Diets in Welfare Institutions and in Outdoor Poor Relief

in Early Modern Western Europe

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This paper discusses the diet in various European institutions of early modern poor relief (hospitals, workhouses etc.). As we know only little about the individual poor man's diet, one has to refer to accounts and household-books of welfare and poor relief institutions in order to get a rather close and approximate picture of the level of consumption of the lower classes in general and the poor in particular. Providing a short summary of the historical approach to food and diets, this paper also deals with the social significance of diets, the quality and variety of a poor man's diet, and the nutritional status of the poor. A first attempt is made to analyse systematically the rich source material provided by the archives of charitable and penal institutions in pre-industrial Europe. Though various countries are represented in this study, the main emphasis lies on German source material.

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1. A historical approach to food and diets

Ogni dolore è dolore,/ Ma quello della tavola è il maggiore. Tuscan Proverb

In 1563 the Flemish artist Pieter Brueghel the Elder finished the copper engravings which he entitled "vette cuecken" (fat cuisine) and "arm ghasterije" (meagre cuisine).¹ No other picture of the early modern period illustrates better the material basis of different life styles than these two engravings which are now on display in the Austrian National Library in Vienna. The one entitled "arm ghasterije" shows a room filled with lean and pallid people, some of them stretching out their hands towards the frugal meal on the table, consisting of a loaf of bread, turnips and cockles. One man is sitting at the open fire-place, cooking soup in a cauldron hanging above the fire. A child with scrawny arms tilts a pot, licking up the leftovers. An emaciated mother feeds a sickly child sitting on her lap with some kind of liquid, most likely watery milk, as her dried up breasts clearly lack any milk of her own. Other signs of poverty and deprivation help to create an atmosphere of utmost misery. What a contrast to the rich man's table loaded with all kinds of good and expensive food, roast chicken a suckling pig, and so on! Hams and thick sausages hang on hooks, giving form to the image of conspicuous consumption.

What Brueghel seeks to express by means of his art, modern historians labour to do through examining medieval cookery books, household accounts, chronicles, catering accounts, autobiographies, diet sheets and other documents pertaining to the history of nutrition. As the majority of the sources refer to the menus of great feasts and elaborate meals given in celebration of some special occasion, it is not surprising that almost all historical studies concentrate on the food of the monied classes, shedding light on the extravagance of the upper classes and the astonishing resources of their kitchens.² By contrast, the daily meals of artisans, labourers and the poor in general, especially in preindustrial times, escaped any marked interest on the part of the social historians. Although some studies give details of working-class food from the Middle Ages to the 18th century, they fail to explore the "nutritional status" of the lower classes. Documents gleaned from charitable institutions, workhouses and prisons have yet to be systematically analysed.³

The modern historiography of food and nutrition starts with the pioneering work written by J. C. Drummond and Anne Wilbraham, "The English Man's Diet", published in 1939. The contents of this book were popularised after World War II by Sir Noel Curtis-Bennett's book on "The Food of the People Being the History of Industrial Feeding". While these two books focused on the pre-industrial period, a more recent collection concentrates on the 19th and 20th centuries.⁶

In Germany there had also appeared some classical studies on the history of nutrition, e.g. Moritz Heyne's book "Das deutsche Nahrungswesen" (1901)⁷ and Kurt Hintze's survey "Geographie und Geschichte der Ernährung" (1934).⁸ After the war many years passed before another book on this subject was written. It is somewhat revealing of the state of social history at German universities in the Fifties and early Sixties that a folklorist should have initiated historical research on this topic. Günter Wiegelmann's stimulating book "Alltagsund Festspeisen" came out in 1967.9 It was followed by a joint publication, the fruit of collaboration with another historian, which dealt with the changing nutritional scene in the 19th century.¹⁰ For the late medieval period we now have the voluminous study by Ulf Dirlmeier,¹¹ and the various publications of Wilhelm Abel,12 the nestor of agrarian history in West Germany.

The French research in this field was intensified after Fernand Braudel published his well-known book "Civilisation matérielle et capitalisme" (1967),¹³ of which translations appeared, for instance, in Germany and England. In 1970 the entire supplement of the journal "Annales E. S. C." was devoted to the history of "alimentation".¹⁴ A regional study by Louis Stouff came out in the same year.¹⁵ In 1973 Hubert Neveux¹⁶ summarized for the first time the French research on this subject in an article which appeared in "Revue d'histoire economique et sociale". The proceedings of a special conference, in which French and Spanish historians took part, were published in 1975.¹⁷

The majority of the above mentioned studies fall into one of the following categories: exploration of the relationship between food production and population ("association alimentaire")¹⁸ or a focusing on the daily meals, the budget for foodstuffs, the energy value and the chemical composition of foods. Almost all of them draw their data from different social backgrounds, be they from wealthy households, charitable institutions, monasteries, colleges and prisons or army camps.

The subject and the social origin of the sources may differ but the methodological problems remain the same: 1) one has to hunt down appropriate documents, in which quantity of foodstuffs can be matched with actual number of consumers; 2) it has to be borne in mind that per capita figures can never represent individual consumption; 3) one has to regard as implicit the limited nature of evidence provided by nutrition tables, which are always based on modern samples of foods. Therefore all caloric values for foodstuffs and figures for all the important organic and mineral constituents of food as well as for their vitamin content cannot be more than approximations; 4) one has to be careful about equating the modern with the ancient nomenclature for foodstuffs, as can be demonstrated by the following example: Where the German word "gemues" is mentioned in the sources, one quickly thinks of the modern term "Gemüse" which means "vegetable"19 but in 16th century texts the word could also have the meaning "Mus" (gruel);²⁰ 5) the historical weights and measures are not always easily converted into modern units, not to speak of the problem of estimating piece goods such as herring and chicken where no weight is given. These snares and caveats make it a somewhat hazardous undertaking to describe the levels of consumption of the lower classes and the general characteristics of a poor man's diet. However, this study represents the first attempt to analyse systematically the source material provided by household books and purchase lists of charitable and penal institutions in pre-industrial Europe. Though various European countries are represented in this study, the main emphasis lies on German source material.

2. The social significance of diets

Pauper non emit quia non potest. Konrad Peutinger 1522/23

The rich man considers what might please his palate, the poor householder is simply concerned to fill his stomach.21 The difference in social status generally correlates with the qualitative and quantitative feature of nutrition. Nourishment is only one aspect of food consumption. Taste and social prestige are other important determinants, and both are apt to change in the course of time and from one place to another.²² In an article by the French historians Maurice Aymard and Henry Bresc²³ light is shed on the "hierarchie sociale" to be found in food consumption. The authors distinguish between two different types of cuisine related to various strata of society: 1) cold dishes of simple character (bread, cheese, and wine), 2) hot dishes of refined character (meat, fish, vegetables, and herbs). Even charitable institutions reflect this "hierarchie sociale" in their diet sheets. The social differences in "nutrional status" are rather obvious, for instance, in the regulations for the Citizens' Hospital of Konstanz (1470), which made provisions for different dishes.24

Many hospitals on the continent distinguished between common and more luxurious nourishment. The Geneva Hospital²⁵ served different meals at the "premières tables" (occupied by the poor) and the "deuxièmes tables", where the warden, the staff and the rich prebendaries were seated.

The meals for the common people were not always adequate or tasty, as appears from the report given by Alexander Berner after he had visited South German and Swiss hospitals in 1531.²⁶ Another document offering proof that staff and inmates were treated differently comes from the 17th century. The diet sheet of the Frankfurt workhouse,²⁷ which also served as an orphanage illustrates how social class distinctions can be gauged by the following criteria (cf. table 2): 1) variety of the dishes, 2) quality of food (fresh or dried), 3) method of cooking (roasted or boiled), 4) presence or otherwise of delicacies.

Care must be exercised when making inferences based on hospital purchase lists about the food eaten by the lower classes, because large quantities of food and rare delicacies were dispatched during festive meals on Christian feast days and the annual banquets given for the governors. A very good illustration of this conspicuous consumption is provided by the Hl. Geist Hospital in Frankfurt, where the bill of fare for the years 1510-1515 reveals a tremendous variety of comestibles:26 milk, fried fish, pigeon, chives, onions, parsley, bread rolls, beef, mutton's pluck, mutton, veal, sugar, fresh herring, butter rolls, herbs, kale, flatfish (?), deer, apples, turnips, dried fish, cheese, groundling, chicken, legs of veal, eggs, roast beef, lamb, lamb's head, strawberries, cherries, parsnips, horse-radish, liver, birds, carp, flour, breast of veal, carrots, mulberries, almonds,

Class	Pieces of meat per week	Index	Quantity of wine per day	Index
1. priest	40	100	3.95 1	100
2. rich prebendaries	17	42.5	2.96 1	75
3. mean prebendaries	9	22.5	2.96 1	75
4. poor inmates	6	15	1.96 l	50

Table 1. Class distinctions in the Konstanz Hospital (1470).

	1st table (warden)	2nd table (labour inspector)	3rd table (poor & journeymen)
Sunday			
lunch	soup or vegetables, fresh beef & roast	soup or vegetables, fresh beef or roast	soup or vegetables, fresh beef
supper	soup or salad, beef and roast (left-overs)	soup or salad and meat (left-overs)	broth and plums
Mondav			
lunch	barley soup, dried or fresh beef	barley soup and dried beef	soup with dumplings or jellied meat
supper	soup or salad and beef (left-overs)	soup, beef (left-overs) or lights	oatmeal soup and cheese
Fuesday			
lunch	mutton or beef with turnips or pickled cabbage	mutton with cabbage or turnips, or pickled cabbage work pork	soup, cabbage or turnips
supper	semolina soup and meat (left-overs), a calf's head or pluck	apple pie or pear pie and cold dried meat	cabbage or turnip soup or sandwiches
Wednesday			
lunch	lentil soup, dried pork or dumplings, a mutton shoulder or breast of veal	soup or vegetables and fresh beef	lentils and cheese
supper	soup or salad, cold dried meat or calf's pluck/liver/ foot	soup and cold beef	barley soup, plums or dried pears
Thursday			
lunch	soup or vegetables, fresh beef with horse-radish	As Sunday	soup or fresh beef
supper	soup, cold beef or pancakes, lights	As Sunday	broth and sandwiches
riday			
lunch	pea-soup, dried fish, herring or other fish	pea-soup, dried fish or herring	peas, dried fish or herring
supper	oatmeal soup, boiled or fried fish or lights	soup, ox-feet or pancakes	oatmeal porridge with bread
Saturday			
lunch	pea soup with caraway, or millet-gruel and jellied meat or ox-foot	millet-gruel and cheese	millet-gruel and cheese
supper	cheese or butter	cheese or butter	millet-gruel and cheese

Table 2. Diet sheet of the Frankfurt Workhouse (1687).

plums, wheaten flour, pike, sausages, pork, pears, calf's liver, peaches, juniper, geese, malmsey, wine.

In particular the banquets of the governors

were notorious for their opulence and luxury, witness the resentments about such excesses during the conflicts in German towns in the 16th and 17th centuries.²⁹ These feelings were sometimes well-founded. One has only to consider the following menu:

	Gulden	Albus	Heller
1 lb. melted butter		9	6
2 lbs. butter		18	0
1 lb. figs		5	0
1 lb. blue raisins		9	0
carp		12	0
1 eel		28	0
herring		84	0
craw fish		9	0
kipper		6	0
herbs		7	0
saffron		2	0
jam (?)		1	0
plaice		8	0
1 pint olive oil		6	0
1 quart vinegar		7	0
1 Limburger cheese		24	0
12 quarts wine	6	0	0
	16	9	6

This dinner was given for the four governors of the Ipperwald Hospital in Cologne on 21st March 1613,³⁰ indicating that they were well rewarded for their honorary work, as were the aldermen of the city of Cologne for their various duties.³¹ The quantity and quality of food served on such occasions contrasts vividly with the rather modest meals given to the inmates, although their diet was not necessarily a monotonous one. Most of it was of the "meat, salt fish, cheese, beer and bread variety"32 in J. C. Drummond's phrase. Only in a few hospitals did the inmates - in common with the outdoor poor - live on gruel made out of barley, bread and beer. With certain qualifications diets of institutions, such as workhouses and hospitals, may serve as a guide to the daily intake of the lower classes, but they should not be equated with the minimum subsistence level.³³

3. The quality and variety of a poor man's diet

Art thou poor, yet hast thou golden slumbers?/ o sweet content! Thomas Dekker, Patient Grissill (1603)

During the famine which struck Nuremberg in 1491 the magistrate provided the poor with bread, butter, salt, salted meat, fish, vegetables, and wine.³⁴ Not every town could afford such a generous outdoor poor relief, especially when later on, in the course of the sixteenth century, the price of agricultural goods increased considerably.³⁵ Except for special endowments the early modern magistrates restricted poor relief to the distribution of one commodity: either bread or grain.

Owing to the price revolution in the agrarian sector the standard of living, especially that of the lower and middle classes, declined steadily. Sebastian Franck in his chronicle (1545) described the peasants' diet as follows: "Their nourishment is black bread made of rye, oatmeal porridge and boiled peas and lentils; water and whey their only beverage."³⁶

A closer look at the institutional diets reveals a similar but not so grim a picture. The diets of workhouses and hospitals in the 16th and 17th centuries never were found to consist of less than bread, meat, cheese, gruel, beer or wine. The hospital of Gronau³⁷ in Hesse had the following menu:

Sunday:	1 soup, 1 meat, 1 vegetable
	dish, 1.9 l wine
Monday:	1 soup, 1 vegetable dish,
	cheese
Tuesday:	1 soup, 1 meat, 1 vegetable
	dish, cheese
Wednesday:	1 soup, 1 vegetable dish,
	cheese
Thursday:	1 soup, 1 vegetable dish,
	cheese
Friday:	1 soup, 1 meat, 1 vegetable
	dish, cheese
Saturday:	1 soup, 1 vegetable dish,
	cheese

On feastdays: 1 soup, 1 meat, 1 pepper broth, 1 vegetable dish, 1.9 l wine.

Beer was served four days a week, mineral water daily.

While we do not know the individual allowance in this case, we do get the impression that the inmates of this hospital received a substantial nourishment if not a great variety of foodstuffs. The main course was cheese, soup and vegetables. Meat, which was more expensive, would appear on the menu only three days a week.

While the inmates of the hospital in Gronau lived largely on cheese, soup and vegetables, the rich and poor prebendaries of the Heilig-Geist Hospital in Lübeck³⁸ were better off in this respect:

Sunday:	salted beef or mutton, 2 loaves
	of bread, 3 quarts (2.7 l) of beer
Monday:	cod, 2 loaves of bread, 3 quarts
	of beer
Tuesday:	salted beef or mutton, 2 loaves
	of bread, 3 quarts of beer
Wednesday:	herring (4 to 6 pieces), 2 loaves
	of bread, 3 quarts of beer
Thursday:	As Sunday
Friday:	dried fish, 2 loaves of bread, 3
	quarts of beer
Saturday:	As Wednesday

It is not only the variety which surprises but also the quantity. The daily portions of meat amounted up to 1.5 kilograms a day, whilst fish, because it was more expensive, was served in lesser quantities (800-1,000 grams). The two loaves of bread weighed 834 grams. Lübeck was undoubtedly still a wealthy city in the 17th century and therefore could afford to treat its senior citizens in so splendid a fashion. The exceptional status of the Hl. Geist-Hospital in Lübeck becomes even more obvious, if one compares its menu with the diet sheet of St Bartholomew's Hospital in London for the year 1687 (cf. table 9). There the inmates (children) received 10 oz. (283.5 g) wheaten bread, 3 pints of beer, 2 pints of soup, broth or milk potage every day. 6 oz. meat (170.1 g) was served on

Mondays, Tuesdays, Thursdays and Sundays. Cheese and butter were the substitute for meat on the other days of the week. In the Hl. Kreuz-Hospital in Cologne (cf. table 10) the 12 prebendaries received almost the same variety of foodstuffs: butter (48.1 g), cheese (27.9 g), bacon (155.8 g), meat (110.4 g), eggs (3), and bread (187 g).

With workhouse and prison diets the details become less homogeneous. The daily allowance for the prisoners in the house of correction in Copenhagen (cf. table 11) is surprisingly high, even if one takes into account the fact that the inmates had to work hard. The ordinary allowance for one month was 1 lb. pork, 7 lbs. beef, 3 lbs. butter, 3 lbs. cheese, 20 lbs. bread, 20 lbs. herring, 3 lbs. dried fish, 3/4 bushel (13 l) gruel, 69.5 l beer. The forced labourers in Bern (cf. table 13) had to be content with a rather frugal diet in comparison. Their daily meals were made up of bread (1137.5 g) and gruel (2171 g). A greater variety of food is displayed in the diet sheet of the House of Correction in Bury/Suffolk (cf. table 12). There bread (453.6 g), porridge (1.136 g), meat (227 g), and beer (1.136 l) figure on "flesh days" and cheese (302 g) or herring (400 g?) instead of meat on "fish days".

The variety and quantity of outdoor poor relief, provided that alms were still given in kind, e.g. herring, bread, peas etc., also lack a common denominator. Private alms such as the festive meal provided by the rich Tucher family in Nuremberg once a year (cf. table 14) could be made up, for instance, of high quality food such as boiled beef, mutton, sausages, bread and beer, whereas the allowance for the poor in Konstanz (cf. table 15) only contained staple foodstuffs like bread, gruel and lard. Almost the same variety as in Konstanz figures in the alms provided by the Heilig-Geist-Hospital in Cologne (cf. table 16), where the individual portions were made up of herring, rye and wheaten bread.

Table 3. Daily consumption of cereal	ly consumption of cereals.	Daily	3.	Table
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Place	Year	Bread		Gruel		Beer	
		grams	percentage of cpd	grams	percentage of cpd	liter	percentage of cpd
Lübeck	1661	834	40.6%	-	-	2.7 1	23.8%
London	1687	284	25.4%	162	12.2%	1.91	28.2%
Cologne	1543	469	17.3%	-		-	-
Copenhagen	1627	1325	53.2%	435	3.1%	2.6 1	19.1%
Bury*	1589	453	37.2%	1136	17.0%	1.1 1	16.5 %
Bern	1643	1138	73.2%	2171	26.8%	1	
Nuremberg	1510	950	63.4%	(0.5 1	6.4%
Konstanz	1527	482	83.7 %	184	5.4%		-
Cologne	1522	167	97.8%	-	-	-	-

*fish days. cpd = caloric value per day.

4. The foodstuffs

If a poor man eats a chicken, either he or the chicken is ill. Jewish Proverb

Cereals: Good wheaten bread, leavened and well baked, was regarded by the man in the street as a tasty and nutritious food.³⁹ However, it did not always appear on the diet sheets of charitable institutions. When wheat prices boomed in the 16th century, the rich as well as the poor prebendaries had to be content with coarse rye bread.⁴⁰ The provision made by the governors of St Bartholomew's Hospital that at least twice a week the poor children should receive wheaten bread instead of rye bread is a rare exception to this general condi-

tion. T	he po	oor and th	ne lov	ver class	ses coul	d only
afford	the	cheaper	rye	bread,	when	grain
prices	went	up.				
Clas	s dis	tinctions	beco	me obvi	ous no	t only

through the range in quality but also through the range in quality. A poor man's diet consisted to a large extent of cereals in the form of bread, gruel, and beer, as can be learned from table 3.

The preponderance of cereals is clearly demonstrated by these figures. The energy value ranges between 97.8 percent in the case of the supplementary diet of the Hl. Geist-Hospital in Cologne and 17.3 percent in the case of the Hl. Kreuz Hospital. But these are rather extreme figures owing to the special characteristics of these two hospitals in the city of Cologne.⁴¹ More revealing of the class distinctions in early modern charitable institutions and outdoor

place	year	category	ration per meat day	weekly ration	annual consumption
Lübeck	1661	hospital	1510 g	(3) 4.53 kg	208.5 kg
London	1687	hospital	170.1 g	(4) 0.68 kg	31.3 kg
Cologne	1543	hospital	266.2 g	(3?) 0.80 kg	36.7 kg
Copenhagen	1627	house of correction	331.3 g	(3?) 0.94 kg	48.9 kg
Bury	1589	house of correction	227.0 g	(4?) 0.91 kg	41.8 kg

(number of meat days)

Table 4. Meat consumption.

poor-relief are the figures provided by the Hl. Geist Hospital in Lübeck and the allowance for the poor in Konstanz. 75 percent of the total caloric value per day represents most probably the consumption habits of the middle and upper classes, whereas as a figure close to 90 percent points to the more frugal diet of the lower strata of society.⁴²

Meat. One has to remember that hospital inmates were in general privileged consumers of meat. Even prisoners in the houses of correction were entitled, at least in the 16th and 17th centuries, to large rations of meat, as for example in the Copenhagen House of Correction. But those were modest in comparison to the portions of meat (1.5 kg) in the Hl. Geist-Hospital in Lübeck on meat days. The inmates of this wealthy hospital regularly enjoyed salted beef, which was considered less tasty and low in quality, but on feast days they were provided with fresh meat. On such days the 124 inmates consumed on average 300 kg of best beef.43 Though meat figures on most of the diet sheets, analysed in this study, there was, however, a considerable range of quality and quantity⁴⁴ (table 4).

With the exception of prebendaries in the Lübeck Hospital the inmates of workhouses and hospitals thus received smaller meat portions compared to the per capita consumption of the German population about 1600.⁴⁵

Fish: Fish was an important article of diet in most of the European hospitals and workhouses of the early modern period, partly owing to the church ordinances, forbidding the eating of meat on Fridays or at Lent; however, the church did not stipulate the eating of fish in particular but rather prohibited the eating of meat. Fish became a luxury food in the 16th and 17th centuries when the draught was in decline.⁴⁶ In the Middle Ages fish had already been twice expensive as meat.⁴⁷ In the early modern period the consumption of fish is even more reliable a guide to the purchasing power of the urban classes or the wealth of a charitable institution.

The variety and large quantity of fish served in the Hl. Geist-Hospital in Lübeck⁴⁸ is amazing, and can only be explained by the geographical and economic position of the most important Hanseatic city. In the 17th century this hospital had four fish days per week: Monday, Wednesday, Friday and Saturday. Each year the hospital bought large quantities of various fish: 5565 lbs. herring (1605), 27,012 lbs. cod (1643), 1,113 lbs. dried fish (1663). The most expensive fish, salmon, was part of the main dish of Lent. In 1617 the hospital purchased 974 lbs. salmon for its 125 inmates.

The daily rations of fish in other institutions of organized poor relief are displayed in table 5.

Dairy products: Dairy products, which J. C. Drummond calls "white meat",⁴⁹ were mostly consumed in the form of cheese and butter. It seems that milk was much more a common feature in English hospitals and workhouses than in similar institutions on the continent. Whereas milk, despite the fact that its high nutritive value was well known at that time,⁵⁰ hardly figured in a poor man's diet or on a hospital menu, cheese played an important role in the nourishment of the lower classes (table 6).

Though the caloric value of the dairy products (compared to the total cpd figure) was rather low, they played an important role because of their protein content, essential for the

Table 5. Fish consump	otion.
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place	year	category	ration per fish day	weekly ration	annual consumption
Lübeck	1661	hospital	744 g	(4) 2.9 kg	150.8 kg
Copenhagen	1627	house of correction	668 g(?)	(4?) 2.7 kg	139.1 kg
Bury	1589	house of correction	400 g(?)	(3?) 1.2 kg	62.4 kg

(number of fish days)

place	year	category	ration per day	percentage of cpd	annual consumption
London	1687	hospital	40.5 g	5.7%	14.8 kg
Cologne	1543	hospital	27.9 g	4.3%	10.2 kg
Copenhagen	1627	house of correction	49.7 g	3.3%	18.1 kg
Bury	1589	house of correction	302.0 g*	34.4%	-

Table 6. Cheese consumption.

*only as substitute for herring on "fish days".

growth of the body and the maintenance of health.

Beverages: An interesting feature is that wine and beer are represented even in the poor man's diet in rather large quantities.⁵¹ One has also to remember that alcoholic beverages were not officially forbidden during Lent or on feast days.⁵² In general wine and beer were of the rather weak sort without much body or alcoholic content. Wine was usually more expensive than beer, but there were of course regional differences. The common drink in the North of Germany was beer whereas in the South beer ceased to be on the menu and wine was the preponderant beverage.

The quantity of wine per day is a reliable indicator for social class distinctions in hospitals. Ulf Dirlmeier⁵³ estimated that 0.5 l wine represented the upper margin of the daily allowance for the poor in South German cities, a quantity of 1.3 l and more indicates, according to Dirlmeier's data, the consumption of the urban middle classes. The figure for beer, however, has to be fixed at a higher level, as can be learned from the following table 7.

The total figures yielded by this table exceed

by far the average per capita consumption of beer before the year 1800, for which Wilhelm Abel once gave an estimation of 300 liters per year.⁵⁴ A ration of less than one liter beer per day seems plausible as the minimum allowance for the poorer classes, although one has to allow for the fact that some cities (like Konstanz) did not provide beer or wine for the poor, who otherwise could live on the allowance granted to them by a paternal government.

5. Nutritional status

Dem armen ist niht mê gegeben/ wan guot gedinge und übel leben Freidank, Bescheidenheit (1225–1240)

Nutritional status is usually defined as the "extent to which a customary diet meets individual requirements".⁵⁵ For the purpose of assessing the diet as a whole the following paragraphs examine each separate nutrient.⁵⁶ energy, protein, minerals, and vitamins.

Calories: Tables of nutrient requirements

place	year	category	annual consumption	daily ration
Lübeck	1661	hospital	985.5 1	2.7 1
London	1687	hospital	620.5 1	1.7 1
Copenhagen	1627	house of correction	967.6 1	2.6 1
Bury	1589	house of correction	401.5 l	1.1 l

Table 7. Beer consumption.

da	ily	quantity	metrical equivalent	capita	ration per day	energy value	protein	fat
-			kg/l		g/ml	cal	g	g
a)	main dish	1 5 65	105 050	104	1510	0000	000	101.0
	Sunday beef	1.5 Tonne	187.353	124	1510	2929	302	181.2
	Monday cod	1 Tonne	135.360	124	1091	764	185.5	-
	Tuesday beef	1.5 Tonne	187.353	124	1510	2929	302	181.2
	Wednesday herring	4 pieces	0.800?	1	800	1312	112	88.0
	Thursday beef	1.5 Tonne	187.353	124	1510	2929	302	181.2
	Friday dried fish	73 lbs.	35.512	124	286	652	145.9	5.7
	Saturday herring	4 pieces	0.800?	1	800	1312	112	88.0
b)	supplements							
	bread	1.714 lbs.	0.834	1	834	2093	58.4	8.3
	beer	3 quarts	2.728	1	2728	1228	13.6	-
av	erage per day					5153	280.8	111.9
re	quirements					2940	94	95

Table 8. Diet of the Hl. Geist Hospital in Lübeck (1661).

show various results. For adults the requirement for calories can be fixed at 2,940 cpd, using the figure applied by Hans Teuteberg and Günter Wiegelmann.⁵ Almost all the diets represented in our sample meet this requirement, some even exceeding it by far, as for example, the diet of the prisoners in the Copenhagen house of correction. Even if one assumes that these people had to work hard as forced labourers the caloric value of their daily portion was above that of the supplementary rations for heavy workers in modern times (5,000 cpd). Whereas such a high caloric diet was justified in the case of forced labourers, the high surplus of calories in the diet of the old pensioners in the Hl. Geist-Hospital of Lübeck, who were not

weekly	quantity	metrical equivalent	capita	ration per day	energy value	protein	fat
		kg/l		g/ml	cal	g	g
Bread (Wheaten)	30 oz.	0.851	1	121.5	345	10.9	1.2
Bread (Rye)	40 oz.	1.140	1	162.9	409	11.4	1.6
Beef	18 oz.	0.513	1	73.3	142	14.7	8.8
Mutton	0.5 lb.	0.227	1	32.4	73	4.5	5.8
Broth	6.5 pts.	3.692	1	527.4	95	5.2	5.2
Ale	2 pts.	1.136	1	162.3	72	0.8	-
Beer	21 pts.	11.928	1	1,704	767	8.5	-
Milk pottage	3 pts.	1.704	1	243.4	163	8.5	8.5
Cheese	10 oz.	0.284	1	40.5	169	13.0	12.2
Butter	5 oz.	0.142	1	20.3	153	0.2	16.2
Rice milk	1 pt.	0.568	1	81.1	312	8.1	8.1
Sugar sop*	1 pt.	0.568	1	81.1	224	2.2	-
Water gruel	1 pt.	0.568	1	81.1	50	2.3	0.4
Total					2974	90.3	68.0
requirements					2940	94	95

Table 9. Diet of the St Bartholomew's Hospital in London (1687).

*dish composed of steeped slices of bread, sweetened with sugar.

carbon	natrium	calcium	phos-	iron	vitamin A	vitamin B.	vitamin B-	vitamin	Niacin
(CH)	(Na)	(Ca)	(Ph)	(Fe)		D ₁	D ₂	0	
g	g	mg	mg	mg	i.u.	mg	mg	mg	mg
-	3.0	166.1	2416	37.8	-	1.5	2.3		67.9
_	4.4	120	2029.3	5.5	546	a			
-	3.0	166.1	2416	37.8	_	1.5	2.3		67.9
8	120.0				4000	+	2.4	-	24.0
_	3.0	166.1	2416	37.8	-	1.5	2.3		67.9
_	5.7	143	2545.4	10.0	+	0.3	1.3	-	31.5
8	120.0		•	8	4000	+	2.4		24.0
433.7	5.0	125.1	792.3	8.3	_	1.3	0.4		8.3
109.1	0.8	109.1	682	27.3	-	+	1.4	-	+
545.1	42.8	343.0	3163.3	54.0	1221	2.0	3.7	•	48.8
360	5	800	1200	12	2500	2.9	1.8	75	25

obliged to do manual work, is amazing. The caloric intake of these old people was almost three times that of the minimum subsistence level represented by the daily allowance for the house poor ("Hausarme") in Konstanz.

It becomes quite clear, if one examines closely the figures yielded by the tables 8–16, that the amount of calories extended over a considerable range. The majority of the recipients, however, received an amount close to 3,000 calories per day. Only in a few cases does the caloric intake not meet the requirements. Thus, it appears that such diets cannot be considered as full diets, but must be taken as a temporary supplement in a period of dearth or individual distress. For this reason, and with

CH	Na	Ca	Ph	Fe	vitamin A	$\begin{array}{c} \text{vitamin} \\ B_1 \end{array}$	$\begin{array}{c} \text{vitamin} \\ B_2 \end{array}$	vitamin C	Niacin
g	g	mg	mg	mg	i.u.	mg	mg	mg	mg
70.5	0.6	18.2	66.8	0.6	_	0.06	0.06	-	1.2
84.7	0.9	24.4	154.7	1.6	-	0.24	0.08		1.6
-	0.1	8.1	117.3	1.8	, 	0.07	0.11	100	3.3
	0.1	3.2	61.6	0.8	—	0.05	0.06	(a. 1	1.6
5.2	•	•	•5	•					
5.0		17.4	23.7	0.1	—	+	0.10		+
68.2		68.2	426.0	17.0	-	+	0.85	-	+
12.2	0.5	289.2	230.8	0.2	316	0.12	0.48	2.4	0.2
0.8	0.8	384.8	350.3	0.4	563	0.02	0.10		+
0.2	0.2	4.1	3.0		670	+	+	-	+
49.4	10.4			•	0.00		C	190	
51.8	+	36.5	72.9	2.8	5613	0.08	0.08	7.3	1.2
9.3	0.4	8.9	105.3	0.5	+	(2)	1.0	+	
357.3	14.0	863.0	1611.6	25.8	7162	0.64	1.92	9.7	9.1
360	5	800	1200	12	2500	2.90	1.80	75	25.0

monthly	quantity	metrical equivalent	capita	ration per day	energy value	protein	fat
		kg/l		g/ml	cal	g	g
butter	37 lbs.	17.305	12	48.1	362	0.5	38.5
cheese	21.5 lbs.	10.056	12	27.9	117	8.9	8.4
ham	1 Zentner	56.120	12	155.8	1117	3.1	14.0
beef	85 lbs.	39.755	12	110.4	214	22.1	13.2
eggs	1,000		12	≈ 2.8 piece	238	19.6	16.8
bread*	worth 6 heller		1	187.0	469	13.1	1.9
Total					2717	67.3	92.8
requirements					2940	94	95

Table 10. Diet of the Hl. Kreuz Hospital in Cologne (1543).

*grams of bread which could be purchased with the alms from the Hl. Geist Hospital.

the exception of Bern and Konstanz, these diets cannot be taken to reflect the living conditions of the very poor. And one should not forget that even the poor whose diets did not meet the accepted requirements were not in danger of starving, because of man's ability then and now to adapt to undernutrition in its many forms. One should not, therefore, automatically expect classical signs of deficiency diseases simply because some of the results represented in our survey indicate that the nutritional intake was occasionally or chronically below the optimum level.

Protein: Protein⁵⁸ is not only a source of calo-

ries but it is also required for the growth and the maintenance of the tissues. Protein is found in most staple foods and constitutes an important element in the nourishment of the poorer classes. Some of the figures yielded by our tables show that institutional diets were often unbalanced in respect to animal protein. Three pounds of fish or meat provide some 200 to 300 g of animal protein, which is already two to three times more than the actual protein requirement.

The evaluation of diets indicates that the main cause of protein malnutrition is the inadequate amount of food and not so much the

monthly	quantity	metrical equivalent	capita	ration per day	energy value	protein	fat
		kg/l		g/ml	cal	g	g
pork	1 lb.	0.496	1	16.6	45	3	3.5
beef	7 lbs.	3.479	1	116.0	225	23.2	13.9
butter	3 lbs.	1.491	1	49.7	374	0.5	39.8
cheese	3 lbs.	1.491	1	49.7	208	15.9	14.9
herring	20 lbs.	9.940	1	331.3	576	43.3	43.3
dried fish	3 lbs.	1.491	1	49.7	113	25.3	1.0
gruel	³ / ₄ Scheffel	13.042	1	434.7	196	6.1	3.9
bread	1/4 Tonne	39.760	1	1325.0	3325	92.8	13.3
beer	$\frac{1}{2}$ Tonne	79.520	1	2651.0	1193	13.3	<i>57</i> .
Total					6255	223.4	133.6
requirements					2940	94	95

Table 11. Diet of the House of Correction in Copenhagen (1627).

СН	Na	Ca	Ph	Fe	vitamin A	vitamin B ₁	vitamin B_2	vitamin C	Niacin
g	g	mg	mg	mg	i.u.	mg	mg	mg	mg
0.5	0.5	9.6	7.2	0.1	1587	+	0.01	_	+
0.6	0.6	265.1	241.3	0.1	388	0.01	0.07	—	+
_	2.0	20.3	171.4	1.6		0.62	0.16	+	3.1
_	0.2	12.1	176.6	2.8		0.11	0.16		4.9
-	0.3	86.8	336.0	4.2	1820	0.14	0.42	+	+
97.2	1.1	28.1	177.7	1.9	-	0.28	0.09		1.9
98.3	4.7	422.0	1110.2	10.7	3795	1.16	0.91	+	9.9
360	5	800	1200	12	2500	2.90	1.80	75	25.0

quality of diet. And it has to be kept in mind that variety of foods plays only a minor role in this respect and that an adult could easily satisfy his need for protein by eating bread alone.

Minerals: The essential mineral elements⁵⁹ are primarily responsible for the skeletal development and water balance of the body. The major elements are calcium, phosphorus, sodium, and iron. There can be no doubt that many poor people throughout the early modern period had, for instance, a low calcium intake, because this mineral is notoriously scarce in cereals and other staple food easily available for the lower classes. Another important mineral is iron. A deficiency of iron, however, is not a very common feature in the institutional feeding of the poor, owing to the fact that the large amount of rye bread eaten by the poor supplied the necessary daily intake.

Vitamins: Vitamin deficiency⁶⁰ is largely responsible for the various deficiency diseases in early modern Europe, although they constitute only one thousandth part of a normal diet. As the vitamin content of foodstuffs depend very much on the age and the variety of the food, the season of harvest, the period of storage, and the method of cooking, it is almost impossible for the historian to estimate the amount

СН	Na	Ca	Ph	Fe	vitamin A	$\begin{array}{c} \textbf{vitamin} \\ B_1 \end{array}$	$\begin{array}{c} \textbf{vitamin} \\ \textbf{B}_2 \end{array}$	vitamin C	Niacin
g	g	mg	mg	mg	i.u.	mg	mg	mg	mg
_	+	1.3	24.9	0.3	—	0.10	0.02	(4)	0.6
_	0.2	12.8	185.6	2.9	-	0.10	0.20		5.2
0.5	0.5	9.9	7.5	0.1	1640	+	+	-	+
1.0	1.0	472.0	429.9	0.5	691	0.02	0.10	—	0.1
	3.3	39.8	499.7	1.7	4307	0.17	0.50	-	11.6
	1.0	24.9	442.3	1.7	+	0.05	0.20		5.5
35.6	2.6	27.3	186.9	2.0		F		2.00	140
689.0	7.9	198.8	1258.8	13.3		1.99	0.70	-	13.3
106.0		106.0	662.8	26.5		+	1.30		+
832.1	16.5	892.8	3698.4	49.0	6638	5.30	3.02	1	36.6
360	5	800	1200	12	2500	2.9	1.8	75	25.0

daily	quantity	metrical equivalent	capita	ration per day	energy value	protein	fat
		kg/l		g/ml	cal	g	g
I. meat days	dinner						
bread	8 oz.	0.226	1	226.8	569	15.6	2.3
porridge	1 pt.	0.568	1	568.0	260	8.0	6.0
meat	¹ / ₄ lb.	0.113	1	113.5	220	22.7	13.6
beer	1 pt.	0.568	1	568.0	252	2.8	-
Total (I)							
dinner + supper					2602	92.2	43.8
II. fish days							
bread	8 oz.	0.226	1	226.8	569	15.6	2.3
milk	1 pt.	0.568	1	568.0	380	19.9	19.9
a) cheese	¹ / _a lb.	0.151	1	151.3	632	48.4	45.4
b) herring	1 lb.	0.200?	1	200.0	348	26.0	26.0
beer	1 pt.	0.568	1	568.0	252	2.8	-
Total (II)	a)				3666	173.4	135.2
dinner + supper	b)				3098	128.6	96.4
requirements					2940	94	95

Table 12. Diet of the House of Correction in Bury/Suffolk (1589).

Table 13. Diet of a forced labourer ("Schallenwerker") in Bern (1643).

daily	quantity	metrical equivalent	capita	ration per day	energy value	protein	fat
		kg/l		g/ml	cal	g	g
bread gruel	70 Lot 1 Maß	$\begin{array}{c} 1.138\\ 1.670\end{array}$	1 1	$\begin{array}{c} 1375 \\ 728 \end{array}$	$\begin{array}{c} 2673 \\ 2404 \end{array}$	79.6 76.5	$\begin{array}{c} 11.4\\ 14.6\end{array}$
Total requirements					5077 2940	156.1 94	26 95

Table 14.	Meal	for the	poor pr	ovided	by the	Tucher	family i	n Nuremberg	(1510).
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occasionally	quantity	metrical equivalent	capita	ration per day	energy value	protein	fat
		kg/l		g/ml	cal	g	g
boiled beef	1/2 lb.	0.238	1	237.5	380	47.5	23.8
mutton	$\frac{2}{5}$ lb.	0.190	1	190.0	428	26.6	34.2
sausage	1	0.150?	1	150.0	329	13.5	73.5
bread (rye)	2 lbs?	0.950	1	950.0	2385	66.5	9.5
beer	¹ / ₂ Maß	0.530	1	530.0	239	2.7	
Total					3761	156.8	141
requirements					2940	94	95

СН	Na	Ca	Ph	Fe	vitamin A	$\begin{array}{c} \text{vitamin} \\ B_1 \end{array}$	vitamin B ₂	vitamin C	Niacin
g	g	mg	mg	mg	i.u.	mg	mg	mg	mg
115.8 46.0	1.3 3.3	33.4 36.0	211.5 244 0	2.3 2.8	-	0.3	0.1	:	2.3
-	0.2	12.5	181.6	2.8		0.1	0.1		5.1
17.4	0.1	66.0	83.0	0.3	_	+	0.3	-	+
358.4	9.8	295.8	1493.0	16.4	?	0.8	1.0	?	14.8
$115.8 \\ 28.4$	1.3	33.4 675 9	211.5 539.6	2.3	- 738	0.3	0.1	5.7	2.3
3.0	3.0	1437.4	1308.7	1.5	2103	0.1	0.4	-	0.2
-	2.0	24.0	300.0	1.0	2600	0.1	0.3	-	7.0
17.4	0.1	66.0	83.0	0.3	-	+	0.3	-	+
329.2 323.2 360	11.0 9.0 5	$\begin{array}{r} 4425.4 \\ 1598.6 \\ 800 \end{array}$	$\begin{array}{c} 4285.6 \\ 2268.2 \\ 1200 \end{array}$	9.4 8.4 12	5683 6676 2500	1.4 1.4 2.9	3.8 3.6 1.8	11.4 11.4 75	6.2 19.8 25.0

СН	Na	Ca	Ph	Fe	vitamin A	$\begin{array}{c} \text{vitamin} \\ B_1 \end{array}$	vitamin B_2	vitamin C	Niacin
g	g	mg	mg	mg	i.u.	mg	mg	mg	mg
546	6.8	398.1	2503	28.4	-	1.7	1.7		28.4
480	0.3	291.2	2477	7.3	-	0.7	0.3	-	18.2
1026	7.1	689.3	4980	35.7	-	2.4	2.0	_	46.6
360	5	800	1200	12	2500	2.9	1.8	75	25.0

CH	Na	Ca	Ph	Fe	vitamin A	vitamin B ₁	vitamin B ₂	vitamin C	Niacin
g	g	mg	mg	mg	i,u,	mg	mg	mg	mg
-	+	23.8	738.8	7.1	-	0.2	0.4	1.00	10.7
	0.4	19	361	4.8	-	0.3	0.4	•	9.5
-		7.5		1.5	-	0.6	0.5	0.00	3.0
494	5.7	142.5	902.5	9.5	-	1.4	0.5		9.5
21.3	8	21.3	132.5	5.3		+	0.3	-	+
515.3	6.1	214	2179.8	28.2	-	2.5	2.1	?	32.7
360	5	800	1200	12	2500	2.9	1.8	75	25.0

annually	quantity	metrical equivalent	capita	ration per day	energy value	protein	fat
		kg/l		g/ml	cal	g	g
bread	1.95 Mutt	176.000	1	482	1210	33.7	4.8
gruel	0.52 Malter	50.600	1	138.6	62	1.9	1.2
lard	14.65 lbs.	6.870	1	18.8	173	·=)	18.6
Total					1445	35.6	24.6
requirements					2940	94	95

Table 15. Diet of the house poor in Konstanz (1527).

of vitamins in foodstuffs mentioned in diet sheets. The documents also make scant mention of green vegetables and salad, which provides the requisite amount of the most important vitamins. Because of this difficulty in estimating vegetable and fruit consumption all figures in the calculation have to be interpreted carefully.

It is difficult to form a true impression of the amount of vitamin C in a poor man's diet of the 16th and 17th centuries. There can be, however, little doubt that there was a good deal of undernourishment in respect of this important vitamin, so that the majority of the lower classes were in a rather pre-scorbutic condition, especially in winter time.

Vitamin A deficiency hardly occurs in the diet represented in this sample. Despite the insufficient intake of green vegetables people obtained vitamin A from animal fat. Milk, eggs, and the viscera of animals (liver and kidneys) provided a sufficient amount of this vitamin.

The intake of vitamin B_1 , B_2 , and Niacin was at best small by modern standards. But this was true of all classes of society and not a distinctive feature of a poor man's diet.

It is clear that the application of modern nutritional knowledge to historical studies is a hazardous undertaking, full of traps and prone to error. The assessment of the food consumed in early modern Europe and the search for appropriate documents has only just begun. The history of nutrition is still in its infancy. It is a fascinating but complex field of studies which requires a multidiscipline approach, and which also comprehends the methodological tools of the art historians, who examines the paintings and engravings of the old masters to determine the degree of rickets and other overt signs of malnutrition in pre-industrial times.

annually	quantity	metrical equivalent	capita	ration per day	energy value	protein	fat
		kg/l		g/ml	cal	g	g
herring	11 Tonnen	1.440	704	5.6	10	0.7	0.7
rye*	207 Malter	22.356	704	87.0	218	6.1	0.9
wheat**	223 Malter	26.091	704	81.2	231	7.3	0.8
Total					459	14.1	2.4
requirements					2940	94	95

Table 16. Alms distributed by the Hl. Geist Hospital in Cologne (1522/23).

*flour extract 100% **flour extract 80%.

СН	Na	Ca	Ph	Fe	vitamin A	vitamin B_1	vitamin B ₂	vitamin C	Niacin
g	g	mg	mg	mg	i.u.	mg	mg	mg	mg
250.6	2.9	72.3	457.9	4.8	_	0.7	0.2		4.8
11.4	0.8	8.7	59.6	0.7					
	-	+	+	+	+	+	+	+	+
262	3.7	81	517.5	5.5	+	0.7	0.2	+	4.8
360	5	800	1200	12	2500	2.9	1.8	75	25.0

Guide to the tables No. 8-16

An attempt has been made to analyse these diets and to compare them with modern estimates of requirements. The calculations give no more than very rough estimates, as food varies so much in its composition and details of the individual portion cannot always be ascertained. The approximate nutritional value of diets is expressed per day.

Metrical measures were calculated according to the following reference books and articles:

H.J. von Alberti, Maß und Gewicht. Geschichtliche und tabellarische Darstellungen von den Anfängen bis zur Gegenwart, Berlin (East) 1957.

- Poul Rasmussen, Mål og vægt (Dansk Historisk Fællesforenings Håndbøger), Copenhagen ²1975.
- R.E. Zupko, British weights and measures, Madison 1977.
- Heinz Ziegler, Die Kölner Mark in neuem Licht. Mit besonderer Berücksichtigung des Normannorum pondus, in: Hansische Geschichtsblätter 98, 1980, pp. 39-60.
- Heinz Ziegler, Flüssigkeitsmaße, Fässer und Tonnen in Norddeutschland vom 14. bis 19. Jahrhundert, in: Blätter für deutsche Landesgeschichte 113, 1977, pp. 276–337.

Signs:

- (+) minute quantity (-) non existent
- (·) not available (?) estimate
- i.u. = international units

СН	Na	Ca	Ph	Fe	vitamin A	vitamin B ₁	vitamin B ₂	vitamin C	Niacin
g	g	mg	mg	mg	i.u.	mg	mg	mg	mg
-	0.1	0.7	8.4	+	73	+	+	_	0.2
45.2	0.5	13.1	82.7	0.9	_	0.1	+		0.9
47.1	0.3	12.2	44.7	0.4	-	+	+	—	0.8
102.3	0.8	26	135.8	1.3	73	0.1	+	+	1.9
360	5	800	1200	12	2500	2.9	1.8	75	25.0

Source of data:

- Table 8: Wilhelm Plessing, Das Heilige Geist-Hospital in Lübeck im 17. und 18. Jahrhundert, Lübeck 1914, p. 256.
- Table 9: J.C. Drummond/A. Wilbraham, The Englishman's Food, London 1957, p. 104.
- Table 10: Municipal Archive Cologne, Armenverwaltung Amtsbücher Hl. Kreuz 22.
- Table 11: Corpus Constitutionem Daniae, ed. by V.A. Secher, Copenhagen 1887–97, vol. III, No. 611.
- Table 12: British Library Harleian Mss. 364:22, f. 149v-150r.
- Table 13: Georg Fumasoli, Ursprünge und Anfänge der Schellenwerke, Zürich 1981, p. 148.
- Table 14: Ulf Dirlmeier, Untersuchungen zu Einkommensverhältnissen und Lebenshaltungskosten in oberdeutschen Städten des Spätmittelalters, Heidelberg 1978, p. 390.
- Table 15: Dirlmeier, Untersuchungen (op. cit.), p. 382.
- Table 16: Municipal Archive Cologne, Armenverwaltung Geisthaus 1046.

Notes

- The engraver was Peter van der Heyden. Cf. Arthur M. Hind, A History of Engraving and Etching From the 15th Century to the Year 1914 (New York, 1963), p. 352. For a reprint cf. Elke Stein, Hungrige speisen (Ulm, 1966), p. 25. For the "literary" imagination see Piero Camporesi, Le pain sauvage. L'imaginaire de la faim de la Renaissance au XVIII^e siècle (Paris, 1981).
- Cf. John Burnett, A History of the Cost of Living (Harmondsworth, 1969), p. 80 passim. An exception from this rule is the literature on diet and nutrition in Eastern European countries, cf. example Maria Dembińska, Konsumpcja żywnościowa w Polsce średniowiecznej (Food Consumption in Medieval Poland), (Wroclaw, Warszawa, Kraków, 1963 (with an informative English summary); Andrzey Wyczański, The Social Structure of Nutrition: A Case, in: Acta Poloniae Historica 18, 1968, pp. 63-74. For Russia cf. R. E. F. Smith/David Christian, Bread and Salt. A Social and Economic History of Food and Drink in Russia (Cambridge, 1984). For the methodological problems involved cf. Andrew B.

Appleby, Diet: Sources, Problems, Possibilities, in: Charles Webster (ed.), *Health, Medicine, and Mortality in the Sixteenth Century* (Cambridge, 1971), pp. 97–116.

- 3. Also Wilhelm Abel's classical study. Massenarmut und Hungerkrisen im vorindustriellen Europa (Hamburg/Berlin, 1974), does not pay much attention to these records. The recent study by William J. Wright, A Closer Look at House Poor Relief Through the Common Chest and Indigence in Sixteenth Century Hesse, in: Archiv für Reformationsgeschichte 70, 1979, pp. 225-237, only provides the number of calories per day, which have been figured in terms of the grams of rye that the recipient could purchase with his monetary aid. But this does not give a clue to the real diets. What can be done in this field is shown in the brilliant study by Marie José Villemon, L'alimentation du pauvre de l'hôpital général de Caen au début de XVIIIº siècle, in: Annales de Normandie 21, 1971, pp. 235-260.
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