In spite of its imperfections for the measurement of details, the value of the crude death rate remains unimpaired for the measurement of broad changes in a large population.[19] The infantile death rate has also been held to be a reliable test of social conditions, in spite of the fact that in modern times there is not necessarily a close association between the general and the infant mortality.

Though many factors in modern life are adverse to health, it is undoubted that at the present day there is a less proportion of serious illness and disablement than in previous ages. The legend of our healthy, vigorous ancestors has as little truth in it as the legend of the healthy savage.

CHAPTER XVII

THE PERIOD 1815–1848 [1]

THOUGH the statistical material for England and Wales was growing both in quantity and quality throughout the 19th century, up to 1875 no very exact conclusions can be based upon it. The mere fact that the statistics were becoming more reliable every decade introduced a new possibility of error when they were used for comparative purposes. After 1815 the population continued to grow at a rapid rate, but the rate of growth was already established and there does not appear to have been any outstanding alteration in the birth or death rates. Once the death rate has fallen below the birth rate to any considerable degree, a population will continue to grow without any further alteration of the rates or even in spite of a degree of adverse change. As a well known writer has expressed it, the increasing number of parents can be compared to compound interest, the *rate of interest* remains the same yet the amount of interest increases year by year.

Up to 1846 the Irish immigration was believed to have roughly balanced the emigration from Great Britain to other parts of the world, after 1846 there was a net loss of population by emigration. The increase of population was, therefore, a natural one.

The registered births for the average of 5 years ending 1830 were 1 in 29 (34 per 1000). Taking the deficiency at as least 21% (this is the lowest estimate) the actual birth rate was at least 36 per 1000.[2] In 1851–61 the registered births had risen to 34 per 1000. Part of this rise was certainly due to better registration but there was also a rise in the registered marriages from 7·8 to 8·4 per 1000.[3] There is no data for anything but a crude rate and this rise may perhaps be accounted for by a change in the age composition of the population. The standardized birth

rate, which is not available before 1851, shows a slight rise between 1851–76, but this apparent rise is most probably simply a result of better registration due to a stiffening of the law.[4] If we assume that the registered births were approximately accurate for 1871–75 (35·5 per 1000) and that the deficiency was correctly calculated for 1830, then there was no appreciable alteration in the birth rate between 1830–75, but the possibility of a slight rise cannot be excluded.

The death rate probably fell progressively from the middle of the 18th century until about 1815, then rose slightly until about 1830, from which date it is fairly well established that it remained practically stationary until 1870. Farr said, "It appears probable, however, that the rate of mortality had been reduced to a *minimum* in 1815, and that it increased somewhat in the interval between that and 1830." He ascribed the rise mainly to the distress following the war but thought that the Irish immigration might also have had some influence. To those familiar with the period 1815–25 it would not be surprising if the death rate had risen very considerably instead of only slightly. The period was one of intense economic dislocation, of depression in agriculture, still the main industry of the country, of widespread unemployment and of political unrest. The country was weighed down with a heavy burden of taxation, a burden which pressed unduly upon the poor and the productive classes generally. Currency difficulties and the cessation of the war demand for agricultural products and for iron and woollen manufactures had led to a disastrous fall of prices and to stagnation of trade. The continent was exhausted and offered but a poor market for our goods, and another lucrative market, that of South America, was dislocated by revolution and civil war. Though the fifteen years after peace was broken up into alternating periods of depressions and booms, the underlying feature of the period was one of stagnation of trade and industry. The revenue was stationary, the imports and exports were the same and so was the mercantile marine. The mass of the people had to submit to lower wages, in many cases after fierce but futile resistance, while, though general prices fell, the price of bread remained relatively high. The aftermath of war, as always, was poverty,

disillusionment and discontent. The towns also continued to grow in size and this was an adverse factor from the point of view of the death rate.

Under these circumstances it is rather surprising that the estimated rise in the death rate was only from 1 in 55 (18 per 1000) to 1 in 51 (19·6 per 1000),[5] there were, however, important counteracting factors which are sufficient explanation. In the first place the lavish Poor Law, however ill advised the method of its administration, did prevent any large number of deaths from actual starvation. Also the potato, the use of which had rapidly extended, was a cheap supplementary food which to some extent compensated for low wages, though to the mass of the people bread was still the staff of life. Secondly there was the cessation of the war drain upon the manhood of the population and of deaths from wounds and disease contracted on foreign service. The men discharged from the army and navy in the year 1816 numbered over 200,000, though a proportion of these were foreigners. Lastly, and probably most important, vaccination was becoming increasingly effective, while the effects of the saving of infant life during the preceding 35 years was showing itself in an age composition that was favourable from the point of view of mortality.

The rise in the death rate between 1815–30 is more than explained by the after war conditions but from 1830 onwards there was recovery in the economic life of the nation, slow at first but unmistakable. The period of 1852–70 was one of unexampled progress in industry and commerce and resultant prosperity in which all classes, except the agricultural labourer, shared. Real wages rose rapidly yet the death rate remained stationary from about 1825 until about 1874. There were, however, in this period several factors adverse to public health. The most important was the rapid growth of towns, the period 1831–41 was that of the most rapid concentration of population in this country and the growth was rapid throughout the whole period under discussion.[6] Even at the present day the country is more healthy than the towns and the difference was far greater seventy or a hundred years ago. In the period 1813–30 the death rate in London was 28 per 1000 while for the whole

country it was 21 per 1000 and for the rural county of Wilts, it was 17·5 per 1000. This is the crude death rate, a standardized death rate (i.e. one making allowance for the difference of age composition) would be even more favourable to the rural areas. The death rate under 5 was 36 per 1000 in Wilts, and 83 per 1000 in London.[2] Unfortunately the administrative areas of towns, for which the census returns are made, often bear no very exact relation to their actual area and therefore it is not possible to make any exact statistical statements as to the growth of towns. It has been estimated that the urban population was about one third of the total in 1831 and about one half in 1851.[7] In view of this increase of the urban population Farr stated that a stationary death rate argued improvement rather than retrogression in town conditions. There is a good deal to be said for this contention, especially in view of the fact that the growth of towns was not the only adverse factor.

In the first place there was a large Irish immigration, especially into Liverpool and Manchester. Farr was very strongly of the opinion that the Irish not only had a high death rate, but tended to lower the standard of life of their neighbours and stated that the Irish quarter in a town was generally a hot-bed of fever. Every writer of the times is agreed upon the filth and squalor in which the immigrant Irish lived. They even kept pigs and poultry in their wretched one room tenements, as they had been accustomed to do in their home cabins; but in a town slum these conditions were not mitigated by health-giving breezes from the Atlantic. To the Englishman of the mid 19th century the Irishman was what the Eastern European is to the North American of to-day. To the working class he was a rival with a lower standard of life, to the employer he represented cheap labour, to the more thoughtful social reformer and administrator he was an additional problem. It was to the benefit of both countries when the stream of Irish emigration was diverted to America.

In 1831 there was an invasion into England of very much more serious import, from the point of view of public health, than that of the poor Irish, for in that year the cholera reached this country. Asiatic cholera is an acute specific endemic or

epidemic disease caused by the *vibrio cholerae* which was discovered by Koch in 1883. The cholera infection may pass from man to man by contact, by the contamination of fields and rubbish heaps by infected fæces, or it may be carried by flies. But it is chiefly carried by the infection of drinking water since the *vibrio* can live and multiply in water. Cholera infection always travels by lines of human communication, rivers, roads, railways and shipping routes. It is said that underfeeding and worry cause greater susceptibility to the disease, also anything which causes diarrhoea and therefore weakens the intestines, such as eating unripe fruit.[8] There has been a good deal of discussion as to whether the 1830 epidemic was the first visitation of true cholera in Europe; the question is complicated, as is the history of most other diseases, by early confusion in diagnosis and nomenclature. In the past the term cholera was used to cover a group of clinically similar illnesses which are, as a matter of fact, caused by germs closely allied to the *vibrio cholerae*. It seems established that true cholera is endemic in Lower Bengal and from time to time becomes epidemic in India. Epidemic cholera was accurately described by European travellers to India from the 16th century onwards; no fewer than 64 independent authorities between 1503 and 1817 mention cholera in India and ten of these refer to epidemic outbursts. At the end of the 18th century English troops were several times attacked by the disease. It seems difficult to believe that the disease never spread to Europe and the rest of the world before the 19th century, but there is no record of any such panendemic in historic times. Sydenham, it is true, gives an account of an epidemic occurring between 1679 and 1682 in London, the symptoms of which closely resembled cholera but a contemporary of Sydenham's refers to the fact that, though the disease reigned cruelly in London, it did not extend beyond three miles outside of the city. If this statement is true the disease could not have been Asiatic cholera, it may have been one of the allied diseases or an acute form of malaria which in bad seasons often results in symptoms closely resembling cholera. As to why cholera suddenly became panendemic, this is unexplainable in our present state of knowledge. Though a

rapid and widespread diffusion of the disease was doubtless aided by the development of transport, it was independent of this development, since one of the first lines of invasion to reach Europe did so by the immemorial trade route over Central Asia to Russia.

The great panendemic seems to have originated in a particularly virulent outbreak in 1817 at Jessore, where 10,000 perished in a few weeks. By 1818 the disease had spread over the greater part of India, it then travelled westward as far as the Levant, also via Persia to the borders of Russia and eastward to Burma, Siam, Further India and China; but by 1823 it had gradually disappeared. It is noteworthy that the Chinese believed the disease to be a new one. In 1826 there was a fresh outbreak in Bengal which spread over India and reached Persia by 1829 and by that route reached Orenburg in August of that year. The following year, in spite of stringent quarantine regulations, it reached Kharkov, Moscow and Novgorod. In 1831 it was carried to Warsaw by the Russian troops who were then fighting the Poles. By another route the disease had reached Arabia in 1828 and in 1831 it raged with virulence among the pilgrims at Mecca. It was computed that nearly half the pilgrims fell victims to it and the disease returned with the survivors to Asia Minor, Turkey and Egypt. From Turkey it spread to Bulgaria and Galicia. In the meantime the northern wing had spread to Finland and Sweden and by the autumn of 1831 the disease had reached Berlin, Vienna and Bohemia, but it did not penetrate to Western Germany in that year. In October of 1831 the disease first appeared in England, at Sunderland, supposedly introduced from Hamburg. The total deaths in England between November 1831 and April 1832 were 4,621. France remained free until 1832, but in March of that year cholera broke out in Paris, within a week the mortality reached 500 a day and in 18 days the deaths numbered 7,000. In 1832 the disease spread to Ireland and there was a renewed outbreak in England, but according to one estimate the total cases only numbered 14,796, of whom 5,432 died.[9] Owing to the lack of proper registration of deaths it is, however, impossible to state the number of deaths

from cholera with any exactitude. According to Farr the deaths numbered 31,376 between 1831–33 in certain districts in which fairly accurate records were kept and which possessed an aggregate population of something under 5½ millions, while in Ireland for the same period they are said to have numbered 21,171.

In June 1832 there was an outbreak in Quebec and from there the disease spread to New York and so over the whole of the U.S.A. Spain had a most vigorous quarantine law, the evasion of which was punishable with death, but though she escaped until 1833, the quarantine line was passed in that year. From Spain the disease spread to the Spanish West Indies. Its virulence was terrible in Havana and also in Mexico.

Cholera died down in Europe in 1834 but there was a renewed epidemic in 1836–37, which may or may not have been due to re-infection from Asia through the terrible epidemic which raged in Bombay during 1832–34. However, Europe remained free from cholera from 1839–46 but there was another epidemic of great virulence in 1848–53. During the first epidemic very strenuous efforts were made by all European governments to stop its spread by quarantine measures but, disheartened by the apparent total failure of these measures, only very faint exertions were made by the authorities to stay the second visitation. Some Russian doctors believed that this relaxation resulted in a much higher death rate in the second epidemic. They pointed out that during the first epidemic when there were sanitary cordons throughout Russia, only 336 towns were attacked and only 100,000 deaths occurred, while during the second epidemic 471 towns were attacked and there were a million deaths. Other medical authorities believed, however, that the virulence of the disease was greater in the second epidemic. The deaths in England during the year 1849 were 53,293.

Cholera completely baffled the medical profession. So mysterious seemed its method of propagation that some authorities even doubted its infectious character and there was a long controversy upon this subject. The *Lancet* pronounced in favour of contagion, but that the method was unknown.

In 1848–49 a Dr. Snow promulgated the view that cholera was spread by a poison contained in the evacuations of infected persons and by the subsequent contamination of drinking water and was awarded a prize by the Institut de France for an essay on this thesis. In 1849 a Dr. Budd of Bristol put forward the theory that the disease was due to a living organism, of the nature of a fungus, which multiplied in the intestinal canal and was spread by the contamination of drinking water. He recommended that all discharges from infected persons should at once be treated with a strong disinfectant. The College of Physicians considered these views to be untenable since they ran counter to the accepted view of the nature of contagion. Budd, however, despite the College of Physicians, stopped an outbreak of cholera at some barracks near Bristol by his repudiated method.[10] Dr. Snow also showed by an investigation in South London that there was a close correlation between cholera and contaminated water supply and this was confirmed by Farr's statistical studies. From this time reform in methods of water supply commenced.[11]

Though it seems highly probable that the defective system of water drainage in use in London and some other English towns, favoured the spread of the disease, the cholera epidemics cannot justly be ascribed to the condition of the English towns. The disease came from the East and spread over the whole world, devastating communities of every race and every type of civilization and economic life with commendable impartiality. Further, if the English doctors and administrators failed to check the disease they at least were not more stupid than those of other countries and it was in England that the correct method of combating cholera was discovered and developed. Some writers consider cholera to have been a blessing in disguise since the hygienic measures instituted in combating it led to the prevention of other maladies which were more destructive than cholera, "though their ravages were more insidious and common place."[12] Cholera, like plague, was a sensational disease and it aroused the petty parochialism of the mid 19th century as effectively as plague had aroused the corrupt bureaucracy of the 18th century.

Thus there were several factors adverse to public health during the period under discussion and there is some force in Farr's contention that these adverse factors must have been balanced by improvements in other directions. The 1848 reformers, however, believed that the conditions which they found were so bad that worse could not be imagined and that these conditions must represent a new and terrible problem. There is no reason to suppose that their descriptions were untrue or even exaggerated but they were perhaps partial and showed a lack of perspective that is understandable. Francis Place was strongly of the opinion that things had improved rather than worsened up to 1834; he held that the descriptions of the reformers applied only to the lowest sections of the population, whereas in earlier periods they would have applied to all. He said, "I know Dr. Kay, and I believe what he says is correct; but he gives the matter as it now stands, knowing nothing of former times; his picture is a very deplorable one. I am assured that my view of it is correct by many Manchester operatives whom I have seen; they inform me that his narration relates almost wholly to the state of the Irish, but that the condition of a vast number of the people was nearly as bad some years ago, as he describes the worst position of them now to be. Any writer or inquirer will be misled unless he has the means of comparing the present with former times."[13] Place added that he had observed the working class for nearly half a century and was positive that their habits and condition showed a great improvement.

Only a detailed study of the period could give a correct judgment as between improvement and retrogression, but there are some matters of general knowledge which make some degree of retrogression not improbable. The towns were growing at an astonishing rate and problems of mere size began to intrude themselves. The idea of town planning, except of central business streets, or of the regulation of building, had scarcely arisen. But, in any case, it is doubtful if any regulation could have been enforced since the constant influx of people had to be housed and housed as cheaply as possible and the enforcement

of building byelaws, by raising the rents, would have increased the over-crowding. The population was also constantly outgrowing existing institutions such as schools and hospitals, and in the difficult times following the war it was not always easy to keep up current revenue, still less to expand it. The supporters of the hospitals had been mainly landowners and wealthy merchants, both these classes suffered severely in the after war depression and charitable subscriptions suffered accordingly. Some large centres tended to be inadequately served with hospitals and dispensaries that had been amply served only a generation previously.

It also seems probable that the growth of democracy was not at first at all favourable to sanitary reform.[14] The magistrates, whether neighbouring gentry or wealthy merchants, were on the whole enlightened, open to new scientific ideas, amenable to persuasion by doctors and others. They had the power, too, of carrying things through in a high handed and sometimes illegal manner. The magistrates after 1815 became the subject of scathing attack, not only for their faults but also for their virtues. Any reform which meant the imposition of a rate was especially the subject of abuse. The gentry tended to retire sulkily from public service or to perform the minimum duties in a perfunctory manner. A new spirit was abroad which was incompatible with the old order. On the whole the poor had trusted their old rulers who had often stood between them and their immediate oppressors and had exerted themselves to give food and money in bad times. Moreover, the poor under the old regime, except when seized with the madness of riot, were docile and generally inclined to obey the commands of the gentry, and to be suitably grateful for help in sickness. It is astonishing the things which the early typhus fighters were able to do without any legal status ; their social prestige appears to have carried them through, not only with patients but generally with landlords also. The men to whom power was passing had not the habit of ruling and the workers were losing the habit of being ruled. Sanitary reform cost money, the problem was getting too big for private charity apart from the fact that the

charitable public was able or willing to give less. Any increase in public expenditure, central or local, was extremely difficult in a time of financial stringency, when the taxable capacity of the country was strained to the uttermost. The cry was " Economy and Reform ". Economy meant, not wise expenditure but the sweeping away of financial and political abuse and the ruthless cutting down of expenditure wherever possible. The Reform was destructive rather than constructive and, though the sweeping away of a mass of currupt and inefficient political paraphernalia was a necessary prelude to later achievements, the good effects were ultimate and not immediate.

Political power, especially in Local Government, was passing into the hands of the lower middle class or petite bourgeoisie; small shop-keepers and small manufacturers, a class with many virtues, thrifty, hard working, clean living but notoriously lacking in large views or sympathetic imagination. The honest among them tended to avoid local affairs except to vote against any increase of the rates, the dishonest found in local government an illicit source of income. The petite bourgeoisie have little sympathy with the working class, from which they are so often barely removed in economic circumstances, and little belief in new fangled ideas. Their numbers can never have been so *relatively* great in England as during the period from 1815 to 1870, owing to the small scale of much industry and nearly all retail trade. From 1832 to 1868, owing to the nature of the franchise, their political powers were also great, though never fully exerted. The growth of large scale industry and trading on the one hand and the political enfranchisement and economic organization of large bodies of highly skilled workers on the other, made this power short lived, except in some small areas of local government. It is, perhaps, due to the fact that our petite bourgeoisie are relatively small in numbers and politically unimportant and are without the support of a peasantry, that in this country class feeling lacks the extreme bitterness often found elsewhere.

There was also, perhaps, a natural ebb in the tide of public health reform. The hospitals and dispensaries missed the zeal of their first founders, medical science tended to fall into a rut

after a period of achievement; enthusiasm found that the anticipated results were not always forthcoming and so tended to wane. The best minds in the medical profession, like those in other spheres, were much occupied with administrative abuses and with the building up of a reasonable professional organization. In the same way, though the pioneers of 1848 began their preliminary work about 1839, little was achieved for the next twenty years, since here also the aim was mainly in the direction of administrative reform which, judging by vital statistics, bore little immediate fruit. It was not until the last quarter of the 19th century that the new era of achievement set in, an era of cheap and plentiful food brought from every quarter of the globe and of astonishing advance in medicine and public hygiene.

It is curious that, though the second and third quarter of the 19th century was a period of considerable economic and social change, it was yet comparatively stable from the point of view of vital statistics. The increasing prosperity and some amelioration in water supply and drainage, etc., were sufficient to counteract the serious adverse factors of the increasing urbanization and the advent of cholera. During this period the growth of population was rapid; the rate of growth, however, was not new but already established and the reasons for that growth must be sought in the preceding period. History looks before and after. For the historian the main interest of the sanitary endeavours of the mid 19th century is the fruit which they bore after 1875. In the same way the main importance of the events described in this study lies in the subsequent cumulative growth of population, which growth, moreover, was predominantly urban. Many factors went to the making of the great urban communities which for good or ill emerged in the 19th century, but these communities could not have arisen had the death rate, and in particular the town death rate, remained at its 17th century level. Civilization could only become urban when a natural increase was possible in the towns and, filthy and abominable as were many quarters of the early 19th century English towns, yet those towns produced more human life than they destroyed.

Some degree of civic polity, lost in the dark ages, had been recovered, great cities had ceased to be merely the graves of mankind, they had become cradles; that fact was fraught with far reaching consequences which are still only very imperfectly apprehended and the importance of which can hardly be estimated.