

poultry, the eating of meat in Saxony shortly before the First World War reached something over 50 kg. per head per annum, already approaching the present day consumption in the German Federal Republic (1959 = 57 kg).

In the meat statistics of Saxony, however, other interesting points are to be found. About 1900, Germany's then leading nutritional physiologist, Max Rubner, formulated the thesis that the higher meat consumtion could be directly regarded as an individual characteristic of the town dweller.[15] If the meat consumption figures in the big Prussian towns are compared with those for the whole of Prussia, there appears to have been twice as much eaten in the towns as in the country. At first glance, the figures for Saxony appear to give grounds for a similar assumption. The greater consumption of beef, veal, and mutton in the towns is noteworthy. Closer inspection, however, shows that its basis is merely the greater prosperity in the towns.[16] In fact, it is not so much the town itself, as its higher living standard, that is responsible for this remarkable discrepancy. A detailed analysis of the eating of beef and pork between 1867 and 1875 in twenty four towns in Saxony, each with more than 8,000 inhabitants, shows that the per capita consumption ranged from 17.5 kg (Schneeberg) and 28 kg (Zwickau) to 73.6 (Leipzig). The contrast between agrarian small-scale industry towns, and industrial and commercial towns is immediately evident. Medium sized towns with a relatively prosperous environment have a noticeably higher meat consumption than pure manufacturing towns. Another noteworthy feature is the greater consumption of the more expensive bullock meat in relation to the cheaper pork in those towns with a higher living standard.

The existence of a garrison naturally influenced the per capita consumption in some towns to a not unappreciable degree. The inferences can therefore be made, that Rubner's thesis is completely erroneous, and that the high meat consumption in the town has nothing to do with the form of life and existence, but is due exclusively to the higher living standard. The use of meat is an astonishingly sensitive gauge of prosperity! Most of the big towns of Germany naturally had a higher meat consumption, because a relatively greater number of prosperous people lived there.

Because of the lack of overall statistics, it is extraordinarily difficult, up to 1904, to make confident statements about the level of meat consumption for the whole area of the "German Reich". If one takes the best comprehensive research of Joseph B. Esslen and supplements it with other partial results, then on the whole a similar trend appears to that in Saxony, except that the upward swing since the middle of the nineteenth century is somewhat flatter. After the end of the Napoleonic Wars and the great agricultural crisis, a quick rise in consumption can be established, as in Saxony and Prussia, which probably only balanced a downward swing. Whilst some researchers postulated a rise of 50 % in the twenty years after 1816, from 11.6 kg to 18.1 kg (exclusive of entrails, poultry, and game), Esslen established a 60 % increase from 13.6 kg to 21.6 kg between 1816—1840. After the end of the thirty years when the 1800 level was reached again, the relative

amount of meat eaten per head remained broadly constant up to the 1850s. There followed a phase of rapid increase in the use of meat till 1900. This upward trend was probably only briefly interrupted between 1875—1885 during the great financial speculation crises, though the actual level of consumption remained constant during this depression period. According to Esslen, the consumption of both the main meat varieties, which at the turn of the century stood between 43 and 44 kg per head, rose further until the outbreak of the First World War (1907 — 46.7 kg). Others consider that the level fell back a little because of the general rise in the cost of living due to protective tariff politics. If one adds to Esslen's estimate for 1816 (13.6 kg) another 2 kg for entrails and poultry as well as 5 % for an import surplus, a probable combined meat consumption figure of 16.4 kg is arrived at for the whole of Germany. The equivalent calculation for 1907, including this time 3.5 kg for entrails and poultry and 5 % for the import surplus, gives a consumption figure of 51.1 kg. These figures suggest that in the nineteenth century meat consumption trebled in Germany. With all due reservations about the early statistics and method of calculation, one can still confidently assert that this statement is tendentially accurate. If the years 1825—35 are taken as a starting point (since the earlier consumption increase was only a post war recovery, as in the periods after 1918 and 1945), then meat consumption has at least doubled in a century and almost trebled up to the present day.

Naturally, there had already, at an early period, been thinking about an "ideal meat consumption". At the end of the nineteenth century some researchers considered 75—100 kg, others 90—100 kg per head per annum as the desideratum. This ideal, and for long not even the pre-1914 standard, was never attained between 1900 and 1966.[17] At 67.5 kg (in 1965—6), the amount stood well over the turn of the century level, but it is doubtful that we are ever likely to reach the alleged medieval consumption figure of 100 kg per head per annum.

The change in meat varieties within the framework of the total consumption is equivalent to that in Prussia and Saxony. The eating of the less expensive pork rose sharply, and the nineteenth century increase in meat consumption was essentially due to this. Today there is a contrary trend, reflected by the change in preference from the fat pork cutlet to the lean beef steak. It is a matter of interest that meat supplies in Germany improved, although the numbers of cattle and sheep sank in relation to the population increase, and the ratio of pigs did not rise greatly. The solution to the riddle is, of course, that an enormous increase in carcase weights was achieved as a result of improved breeding and feeding. In the course of 150 years the carcase weight in Germany far more than doubled.[18] At the same time selective breeding has considerably reduced the fattening period and the change to a ready supply of stock has been accelerated.

Adherents of the pessimistic theory of increasing under-consumption and the distressed condition of the masses in the nineteenth century can now argue that this undoubtedly well authenticated tendential increase in consumption was possibly based only on the financially better

favoured upper classes. Actually there are plenty of examples of a much too limited use of meat amongst the "working classes," but sympathy-rousing descriptions of the fates of individuals should not be allowed to blind the ethnological-historical food researcher to the fact that a threefold increase in meat consumption in the nineteenth century cannot be entirely due to a fairly thin upper social stratum. As shown by Leipzig, a town populated by relatively well-to-do citizens, the meat consumption there at the beginning of the nineteenth century, 61 kg per head per annum, was almost as high as today and then fell slowly back at times. One can even say according to the "Marginal utility theory" that meat consumption amongst the financially restricted upper classes remained relatively constant. Certainly the middle classes in the nineteenth century had a greater share of the increased meat consumption than the lower classes. A whole series of authors see the change from dearer beef to cheaper pork as an index to the suggestion that it was the lower classes who profited most from the consumption increase.[19] At all events, it is known from the household accounts of workers in the late nineteenth century, that there were quite considerable differences in the dietary range, corresponding to income and the size of the family. The highest paid workers, small officials and functionaries ate about twice or even three times as much meat as the workers with the lowest pay and biggest families. Probably the attribution according to family size, income, dwelling place, age, sex, occupation and religion must be quite narrowly differentiated, if one wants to come to a really satisfactory statement about changes in meat consumption according to social strata. As far as can be seen from the as yet poorly flourishing state of research, this question cannot in general be answered monocausally in one direction. All in all, the increase in meat consumption in German runs parallel in an astonishing way to the industrialisation of the country and can be seen in itself as a first rate index to increasing living standards.

* This contribution represents an extract of a chapter of a forthcoming book: H. J. Teuteberg and G. Wiegelmann, Wandel der Nahrungsgewohnheiten unter dem Einfluss der Industrialisierung, Göttingen 1971. For this reason the statistical figures and footnotes on historical sources could be restricted here to a minimum. I acknowledge a very great debt to my colleague Alexander Fenton, M.A., B.A., F.S.A. Scotl. (Edinburgh) who has helped me in the translation of this paper.

1 C.F.W. Dieterici, Statistische Übersicht der wichtigsten Gegenstände des Verkehrs und Verbrauchs im Preußischen Staate und im deutschen Zollverbande im Zeitraum von 1831 bis 1853, 6 vols., Berlin 1838 ff. — Ibid., Der Volkswohlstand im Preußischen Staate, Berlin 1846. — Ibid., „Über die Verzehrung von Brod und Fleisch im Preußischen Staate", Mittheilungen des statistischen Bureaus in Berlin, vol. 7 (1854), pp. 135—152. — Ibid., Handbuch der Statistik des preußischen Staates, Berlin 1861. — E. Engel, „Zur statistischen Ermittlung der Consumtion pro Kopf der Bevölkerung im preußischen Staate", Zeitschrift des Königlich Preußischen Statistischen Bureaus, vol. IV (1864), pp. 128—135. — Reinick, „Resultate der Mahl- und Schlachtsteuer in der Periode von 1838 bis 1861", Zeitschrift des Königlich Preußischen Statistischen Bureaus, vol. III (1863), pp. 217—234, and vol. IV (1864), pp. 160—167, — G. von Viebahn, Statistik des zollvereinten und nördlichen Deutschlands, vol. III, Berlin 1868. — A. Bienengräber, Statistik des Verkehrs und Verbrauchs im Zollverein für die Jahre 1842—1864, Berlin 1868. — G.

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2 Jannasch, Fleischconsum op. cit, p. 34.

3 Martin, Fleischverbrauch Sachsens op. cit. p. 749. — Esslen, Entwicklung des Fleischverbrauchs op. cit. p. 751.

4 Moriz Heyne, Das deutsche Nahrungswesen von den ältesten geschichtlichen Zeiten bis zum 16. Jahrhundert, Leipzig 1901, p. 292. — See Schmoller, Historische Entwicklung des Fleischconsums op. cit. p. 288.

5 Schmoller, Historische Entwicklung des Fleischconsums op. cit. p. 290. — Abel, Fleischverbrauch op. cit. p. 413. — Günter Wiegelmann, Alltags- und Festspeisen. Wandel und gegenwärtige Stellung. (Atlas der deutschen Volkskunde, new series, ed. Mathias Zender, Beiheft 1), Marburg 1967, p. 30. — See G. Bark, „Geschichtliche Entwicklung des Fleischkonsums und seine Preisbildung", O. D. Potthof (ed)., Illustrierte Geschichte des deutschen Fleischer-

handwerks, Berlin 1927, p. 420. — As far as I can see the theory of high meat consumtion in the Late Middle Ages and the following phase of "Depekoration" until the 19th century has been put forward for the first time by W. Roscher, Die Nationalökonomik des Ackerbaus und verwandter Urproduktionen, Stuttgart 1859.

6 W. Abel, „Die Lage der deutschen Land — und Ernährungswirtschaft um 1800", Jahrbücher für Nationalökonomie und Statistik, new series, vol. 175 (1963), pp. 319. — See ibid., Agrarkrisen und Agrarkonjunktur, 2nd revised edition, Hamburg-Berlin 1966.

7 Martin, Fleischverbrauch im Mittelalter, op. cit. p. 322.

8 Schmoller, Historische Entwicklung des Fleischconsums, op. cit. p. 355.

9 Wiegelmann, Alltags- und Festspeisen op. cit. p. 37 and p. 39.

10 H. Wiese and J. Bölts, Rinderhandel und Rinderhaltung im nordwestdeutschen Küstengebiet vom 15. bis zum 19. Jahrhundert, Stuttgart 1966, p. 104 ff and p. 233 ff.

11 Schmoller, Historische Entwicklung des Fleischconsums op. cit. p. 303.

12 Heyne, Nahrungswesen op. cit. p. 280.

13 Böhmert, Statistik des Fleischverbrauchs op. cit. p. 286.

14 Esslen, Fleischversorgung im Deutschen Reiche, op. cit. p. 40.

15 Rubner, Wandlungen in der Volksernährung op. cit. p. 63.

16 Böhmert, Statistik des Fleischverbrauchs op. cit. p. 289.

17 The meat consumption (all sorts of meat with poultry and entrails) was in 1935/38 = 52,8 kg, in 1948/49 = 18,1 kg, in 1951/52 = 38,6 kg, in 1959/60 = 57,6 kg and in 1965/66 = 67,5 kg per head and annum. (See Statistical Yearbook of the Federal Republic of Germany). For the socalled "ideal meat consumption" see Hanssen, Über die Fleischkonsumtion, op. cit. p. 42, and Martin, Der Fleischverbrauch der Gegenwart p. 338 f.

18 Wittig, Die deutsche Fleischversorgung op. cit. p. 452.

19 Schmoller, Historische Entwicklung des Fleischconsums op. cit. p. 240. — Martin, Fleischverbrauch Sachsens (1895) op. cit. p. 117. — Hanssen, Über die Fleischconsumtion in Deutschland op. cit. p. 39. — Apelt, Konsumtion der wichtigsten Kulturländer op. cit. p. 46.