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## THE VITAL REVOLUTION RECONSIDERED\*

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The historian's understanding of past situations benefits greatly from the fact that he, unlike any contemporary observer, knows a good deal about the subsequent development. It is only in retrospect, if at all, that germinal forces, unnoticed or underestimated at the time, can be seen in their true significance. However, hindsight also has its dangers. Reading history backwards we are easily misled into postulating specific "antecedents" and "early phases" of phenomena which seem to require a long period of gestation; and we are almost inclined to distrust our records if they fail to confirm our expectations.

It is well to be on guard against this temptation when trying to appraise the general character of the closing years of the seventeenth, and the early decades of the eighteenth century. Certainly, as far as the demographic situation of this period is concerned, there was little if anything to herald the impending changes. Man was still very much at the mercy of the elements. As late as the 1690's a succession of poor and indifferent harvests created severe subsistence crises in almost all countries of Europe. So far from growing, the population declined here and there, as dearth and starvation stalked through the lands from Castile to Finland, and from the Scottish Highlands to the foothills of the Alps. In 1698, after a serious crop failure, certain regional death rates in Sweden are known to have risen to 9 and 13 per cent respectively.<sup>1</sup> (The present death rate in Canada is 9 per mille.) In one Finnish province, Tavastland, no less than one-third of the inhabitants must be assumed to have perished during the famine of 1696-7.<sup>2</sup> Many parts of France had suffered comparable losses a few years earlier, in 1693-4.<sup>3</sup> An enumeration held in the

\*This paper was presented at the annual meeting of the Canadian Political Science Association in Montreal, June 6, 1956. Its main substance will be incorporated, in slightly extended form, in the author's contribution to the forthcoming fourth volume of the *Cambridge Economic History*.

<sup>1</sup>Eino Juulkala, "The Great Finnish Famine in 1696-97," *Scandinavian Economic History Review*, III, no. 1, 1955, p. 56.

<sup>2</sup>*Ibid.*, 51 ff.

<sup>3</sup>There exists ample information of a local or regional nature on the impact of the French famine of 1693-4. The following recent studies may be mentioned: Jean Meuvret, "Les Crises de subsistance et la démographie de la France d'Ancien Régime," *Population*, I, 1946, 643-50; Pierre Coebert, "En Beauvaisis: problèmes démographiques du XVII<sup>e</sup> siècle," *Annales: économie, sociétés, civilisations*, VII, 1952, 453-68, and his "Une Richesse historique en cours d'exploitation: les registres paroisiaux," *ibid.*, IX, 1954, 83-83.

Duchy of Brabant in 1709 failed to reveal any gain in numbers over those ascertained in 1698.<sup>4</sup> The Kurmark, in 1728, counted slightly fewer inhabitants than forty years earlier.<sup>5</sup> In England and Scotland, a period of acute distress which lasted from 1693 to 1699 was long afterwards remembered as the "seven ill years."<sup>6</sup> If they did not cause a diminution, they must at least have checked the growth of population in the British Isles.

Nor was this the last visitation of the kind. The excessively cold and long winter of 1708-9, followed as it was by widespread crop failures, again caused intense misery and high mortality among the poorer classes, especially in France, where this season was long remembered as "le grand Hiver."<sup>7</sup> In England, the scarcity did not reach famine proportions, but the price of grain rose very high,<sup>8</sup> and the London Bills of Mortality record an unusual incidence of fatal cases of "fever."<sup>9</sup>

Meanwhile Europe had once again entered upon a phase of universal belligerency. While the campaigns of the War of the Spanish Succession (1701-14) were fought in the west, the nations of the northeast were engaged in an even longer and fiercer conflict, the Great Northern War (1699-1721). Historians have tended to minimize the direct demographic effects of warfare; and in general this view of things is probably correct. However, the Great Northern War appears to have been an uncommonly sanguinary affair. This may be inferred from Finnish population data from the middle of the eighteenth century, which reveal a highly abnormal sex distribution in all the older age groups. At that time, there was an excess of females over males in the groups born between 1676 and 1695, ranging from 21 to as high as 68 per cent.<sup>10</sup> The conclusion to be drawn is that a significant proportion of the men who were of military age during the period of hostilities perished in the war. The effects of such losses on the reproductive power of the nations involved need no emphasis.

Nevertheless, the number of military casualties, if it could be ascertained, would undoubtedly be dwarfed by the heavy losses inflicted upon the civilian population by wartime epidemics. While the theatres of operations in the west experienced the usual flare-up of typhus, northeastern Europe was once again invaded by plague.<sup>11</sup> Though virtually extinct in the west, plague was still endemic in the eastern parts of the European continent. As early as 1708

<sup>4</sup>A. Cosemans, *De bevolking van Brabant in de XVIIe en XVIIIe eeuw* (Brussels, 1939), 57, 222.

<sup>5</sup>Karl Theodor von Inama-Sternegg and Rudolf Häpke, "Die Bevölkerung des Mittelalters und der neueren Zeit bis Ende des 18. Jahrhunderts in Europa" in *Handbörterbuch der Staatswissenschaften* (4th ed., Jena, 1924), II, 672.

<sup>6</sup>Charles Creighton, *A History of Epidemics in Britain* (Cambridge, 1891, 1894), II, 47 ff.

<sup>7</sup>Arthur M. de Boislisle, *Le Grand Hiver et la disette de 1709* (Paris, 1903).

<sup>8</sup>James E. Thorold Rogers, *A History of Agriculture and Prices in England* (Oxford, 1866-1902), VIII, Part 1, 7 ff.

<sup>9</sup>Creighton, *A History of Epidemics in Britain*, II, 54 ff.

<sup>10</sup>Eino Jutikkala, "Die Bevölkerung Finnlands in den Jahren 1721-49" in *Annales Academiæ Scientiarum Fennicæ*, B. I.V, no. 4 (Helsinki, 1945), 21.

<sup>11</sup>Georg Stücker, *Abhandlungen aus der Seuchengeschichte und Seuchenlehre*, I, part 1, *Die Geschichte der Pest* (Gießen, 1908), 214 ff.

the infection appears to have spread through Poland into Sillesia; and in the next few years, undoubtedly in connection with military movements, but probably fomented also by the food crisis of 1709-10, the disease invaded Brandenburg-Prussia, the Baltic countries, and Scandinavia. In the city of Danzig and its suburbs, 32,600 persons—between one-third and one-half of the population—are reported to have died of plague during the epidemic of 1709; Copenhagen is said to have lost about a third of its inhabitants in 1710-11. Other cities of northeastern Europe such as Königsberg, Riga, Stockholm, Uppsala, and Helsinki also suffered grievously. Nor was it only the urban centres that were afflicted. As Süssmilch's figures for East Prussia and Lithuania indicate,<sup>12</sup> mortality was very heavy throughout the Baltic littoral in 1709 and 1710. In East Prussia nearly 11,000 vacant farms are said to have been counted after the plague.<sup>13</sup> Progressing relentlessly toward the west, the infection reached northwestern Germany in 1712, and Austria, Bohemia, and Bavaria in 1713. However, by this time, the epidemic, while still murderous in some places, seems to have exhausted its powers of diffusion. Before it was able to penetrate into Italy and the west of Europe the plague ceased abruptly.

To people in western Europe it must have seemed as if their countries had acquired some sort of immunity against plague: after all, the last pestilential visitations of western Europe had occurred a generation or two before. Moreover, events in the following years, though very upsetting at first, could not but confirm men in their optimism. I am referring to the last great outbreak of plague in western Europe, the visitation of Provence.<sup>14</sup>

In May, 1720, a ship coming from a plague-infested port in Syria brought the deadly disease to Marseille. There followed a furious outbreak, killing about 40,000 of the city's 90,000 inhabitants. Within a few weeks after its first appearance the epidemic was sweeping through Provence; and though in some places the losses were relatively light, in others, especially in the more populous towns and cities, the death toll was appalling. Aix-en-Provence, Martignes, and Saint-Rémy lost about one-third, Toulon, Auriol, and Berre about one-half, and Arles and La Valette about three-fourths of their inhabitants.

The news of this catastrophe caused grave anxiety throughout Europe. Authorities everywhere hastily decreed quarantine and other precautionary measures—the Pope had six of Rome's sixteen gates walled up so as to facilitate the inspection of incoming freight and travellers. In England—such is the tangled skein of historical causation—the scare produced an unexpected boom in the textile trades, as people stopped buying French manufactures and transferred their demand to English goods.<sup>15</sup> However, the fears proved unfounded. Inexplicably, the plague failed to spread beyond the borders of Provence and a few adjoining districts of Languedoc; and by August, 1721, it was all over.

<sup>12</sup>They are quoted by Thomas Robert Malthus in the (Second) *Essay on Population*, Book II, chap. XII.

<sup>13</sup>Erich Keyser, *Bevölkerungsgeschichte Deutschlands* (2nd ed., Leipzig, 1941), 386.

<sup>14</sup>Stücker, *Die Geschichte der Pest*, 222 ff.

<sup>15</sup>M. Dorothy George, *England in Transition* (Penguin Books, 1953), 54.

## I

The sequence of crises which, often reinforcing one another, had afflicted most nations of Europe during the 1690's and the early years of the eighteenth century was followed by a period which appears considerably more auspicious by comparison. The two decades from 1715 to 1735, with one or two exceptions, were marked by abundant harvests. Endemic diseases, such as typhoid, continued to exact a heavy toll of life, especially in the big cities; but there were no more epidemics of plague, except that limited outbreak in Provence. Fighting was tapering off: the Spanish succession was settled by treaty in 1714, and Austria's conflict with Turkey ended in 1718. The Northern War was in its last phase, and terminated in 1721. The stage was set for demographic recovery and advance.

At this point in his narrative the historian of population, for the first time, finds himself in a position to support his conclusions with tolerably reliable figures arranged in time series; though in the beginning it is only for a very limited territory—Finland and ten counties of Sweden—that this kind of information becomes available.<sup>16</sup> In both these countries the death rate remained remarkably constant and very low for a period of about fifteen years following the end of the Northern War, the average being 21.2 per mille for Sweden<sup>17</sup> and 20.8 per mille for Finland in 1721–35. A recent student of Swedish population sums up the state of affairs in these words: "For no subsequent period during the rest of the century did the death rate remain at so low a level and in spite of wide fluctuations in the death rate in later years it was very rare for the rate to fall again to the low level of 1721–35, and in no year did it fall below that earlier level. Not until the 1830's in Sweden and the 1870's in Finland did the death rate fall to a comparably low figure."<sup>18</sup>

To some small extent this uncommonly low death rate can be explained by viewing it as a function of the birth rate. Since infant mortality formed a very important component of total mortality in the eighteenth century, a low birth rate would tend to reduce the death rate. As a matter of fact, in consequence of the highly unfavourable age and sex distribution referred to above, the Swedish and Finnish birth rates were relatively low in this period. However, since the death rate was substantially lower still, the population of the two countries was growing rapidly. In Finland, the average annual increase in the twenties and early thirties of the eighteenth century was almost 16 per thousand, only a little lower than the rate of natural increase in Canada in

<sup>16</sup>See: Eli F. Heckscher, "Swedish Population Trends before the Industrial Revolution," *Economic History Review*, Second Series, II, no. 3, 1950, 266–7; H. Gille, "The Demographic History of the Northern European Countries in the Eighteenth Century," *Population Studies*, III, no. 1, 1949, 8–65; Gustav Utterström, "Some Population Problems in Pre-Industrial Sweden," *Scandinavian Economic History Review*, II, no. 2, 1954, 105–65. See also the studies by Eino Jutikkala cited above in notes 1 and 10.

<sup>17</sup>This figure, which is based on slightly defective contemporary compilations from the church registers, would have to be raised to 23.9 per mille if the corrections suggested by a regional investigation were to be applied to the whole Kingdom. See Bertil Mörthén, "New Light on Eighteenth Century Sweden," *Scandinavian Economic History Review*, II, 1953, 151, n. 2.

<sup>18</sup>Gille, "Demographic History," 50.

recent years. In the ten Swedish counties for which information is available, natural growth, if considerably slower than in Finland, was also quite impressive.

However, the time had not yet arrived when European societies would be capable of weathering adversity well enough to produce an excess of births over deaths year after year, and decade after decade. In Sweden, for instance, natural increase turned negative momentarily as late as 1809-10. To be sure, the secular demographic trend was rising in all the Scandinavian countries after 1720. Subsistence crises and epidemics in the period under review were very much milder, to all appearances, than those of the seventeenth century. Yet the gravest of them, for instance those of 1737-43 and 1771-3, were still sufficiently powerful to slow down population growth, and even reverse it temporarily. In no case, however, were the losses caused by hunger and disease crippling. Finland by 1745 had already overcome the demographic effects of the bad years after 1736. The net losses suffered by Sweden and Norway in the early seventies did not amount to more than 2.3 and 3.5 per cent of their respective populations, and were also made good within three or four years.

Demographic developments in eighteenth-century Scandinavia were in many respects typical of what was happening elsewhere in Europe at that time. Though the rates of growth varied widely from country to country, the population was on the increase everywhere from about 1720 onwards. The statistical evidence for this statement cannot be given here. Suffice it to say that the figures at our disposal—there are plenty of them—are of unequal value, and even the best of them should not be pressed very hard. Yet even if they be used for no purpose other than that of demonstrating the universal character of the demographic upswing in the eighteenth century, their heuristic value remains very great indeed: for it is only by taking cognizance of the universality of this phenomenon that we can hope to understand its causal mechanism. It is to this very problem of causation that the remainder of this paper will be devoted.

## II

Surveying the course of demographic history over the last five hundred years in the various countries of Europe, one becomes dimly aware of some rough synchronism. In certain periods, seemingly unrelated or at any rate not closely related events appear to form congruent patterns of adversity which are found to have produced a downward trend of population over wide areas. At other times, conditions seem to have been sufficiently favourable to permit an increase of people almost everywhere. As far as *short-run oscillations* are concerned, this synchronism is perhaps not surprising. It may be explained on the ground that epidemics, and even wars, have a tendency to spread, and that climatic disturbances are often extensive enough to cause simultaneous crop failures in many countries. However, the parallelism of *secular trends* is not so easily accounted for. Even such a relatively recent phenomenon as the universal demographic upswing in eighteenth-century Europe still awaits an adequate explanation.

Some of the theories advanced by students of the earlier phases of the

Vital Revolution certainly are not convincing.<sup>19</sup> The vaunted advances in medical knowledge and skill to which the reduction of mortality in this period has been partly attributed can hardly have exercised much influence on life expectancy in, let us say, Finland or Spain, or even in the rural districts and city slums of western Europe. It is safe to say that the great majority of the people received no medical attention at all, and those who did might have been better off without the radical purgings and bleedings administered even by the more enlightened practitioners of the art of healing. As a contemporary, Jacques Casanova, remarked in his *Memoirs*, "More people perish at the hands of doctors than are cured by them."<sup>20</sup> Though there had been some progress in medical theory, eighteenth-century therapy was not much different from that inflicted upon Molière's *Malade imaginaire* a hundred years earlier.

It is not always realized how little medical men could do to cure any of the major ills that flesh is heir to before the coming of antiseptic surgery and the discoveries of salvarsan, insulin, and the antibiotics. Even though a few drugs of potential efficacy (such as mercury, digitalis, ipecacuanha root, and cinchona bark) were already known in the eighteenth century, they were by no means always used correctly. In any case, not many of these newer remedies can be regarded as life-saving; and it is almost certain that their use cannot have had any appreciable effect on the national death rate.<sup>21</sup>

As to preventive medicine, the profession was equally helpless. To be sure, inoculation, a crude method of immunization against smallpox, had been introduced to western Europe early in the eighteenth century; but its practice remained limited, and its value was, moreover, doubtful. For the treatment was risky; and while it may have helped individuals to overcome the dreadful disease more easily than if they had caught an infection at random, the inoculated person did go through an attack of real smallpox, and was therefore a source of danger to his family and attendants. The discovery of vaccination came too late to have any effect on mortality in the eighteenth century; Edward Jenner's famous essay on cowpox appeared only in 1798.

Nor did eighteenth-century medicine have any effective means of protecting people against such infections as puerperal fever or typhus. That being the case, it seems doubtful whether the establishment of new hospitals in the period under review can properly be listed among the factors which contributed to the decline in mortality. What beneficent effects such institutions may have had were almost certainly more than counterbalanced by the dissemination among their inmates of those dangerous germs. For some time to come the hospitals' reputation of being gateways to death was not undeserved.

Another development which is usually mentioned among the factors held responsible for the fall of the death rate in eighteenth-century Europe—ad-

<sup>19</sup>See G. Talbot Griffith, *Population Problems of the Age of Malthus* (Cambridge, 1926).

<sup>20</sup>Madeline Boyd, ed., *The Memoirs of Jacques Casanova* (Modern Library ed., New York, 1929), 7.

<sup>21</sup>Thomas McKernan and R. G. Brown, "Medical Evidence Related to English Population Changes in the Eighteenth Century," *Population Studies*, IX, 1955, 119-41, esp. 123 ff. This author was gratified to see views which he had developed independently receive confirmation in this study.

vances in sanitation—also requires reconsideration. That there were some improvements in public water supply and sewerage should not be denied. However, what progress there was affected only urban populations, and may, moreover, have been offset, at any rate in Britain, by the growth of appallingly unsanitary slums in the new industrial centres. Yet even if it be granted that, on balance, sanitation was improving, the effects on total mortality should not be overrated. Cleaner water and proper sewers, while they must have been instrumental in reducing the incidence of such diseases as typhoid and dysentery, could not prevent the spread of such equally potent killers as typhus, smallpox, diphtheria, or tuberculosis. Some of these could have been checked by a higher degree of personal cleanliness, better housing, and adequate nutrition. But have we any evidence of such improvements on a *general* scale? Other factors, such as the gradual draining of the fens in East Anglia, which may have been responsible for the disappearance of "ague" from England, or the drastic drop, after 1751, in the amount of spirits consumed by the English, must indeed have had wholesome effects on *regional* morbidity and mortality; but any such local reductions of the death rate cannot, of course, be held accountable for the universal growth of population in eighteenth-century Europe. It is this larger phenomenon which requires an explanation.

Most students of the history of population seem to agree that a significant reduction in mortality was the primary cause of the demographic upswing; and, though the statistical evidence is inconclusive, we see no reason why this proposition should be challenged. Indeed, it can be shown that, when mortality is high (as it still was in the eighteenth century), a decline in the death rate is inherently a more powerful causative factor of population growth than a rise in the birth rate.

We should argue, however, that it was the peaks rather than the plateau of mortality that were lowered. In other words, it was not so much a reduction of mortality in "normal" years that produced the secular downward trend of the death rate, but an unmistakable abatement of the "great crises." The disappearance of plague above all, but also a very sensible mitigation of subsistence crises seem to have been chiefly responsible for the increase in life expectancy.

Not that dearth and epidemics had become a thing of the past: for instance, the late thirties and early forties, afflicted as they were by pandemics of influenza and typhus as well as by widespread crop failures (in 1740-1), were times of acute distress in most countries of Europe; and so were the early seventies of the eighteenth century. However, while death rates greatly increased in such periods, and momentarily exceeded the birth rates, mortality no longer assumed *catastrophic* proportions. Even death rates of 89 and 112 per mille, such as were recorded in Norway and the Swedish province of Värmland in 1742, are still a far cry from those experienced by some regions of Europe in times of adversity half a century earlier. As M. Coubert put it, "Après 1741, un monde démographique semble défunt: les mortalités s'atténuent jusqu'à disparaître."<sup>22</sup> (The fact that subsistence crises, unlike those of

<sup>22</sup>"En Beauvaisis," 466.

previous centuries, could no longer raise the spectre of plague had of course a great deal to do with this attenuation.)

Since famines and epidemics are known to have been particularly hard on the very young, it is safe to conclude that the general abatement of crises must have had disproportionately beneficial effects on infant mortality; and the fact that a higher percentage of the population survived to the reproductive age could not fail to exercise a favourable influence on the birth rate. One further corollary should be noted. As I hope to show in my forthcoming contribution to the *Cambridge Economic History*, severe crises invariably caused not only a jump in the death rate, but also a drastic drop in the number of conceptions and live births. It follows that the substantial mitigation of crises which becomes obvious in the course of the eighteenth century must also have tended somewhat to raise the secular level of the birth rate.

### III

Having sketched the demographic history of eighteenth-century Europe, the historian can hardly avoid asking himself whether it is proper to call these developments a "Vital Revolution." The opinion, still widely held, that before the eighteenth century, Europe's population, though subject to violent short-run fluctuations, remained stationary over long periods, or was growing only imperceptibly, is, I believe, no longer tenable. There is sufficient evidence to indicate that those oscillations were superimposed on clearly recognizable "long waves." At least two periods of secular increase can be tolerably well identified in the demographic history of medieval and early modern Europe, the first extending from about the middle of the eleventh to the end of the thirteenth, the second from the middle of the fifteenth to the end of the sixteenth century. What the exact rates of growth during those earlier phases of expansion were it is impossible to ascertain, but their order of magnitude can be estimated with some confidence; and there can be no doubt that it was comparable to that observed in the early phases of the Vital Revolution. *In this sense the demographic development of the eighteenth century was not unique.* What was unprecedented about it was the fact that the secular upward movement started from a higher level, and that it was able to maintain, and for some time even increase, its momentum. Population growth in the eighteenth and nineteenth centuries, unlike that of previous epochs, was not terminated and reversed by catastrophe. When increase did slow down eventually, it did so owing to the personal decisions of millions of human beings, not to Acts of God such as the Black Death of the fourteenth century.

However, it would be vainglorious for European man to claim that the partial victory over the forces of death, which enabled the Vital Revolution to run its course, was altogether of his own making. To insist on the co-operation of strictly exogenous factors is not to belittle man's proud achievements in the fields of agricultural and industrial production, transportation, and marketing. Without these advances and equally impressive accomplishments in the theory and practice of hygiene and therapy, demographic growth would have been arrested very soon by the inexorable operation of Malthusian forces. However, when all is said, an obscure ecological revolution among rodents—the disap-

pearance of the black rat<sup>28</sup> which we believe to have been largely responsible for the cessation of plague in Europe should also be given its due, not merely in the sense that it helped to eliminate the greatest single agent of mortality, but in the sense that perhaps only a society freed from the fear as well as from the material and spiritual consequences of sudden death was able to achieve that high rate of intellectual and technical progress without which population growth could never have been sustained. The historian can only subscribe to the wistful words of Albert Camus: "Personne ne sera jamais libre tant qu'il y aura des fléaux."

<sup>28</sup>See: L. Fabian Hirst, *The Conquest of Plague: A Study of the Evolution of Epidemiology* (Oxford, 1953), 123 ff.; and Sticker, *Die Geschichte der Pest*, 207 f.