The History of Nutrition and Economic History

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Lucien Febvre would have appreciated the recent interest shown in the history of foodstuffs. Shortly before the war he laid down the basic lines along which research was to be conducted, drew up the first programmes for historians and researchers, presented some preliminary conclusions, and, together with M. Maget, prepared some of the first maps of dietary customs, showing the areas in which fats were used in the preparation of food in France. At that time his main public was provided by folklorists, and his models by geographers such as Vidal de la Blache (*des Genres de Vie*, Annales de Geographie XX, 1911). His aim was to distinguish, through a study of culinary techniques, notable permanencies to which man adapted himself, rather than was able to adapt, and which changed only very gradually.

The subject has been taken up again and given some systematic shape through the researches launched and published in the *Annales* since 1961, as a result of which some of the basic problems have been more clearly defined and elaborated. These still rely on a geographical matrix, providing a two-fold perspective of, on one hand, the concrete reality of the land and, on the other, cartographical representation of the phenomena. But during this period anthropologists as well as historians have turned their attention to this silent and static infra-history which is an intimate part of man's behaviour and customs to the extent that he ceases to be conscious of its existence, an infra-history revealed as it were by Lucien Febvre and then more systematically explored by Fernand Braudel,[1] which provides history at its most elemental. The history of nutrition outruns the economic historian's concept of the short

[1] Fernand Braudel, *Civilisation matérielle et capitalisme*, Paris, A. Colin, 1967.

and even the long term, taking us into a historical time scale in which ' the Neolithic agricultural revolution is an ever-present reality '. The regular repetitions which pass before the historian's lazy eye only become meaningful when he succeeds in defining the limits of time and place.

Such a complex, curious and exacting history provides an ideal field for the *Annales*. But surely, one might ask, prior to the advent of modern statistics the necessary sources must be lacking? In fact the sources exist and are already well known, it is simply a matter of looking at them again. Even the most banal sources which are often dismissed as beneath the historian's concern contain a wealth of information on what men eat and on the men who eat. Everything in fact becomes a source, tax registers, literary texts, works of art such as the painting of Jacopo Bassano in which Ferdinand Braudel discovered the first representation of the fork for 1599. But the grains of wheat, the traces of vegetable matter or the fragments of cinders and pieces of charcoal turned up by the medieval archaeologist by chance among the animal remains on the site of a deserted village, which he had chosen to explore in preference to a castle or a church, equally constitute the source material for such a study. But is the historian able to interpret and use such sources? If not, then so much the better, for he must seek the advice and assistance of the botanist, the medical expert, the dietician, the anthropologist, and from such exchanges he cannot but gain.

One of the great dangers inherent in such research is of course the fact that the same words in different periods may carry quite different meanings. But this too is useful, as once these changing meanings have been caught and defined with the aid of folklorists and linguists they themselves bear witness to a reality which changes so gradually that man does not even need to find a new word for it. He continues for example to ' lay ' and ' set ' the table long after it has ceased to be a wooden board laid on trestles at meal times and has become a fixed piece of furniture with a room of its own. In the same way French *blé* and Italian *grano* in the singular attain the dignity of wheat as the latter gained supremacy over other cereals less suited to bread-making, but from which all the same bread was made — that is over the other *blés* and *grani* which for so long had provided man's daily diet. Maize, that brutal invader of the XVIth century, was always to remain linguistically a foreigner, and was known in the Christian west variously as ' Indian ' or ' Turkish ' corn, and as ' Arab ' or ' Egyptian ' corn in the Balkans.

When the *Annales* in 1961 launched their research they gave food pride of place in their study of the history of ' material life '. This was a phrase which for Fernand Braudel ' describes well enough that area of imperfect awareness which surrounds man's economic life and which is composed of vivid but often uncertain intuitions '. Other stages follow on, and Fernand

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2 Fernand Braudel, *Retour aux enquêtes*, « Annales E.S.G. », 1961, p. 423.

Braudel adroitly listed a number in his ' *Civilisation materielle et capitalisme* ': housing and clothing, standards of life, techniques, biological factors — to which the *Annales* in 1969 dedicated a special issue entitled ' Society and Biological History '. Once given currency then the history of food and nutrition has in little more than ten years developed along two apparently contradictory lines which were foreseen at the outset; it has become in turn both quantitative and qualitative.

Quantifying accurately the consumption not only of the great but of all social sectors has made it possible to reconstruct in the past the now familiar division between under-nourished mankind and that rather narrower group who eat to capacity and beyond. In the past this was a division separating roughly the same greographical areas as to-day. But within the societies of the ' rich ' countries it is possible to go beyond this initial division, for their peasant and urban masses were always qualitatively poorly nourished and regularly afflicted by famine. In numerical terms consumption provides an irreplaceable tool of social analysis. It is also one that suits the needs of the economic historian, although prior to the XIXth century he is brought up short by the lack of precise information on agricultural production and at best must rely on simple indices of trends, such as are provided by tithes. From this arise the temptation of trying to work around the obstacle by multiplying individual consumption rates by the generally better known total size of the population. This is the method adopted by Deane and Cole for XVIIIth century England,[3] and was also the method employed in all the public accounts of the Ancien Régime and, following Vauban's *Dîme Royale*, by all the Enlightenment economists. There are certainly a range of variations. For Languedoc in the XVIth century, for instance, the increase in tithes was markedly inferior to demographic growth, which made it possible for Le Roy Ladurie to infer the hypothesis of a quantitative and qualitative decline in the popular diet which other sources have strengthened.[4]

Figures however do not tell all, and the study of food in history has annexed, with certain imperialist designs, the new fields of ' dietary sensitivity ' and of the ' psycho-sociology of nutrition ', which have no clearly definied limits. But food, even in contemporary well fed towns, is something charged with too many secular aspirations and preoccupations ever to be considered as a mere material object. It is rich in complex implications of ritual and social etiquette and takes us to the heart of individual and collective social customs. It both separates and reunites. What is even more important is that these implications and significances are often in many ways divorced from purely material factors. Witness for example the way in which luxuries of

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[3] PHYLLIS DEANE & W. A. COLE, *British Economic Growth*, Cambridge (University Press), 1962.

[4] EMMANUEL LE ROY LADURIE, *Les Paysans de Languedoc*, Paris, SEVPEN, 1966.

the table are different in each successive century as the former are reduced in turn to a ' common level ', or else the contemporary return of rye — and ' whole-meal ' — bread, traditional foods of the poor, to the tables of the rich.

After ten years labour then, and on the eve of a conference devoted to the study of food in history,[5] three books have appeared, one being an exemplary monograph and the other two collective studies. The first of these, the *Atlas des cultures vivrières - Atlas of Food Crops*[6] stands on the cross-roads between history and geography and employs a millenial time scale in presenting a collection of ' geographic and chronological inventories for an *Atlas of World History* '. In 18 charts the diffusion and development of the main cultivated crops in different times and areas is traced — the new cereals; the progression from corn to rice and maize passing through millet and buckwheat — the four main root crops; cassava, sweet potato, potato and yam — sugar cane — and finally the four principle shrub cultures which are similarly signs of civilisation; banana, date, olive and vine. This is not achieved without certain simplifications and uncertainty, but this is recognized and further research is proposed. In fact such limitations derive largely from the scale, for as the charts are drawn on a world basis certain regional over-simplification is inevitable.

But plants travelled, and plants conquered. Abandonment of an area or withdrawal, as in the case of the vine in north-west Europe, was rare except when acclimatization proved impossible (e.g. the case of the sweet potato in Europe). Millets (broomcorn and foxtail) were the only losers and were in permanent retreat in relation to their diffusion at the start of the modern period without ever conquering new areas. The *Atlas* tells us mainly of the winners, the dynamic species which succeeded in spreading beyond their original home-lands throughout the world. Nothing could be less ' natural ' than such travels, all of which were connected with man's activity and designs. Climate and sun fixed only their extreme limits, but often enough even these were overcome.

Once established on their own terrain, plants exacted their own tyranous demands, but frequently at an earlier stage they had been forced by selection and mutations of cultivation to adapt themselves to man's needs. The vine provides a well known example of this, but rice was originally a dry plant prior to its great expansion as an irrigated crop.

The graphical representations serve to accentuate even more strongly the extent to which the XVIth century was a real jumping-off point for these

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[5] Deuxième Congrès de l'Association Françaises des Historiens Economistes, Paris, 4-6 October 1973.

[6] Jacques Bertin, Jean-Jacques Hemardinquer, Michel Keul, W. G. L. Randles, *Atlas des Culture Vivrières - Atlas of Food Crops*, Paris-La Haye, Mouton, 1971.

plant migrations. Prior to this only one transoceanic migration had occurred, that of the banana which was carried over the Pacific by migrant Melanesians. Plants travelled usually by land or else more frequently on the traditional local coastal trade routes of the land-bound seas, the Mediterranean and the Caribbean, between island chains such as the Indies, or along Continental coast-lines, and while rice sugar cane and perhaps yams came to West Africa from India sorgum (Indian millet) travelled in the opposite direction. But this linkage between tropical zones was paralleled by the continuity of cultivation between Asia and Europe which produced the main shaded areas of plant cultivation prior to the Christian era. Starting from their home terrain in the Middle East, wheat and its companion barley became partners of the cereals of northern Europe, rye and oats, which profitted from their hardiness. But the world of 1500 remained partitioned into Continental groupings of cultivation much as it had been at the start of the modern era. With the exception only of the belated adventures of rice, the dominant influence was still that of the Neolithic revolution, the passage from fruit-gathering, fishing and hunting to productive agriculture, embodying the alliance between man and nutritional plants — plants that were exclusive and demanding, such as Eurasian corn, Africa sorgum, American maize, or the rice of the Asian monsoons.

Columbus' discoveries opened up the Oceanic routes to plant movement and henceforth they became the most direct expression of European domination. Wheat and its satellite cereals filled all the blank spaces in Europe, while the vine and the olive became concomitant with the areas of Spanish colonization. But Europe was also able to take for her own use or transplant to other countries as it suited her purpose. Sugar cane and the banana was carried to America, as is well known, while of the American plants some, such as the sweet potato, were tasted without relish and so left, like cassava, to Asia and Africa, while other, like maize and potatoes, were adopted. The potato which had been established on the Andes for two millenia was even re-exported back to north America.

But even the criticisms which one may level against it illustrate that the *Atlas* succeeds in its intention — that is of reopening discussion and thought by providing a picture of the main phenomena on a world scale. As far as possible the authors have not included experimental cultivation — which is of mainly botanical interest anyway — but only definitive adoption. However one does at time wish that it were more easy to distinguish between purely marginal and more predominant forms of cultivation. This may well appear in later charts, but one should point out that maize never held a position in Sicily comparable to that in the Veneto. This is the sort of problem which the authors had already envisaged and which they intend to rectify in subsequent volumes. The *Atlas* however provides us with a series of informative diachronic perspective on each individual plant. But in fact plants

rarely travel on their own; they accompany not only men but other plants as well, and on their journeying pursue one another and sometimes drive one another back, as in the case of maize and millet in Europe. On changing partners their way of life was also changed, but they only required integrating into a system of cultivation which, with varying degrees of rigidity, was becoming a system of crop rotation which contributed to their cultivation. It was only at this price that they were able to satisfy all man's needs without exhausting the soil. But behind these often shaky pairings of cultivation and such alliances, which were born of necessity and design rather than mutual compatibility, lies a problem which is fundamental to the history of nutrition — that of nutritional balances. A chart of suger cane or date diffusion is all well and good — but we also need a map of sugar diffusion. And surely for vegetable oils a map of green olive diffusion in the Mediterranean and its narrow colonial extensions alone is scarcely sufficient? But as J. BERTIN warns us, the *Atlas* is only the first of a series.

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The monograph by LOUIS STOUFF[7] takes us on to more familiar and secure ground. Were the study limited solely to Provence, the area chosen by the author for his exhaustive and systematic research, it would be rather limited, but this on the whole is not the case. The study is admirable in its originally and makes it possible to draw immediate comparison with neighbouring countries such as Italy and Spain. Such comparisons are all the more vaid due to the number of really fine discoveries made by the author in the archives. Among these are the records of the butchery at Carpentras, which are complete for the 80 years between 1419 and 1479 and give day by day accounts of slaughtering, the weights of the different beasts, and sales. There are also the daily accounts of the household of the Archbishop of Arles (1429) and those of the papal *Studium* at Trets (1364-65). Documents of such authentic detail are bound to become familiar reference points for historians. But while STOUFF treats these figures in a sound and lucid way he is equally aware of the problems which they pose for the social historian. What did men eat? — that is to say, what did all types of men and all social classes eat? How did they eat, purchase, and prepare their food? In fact when bakers (*pistres*), who both made and baked bread, began to make ground at the expense of the public oven-men who merely baked bread which had already been prepared in the household kneading-trough, auto-consumtion fell back in the face of a market economy. But in this period, as the price of bread was regulated, the problem of its weight became central to everyday municipal deliberations and also to social conflict.

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[7] LOUIS STOUFF, *Ravitaillement et alimentation en Provence aux XIVe et XVe siècles*, Paris-La Haye, Mouton, 1970.

Beyond such contributions of documentary interest however, the main interest of this book lies in posing and also to some extent answering the question which is crucial to all historians of the modern period — and that is the optimum nutritional standard reached after the great plagues, in the XIVth and XVth centuries. The theory is that with fewer men there was consequently more bread for those who survived; there was also more meat, both butchered meat and venison, as pasture and forest were expanding at the expense of cereal cultivation; here were also higher wages both in kind and in money as a result of scarcer labour. Such is the thesis that has now become a classic in the economic history of Western Europe in the XVth century, but nowhere does it find as strong quantitative support as in STUFF's research, as a result of which a number of fact would now seem to be incontestable.

As far as bread and its increasing importance in the daily diet is concerned, even more striking than the slow and gradual advance of wheat over the centuries, although remaining reserved for the rich man's table, is the sudden abandonment of barley in the mid XIVth century. It was replaced in the popular diet by rye and a number of meslins, in particular the mixture of wheat and rye sown together. This also occurred in neighbouring Languedoc and doubtless elsewhere as well. This in turn made for the social ascendancy of the baker and the partial abandonning of the porridges and gruels which were traditional to the peasants' table in favour of bread, even if it was course and black. The town maintained its lead over the countryside, and there white bread was eaten. But such a qualitative advance which touched all sectors of society did not prevent the regular recurrence of famine. The Provence region exported grain to areas such as Genoa and Barcelona which were less well provided, but in turn often had to import it from its Burgundian hinterland, for along side the grain producing areas which often yielded in excess of demand there were other zones — the towns and the hills — which regularly under-produced. When the harvest failed then or was poor, and there were no preservable reserves, the whole system of long and short distance exchange, which in a good year made it possible for all to eat to their fill (some quintals per head), came to a halt and local demands became overriding. The results were always the same and costly, benefitting only the towns which alone were able to pay for reserves and avoid famine, although on this point STUFF is unduly optimistic. Was it really the case that the flood of starving peasants to the towns and their distribution of foodstuffs in times of scarcity, to typical an occurrence a century later, was unknown in the XVth century?

Alongside bread which was regularly in short supply and which the poor were forced to buy each day, always paying more for it than the rich, wine featured predominantly in the popular diet. In the early XVth century only 15% of the inhabitants of Carpentras had no stock of wine in October. Yet at the end of August 1473 more than half the families had no grain supplies

and less than a quarter had sufficient food to last the year. But even in poor years wine supplies were always considerable, sometimes even fabulous. One finds from 300 to 400 litres per person, all of which had to be drunk during the year as it kept badly, although it was probably of a low alcoholic content so harmless, and certainly more wholesome than water which was always suspect. The communes understood the situation well; the taxes on wine formed the basic of their finances.

This leaves us with meat which is much the most difficult of all to quantify. What meaning can be given the weights cited in these documents? How can domestic slaughterings — the poor old family pig for example — or poultry and game be taken into account? All such traditional objections cannot be completely met, but it is still possible to reach some preliminary conclusions and to provide figures which are acceptable at least as indicating a minimum. In the first place the network of butchers in the villages seems to have been as extensive in 1500 as it was four centuries later. Even if he did not sell meat everyday, the appearance of a butcher indicates an increase in meat consumption and also that it was becoming a more normal, if not necessarily daily, food rather than something reserved for certain special days — such as Christmas — or for days of particularly heavy toil in the fields. The obligations imposed on the butcher varied from the countryside to village; and from the village to the town, revealing the existence of a situation of geographic and social hierarchy. Feast-day (Christmas and Easter), then weekly and twice weekly (Sunday, Sunday and Thursday), and finally daily levels of consumption become apparent. Fast days fixed by the Church, numbering 150 in the year, remained of course apart. But the communal authorities could not ignore the need for meat supplies, nor rely solely on domestic slaughtering, which still remained important, however, especially for the Easter lambs and kids, for December's salted pork, and for poultry. The butchers were however carefully supervised, encouraged, and subsidised more or less directly. Certainly, in the town at any rate, this interest also had a fiscal motivation, for which the historian may be thankful as the meat taxes provide his best quantifiable source.

The exceptional accounts of the Carpentras butchery make it possible to detail the weight of the animals, the seasonal nature of consumption and of various kinds of meat, the range of consumption (mutton and beef), its volume, together with the total weight marketed, and so also the minimum availability per capita of the population. The last figure is some 26 kilos per person per year dead-weight — that is, including the carcass — making some 20 kgs of real meat; excluding fast days that works out at 100 grammes per person per day. This figure would seem to disguise an increase in relation to the past, for the population had decrease, but it also shows a certain stability from one year to the next. Throughout the XVth century the number of animals slaughtered hardly varied by more than 15% from the average, and the pattern

of monthly increases and decreases is remarkably constant. Can one then say that it was meat that formed the most stable element of nutrition in relation to the dramatic irregularities of cereal harvests and the catastrophic variations in bread prices? In fact meat still played too small a part, and its calorific value was way below that of grain. But XVth century consumption rates were good. Later figures, if one goes as far as the 19.3 kg. yearly average registered for the Department of the Vaucluse in 1840 — although in Paris by then it was three times as high — indicate both a gradual decline between the XVIth and the XVIIIth century, or rather a plateau with the geographical characteristics of a ' depressed relief ': an optimum of 20/25 kgs for the towns which was never exceeded and which in the countryside was often never reached. In wider terms this parallels the figure suggested by Bennassar [8] for Valladolid (which omits to take fast days into account) and also, despite appearances, compares very closely with Le Roy Ladurie's Languedoc figures (40 to 30 kgs) which refer to the optimum consumption of and adult male working agricultural labourer rather than to a general average for the whole population. Unfortunately there are no similar figures for Italy which would make it possible to arrive at a ' Mediterranean quota ' comparable to that for corn, which varied between 2 to 2.2 quintals.

Day to day realities such as bread, wine, fish and meat all too easily become mere abstractions to the historian and the economists despite their importance. But after these statistical exercises STOUFF succeeds in returning to every-day realities — that is to the small but identifiable social groups to whose tables those sources which register the day to day weights and quantities of purchases invite us. These in fact are the only sound sources and are infinitely preferable to details of the victuals rations given to agricultural labourers or those of victuals allowances which are payments in kind rather than real indices of consumption. From this study two levels of consumption are evident; the one being clearly aristocratic and lavish, as enjoyed by the commensal of the Archbishop of Arles (some 4,500 calories); the other, that of the students at the papal *Studium* at Trets (2,600 calories) being sufficient but closer to the norm, although perhaps privileged even in its monotonous regularity. The first group had a more expensive and varied diet, and expenditure on bread and wine was proportionally less than on meat, fish, and eggs. But they ate — or at least had on their table — much greater quantities: twice as much bread and wine, and three times as much meat. The energy giving content of their daily diets however was much the same in both cases; in fact bread constituted a greater proportion at Arles (91%) than at Trets (80%), which can be compared with the diets at the Hospital for the Incurable at Genoa in 1608-9 (bread = 81%), but is markedly

[8] BARTOLOMÉ BENNASSAR, *L'alimentation d'une ville espagnole au XVIe siècle. Quelques données sur l'approvisionnements et la consommation de Valladolid*, « Annales E.S.C. », 1961, pp. 728-40.

higher to that of the Collegio Borromeo at Pavia (53% in 1614-5).[9] A result of this was unavoidable imbalances, with an excess of carbohydrates, a deficiency of animal proteins and a real shortage of vitamins which was made even worse by the mode of preparing soup — almost always relentlessly boiled cabbage soup — together will the lack of fresh vegetables. But what were such deficiencies, many of which may have been compensated in other ways, compared to the regular occurence of famine?

It is when he attempts to interpret such results that he has established that the historian finds himself on the very frontiers of its discipline. It is now that he needs the assistance of the biologist, the dietician, and the nutrition expert, all of whom, however, are far from any common consensus. The uncertainties in the tables of calorific values drawn up in this study with the aid of such experts show this quite clearly. But such a criticism of STOUFF's study could equally be made of the book by J. J. HEMARDINQUER which brings together the principal articles published in the *Annales* as a result of the research begun in 1961.[10] L. STOUFF reckons 100 grammes of wheat at 360 calories, which is close to the estimate made by Morineau, and Davies or Lane for ship's biscuit (about 360 calories). But J. J. HEMARDINQUER puts it at 280. This disparity of 25% occurs frequently: it corresponds to the disparity between calorific values of corn and bread. It becomes more serious however when one comes to other foods, especially those which serve to diversify diets. As is well known, meat poses complex problems. J. J. HERMARDINQUER allow a coefficient of 2 (p. 86), although with some reservation, for fresh meats, as do Morineau, Filippini and Davies for salt beef, while Lane takes a coefficient of 7 for salted pork, yet Stouff on the other hand seems to stick to a coefficient of 1. But for wine the disparities are even greater, which cannot be accounted for simply in terms of doubt as to alcoholic levels. STOUFF hesitates between 28 (Arles) and 45 (Trets) calories per litre, while Lane puts it at 700 (p. 81) and J. J. HEMARDINQUER (p. 89) and J. P. FILIPPINI (p. 97) at about 500.

One could go on citing examples, but what in fact becomes apparent at this stage in the inquiry is the need for some attempt at uniformity. This is essential if the research is to be carried though, and also if it is to provide

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[9] Calculations made by FRANK SPOONER, *Régimes alimentaires d'autrefois: proportions et calculs en calories*, « Annales E.S.C. », 1961, pp. 568-574, following the study by M. NOVELLI, *Bilanci alimentari in Liguria all'inizio del Seicento*, « Rivista Internazionale di Scienze Economiche e Commerciali », 1955, and G. ALEATI & C. M. CIPOLLA, *Contributo alla storia dei consumi e del costo della vita in Lombardia agli inizi dell'età moderna*, « Eventail de l'histoire vivante offert à Lucien Febvre », Paris, A. Colin, 1963, Vol. 11, pp. 317-341.

[10] *Pour une histoire de l'alimentation*, a collection of studies edited by JEAN-JACQUES HEMARDINQUER (« Cahiers des Annales », 28), Paris, A. Colin, 1970: the Annales' articles mentioned above may also be found here.

some answer to the question which underlies an inquiry of this sort, even if it is not made explicit — and that is; was man in the past, in the XVth and XVIth centuries for example, affected bodily and mentally by dietary deficiency to the extent that he was biologically different from ourselves or not? POITRINEAU (p. 152) hold that this was the case. He sees his Limogne peasants suffering from the same symptoms of malnutrition and with the same consequences as those of contemporary India. In the same way LE ROY LADURIE credits the nutritional advances made in the late Middle Ages with the victory over the plague and man's new energy for survival in the early XVIth century. Lynn White has related Europe's advances in the Xth and XIth centuries to the introduction of beans and peas, both of which were sources of vegetable protein (or rather of lysine, the ' essential ' amino-acid of which there was little in corn although it has other protein properties), in the three yearly system of crop rotation. Robert Philippe has also emphasised that protein deficiencies cannot be compensated, and that their consequence is vulnerability to disease combined with mental and physical apathy: ' the first quality of innovators has always been to eat well '.[11] But this is perhaps too simplistic a determinism?

Despite such reservations however, there can be no doubt as to the value in other fields of the attempt made by the *Annales*. Among the material that has been collected there are the systematic inventories of food rations, including military, and in particular naval, rations, college and hospital menus, and urban provisions. Such quantitative sources certainly pose a whole series of problems, in particular the degree to which they really do represent real rations. While good on paper they were rarely in fact distributed, but they do serve to illustrate some technical problems — for example that of supplying fresh meat and vegetables on board ship — as well as social realities. The free sailor not only received a substantial meat ration which no-one considered giving the galley slave, but he also received a truly Pantagruelian quantity of wine or beer; in addition, even if the diet was monotonous, he could also be sure of eating to his fill every day. In this sense the soldier's ration must represent something of an optimum in terms of popular diets.

Soldiers, sailors and towns, then, were always — or nearly always — able to eat: and the authorities who provided the food for these privileged groups also played their part in this uniformity. But given the silence of the sources the countryside still remains open to question. The scale of auto-consumption makes even those rare statistics that do exist unreliable. It is possible that gleaning and hunting were sufficient to compensate the greater under-consumption and in particular the lower consumption of butchered meat? It may well have been in fact that the double social and geographical

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11 « Annales E.S.C. », 1961, pp. 549-552.

hierarchy separating rich and poor and town and country became if possible even more rigid. But within the countryside the differences between regions seem often to have been nearly as pronounced. In the Auvergne Poitrineau holds that the differences between the plains and the hills disguised two biologically different stocks, one weakened by malnutrition, the other being rough, almost savage, but undeniably more dynamic because better fed. For Nivernais G. THUILLIER reaches the same conclusion. This leads one to question the simplistic idea of an Ancien Regime diet which finally vanished only some hundred years ago. Even in the 1950s rural France remains rich in contrasts to the attentive, yet the contrast between the Western regions, where more butter, bread and vegetables are eaten, but much less meat, and the North with its richer meat, milk and cheese diets, which is still evident to-day, goes back to the XVIth century at least.

Such social and geographical contrasts have impeded the development of any macro-economic approach to the problem. But the historian of nutrition and food is still caught between concentrating on supply on one hand and consumption on the other, and slow in providing the economist with the information which he requires. After all, the two series of estimated averages which we find here, one for the provisioning of Paris on the eve of the Revolution (pp. 60-61) and the other for urban consumption under the Second Empire (p. 71-78), owe little to the historian — they are the work of the contemporary administrators Lavoisier and Husson who relied on available information just as modern statisticians. But the historian can however establish dates — that of the appearance and diffusion of stimulants such as tea and coffee for example — or that of major mutations, such as those of maize in the early XVIth century, or that of the potato later. He can also establish the phases of probable advance, both those that are general, such as the late Middle Ages, and those that are more isolated. He can also indicate the periods of decline, which may be simply quantitative or both quantitative and qualitative, as in the case of the striking decline in living standards in the towns of the early XIXth century, of which contemporaries were well aware, and which has also been verified by anthropological research on the height of conscripts. He can also point to the reduction in death from famine during the XVIIIth century. But at the same time the prospect of further quantitative elaboration seems to recede, or at least mark time. This perhaps is one of the reasons for interest in such problems as nutritional awareness, which is a matter of analysing meals as ' social conversations ' and also the changes from one period to another in what is considered to be the indispensable minimum.

There are however other openings, such as the contrasts between town and country or between mountain and plain, which could be followed. These are certainly important in local terms, and are probably to be found everywhere. What is important however is to go beyond them in order to establish the more major international contrasts. A comparative chart of military and

naval rations for XVIth and XVIIth century Europe could be drawn up already. The English and Dutch sailors enjoyed a minimum of 3,500 calories (pp. 94-109), if not 5,000 to 5,500 (pp. 93-100), in contrast to the 2,200/2,500 of the Tuscan galley slave. These were formed from equal quantities of bread or biscuit, but the former had twice as much meat and between three and four times as many alcoholic calories. And before long it should be possible to drawn up a comparative chart of urban consumption, as there are a mass of documents which could fill the lacuna for Italy. Would such a graph confirm the lead gained by Northern Europe from the early XVIth century? It would be worth finding out.