

ON OLD LONDON : ITS INSANITARY CONDITIONS AND ITS EPIDEMIC DISEASES.

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LONDON was founded on a salubrious site, not in the Roman age, but in that of the Ancient Britons; not as a fortress, but as a convenient commercial emporium on a tidal river, up which Continental merchants could bring their wares secure from the pirates of the sea. From that primitive condition it has grown to be the centre of the mercantile world, and the metropolis of one of the grandest and the most extensive empire the world has ever possessed, with about four millions of inhabitants. Unlike modern seats of commerce founded by merchants on newly discovered shores, that have grown rapidly like young giants from their infancy, London was slow in developing itself; but, through the advantages of its position, it has outlived the fall of Roman, Saxon, and Norman masters, and has taken eighteen centuries of growth to attain its actual condition.

Primitively its site was a gravelly knoll on the banks of the Thames, rising to a moderate height, possessing many good springs of pure water on its hill-sides, with a considerable rivulet—the Flete—on its western boundary; a brook that flowed out of marshes in Finsbury—the Walbrook, which divided the site in halves; and two bournes—the Sherborne and Langbourne—that subdivided the eastward half of the City site. Although its own soil was of gravel and fine sands, on clay, yet around there were basins scooped or sunk here and there, as at Lambeth, at Westminster, and at Stepney, when the river was swollen, and on the flats of Finsbury after heavy rains; and hence there arose marsh miasmata, productive of agues from the earliest times; but now that these parts are sewered and drained, there are none of those morbid causes effective. A wall was built round it by the Romans, but that could scarcely have protected its inhabitants from these causes of disease, before drainage was completed; while, on the other hand, in later ages, when the

undrained city began to produce its urban malaria, remittent deadly fevers began to abound, and contagious or infectious typhus reared its many hydra-like heads, to remove or to subdue which London had neither hero, saint, nor king.

Sydenham, writing later than the Restoration, states of fevers, apparently from local reminiscences as a Londoner, "Many die by violent deaths; but, with the exception of these, two-thirds of our race die of fever." And when he wrote this London was more free from fever than it had been for several centuries.

These conditions were founded on general febrile diatheses, which were then termed "epidemic constitutions", from the type and the concomitancy of the fevers that were generated by a poisoned atmosphere and impure water-supply. In the reign of Henry III, the Flete and the Walbrook and the bournes had become virtually sewers, for the most part open; and the drinking waters were drawn from City wells, some of which lay within or were adjacent to churchyards, reeking with the effluents from the human remains that had been piled for centuries in the shallow graves,—these causes chiefly, in combination with the personally filthy habits and customs of a monastic long period, proved sufficient to render it, like all other European cities, the home and nest of malignant fevers of every description—the lasting, prompt, and fitting receptacles for the great Eastern bubonic plague that was endemic in Europe through centuries; from which, however, London was the first to be purged, and that accidentally, by the action of fire. Plague was normally an intense synochus involving the absorbent system, that gave immunity from future attacks, and was in no wise produced by poverty and bad feeding, for some of its worst outbreaks occurred in seasons of plenty; whilst the other destructive types of fever were either miasmatic, from the marshy surroundings, or typhous, of many varieties, sometimes complicated with plague or with the miasmatic types, or frequently arising in times of great scarcity of food amounting to famines, or approaching to them, and leaving sequelæ which are unknown in plague. So long as the bubonic plague retained its explosive force productive of epidemics, the proper exanthematous fevers would seem to have been held in abeyance; but when plague had disappeared they soon began to increase in frequency as well as in virulence, swelling the mortality returns, and showing, up to the end of the last century, a steady increase of deaths by them, in proportion to the total mortality.

The early history of our country is to be gathered from a

rich series of chronicles, written in the repose of the monasteries, which are, however, more diffuse on the affairs of its kings, princes, and ecclesiastics, than on those relating to the nation at large and its sufferings.

With regard to the City of London itself, there is a grand store, safely kept, as its special archives, from which are derived two very interesting authorised publications—the *Liber Albus*, of date 1451, compiled by John Carpenter, City Clerk; and *Remembrancia*, or Précis of the City Remembrancer's Office, with continuation to the Rebellion.

From these early sources much may be gained concerning the epidemics of London within their several eras, although vaguely reported; the science of medicine being then in its infancy, and not having arrived at a nomenclature of diseases.

When King James ascended the throne, in 1603, a very severe visitation of the plague was hatching, which led to the permanent institution of a Bill of Mortality, to be published weekly for the entire City of London and its Liberties, by the Company of the Parish Clerks, which was thus the actual forerunner of our Registrar-General's report, in making way for it, and by laying its foundation.

The epidemic diseases of London prior to the Great Fire (which cleared the ground for a new city to rise on the ruins) were typhus, maculated and petechial; synochus, plague, sweating sickness, trousse-galant, small-pox, scarlet fever, with malignant sore throat; measles, with mumps.

Of these pestilences, *typhus* has the precedence as the earliest recorded, so remote, indeed, as the Saxon era, when the Danes devastated the land; then again after the Conquest, as told by Vitalis and others—the whole of these visitations being *famine fevers, which are typhus*; and, as Speed informs us of the reign of Henry III, in 1235, "As those continued turmoils, and *plagues of the sword*, much afflicted the land, so this was the third year wherein God inflicted also for sinne, the *plague of famine*, whereby the poor did miserably perish"; and as it is related in the *Antiq. Britan.*, later in the same reign, 1270, "that provisions were so scarce that parents did eat their own children, and thousands died on the highways from starvation." These, and many other epidemics, although less extensive, must be regarded as the severest form of typhus.

Similar occurrences were recorded in 1521, when, according to Sir Thomas More, the farmers were driven from their farms by oppressive taxations, "without knowing where to go", and a severe famine resulted, with fever, in London; and later, in the rebellion of 1549.

Besides these, there were great epidemics of fever in London in 1314, 1379, 1478-9, 1481, and with it a great plague in 1499-1500, when the king, with his court, fled to Calais; that called English fever, in 1555, 1580, and 1645; that called pestilential spotted fever, in 1505, 1528, 1626, and 1643; in 1546-47, a delirious fever with pestilential flux; in 1586, ship fever; and in 1602 the Hungarian, or camp fever; malignant fever in 1612; depuratory fever, with abscesses and furuncles, 1661-64, just preceding the last Great Plague.

These visitations, when they were not of the plague, may, I think, be pretty safely assigned to our types of typhus, typhoid, and synochus, although it is possible that the first two of them, following the Black Death of 1348-49, may have been recrudescences, with intervening series of minor manifestations of it, as we shall find when dealing with the plague of the seventeenth century. But it is significant that, from the beginning of the sixteenth century, exanthematic typhus extended over all Europe, and that, so late as 1845 to 1848, was the more general type of the famine fever that devastated Ireland, and is always ready to rise again from similar causes.

The next pestilence in order of succession was the great plague of the Levant, of which the first eloquent record is from the pen of Cantacuzenus, Emperor of Constantinople, an eye-witness of it. It was a fever, a true pandemic, that was preceded by, and which left behind it, a long-enduring progeny of epidemics. It came in among the Ottoman Turks, who were invited by Cantacuzenus to his aid at that time against the Palæologi, 1347. From Constantinople it spread along the shores of the Mediterranean; and, according to Barnes, the historian of the reign of Edward III, "it destroyed nine of ten through the whole world." In August 1348, it reached the western seaport towns of England, and extended to London about the 1st of November in the year after our capture of Calais. Of this we are informed by Stow, "that it overspread all England, so wasting the people, that scarce the tenth person of all sorts was left alive, and churchyards were not sufficient to receive the dead. For this reason Ralph Stratford, Bishop of London, bought thirteen acres of land called No Man's Land, and added it to the ancient Pardon churchyard lying on waste land northwards to St. Paul's; and in the same year, 1348, Sir Walter Manny purchased another No Man's Land—now the Charter House—and devoted it for a cemetery to those who died of the pestilence, of whom more than 50,000 were buried in it, and the whole mortality in London is generally reputed to have exceeded 100,000."

Speed writes of it: "It rained from Midsummer to Christmas, and so terrible a plague spread through the world, that the earth was filled with graves and the air with cries, which was seconded with murder of cattle and death of all things. The plague began among the Turks."

Through three centuries and a half subsequent to the Black Death the plague was never absent from continental Europe, and therefore it may be supposed that it was likewise present in England, more especially in London from its dimensions; and that many of the so-called pestilences with which it was afflicted were really of the plague, although not definitely so called. Generally, there were epidemics commencing in unhealthy cities, and infecting the towns and country around to a greater or less degree; but there was never again such a pandemic as that of the Black Death. Historians have asserted that in the sixteenth and seventeenth centuries epidemics of plague ravaged London once in twenty years, or oftener; and, as in the seventeenth century sporadic plague was rarely absent from the city until its final extinction, the same may be assumed of it from its origin in 1348. The next recorded recurrence of the plague in London was that of 1499-1500, in the reign of Henry VII, when it took off about 30,000 of the citizens, and the king, with his court, fled to Calais for safety. In 1504 it overran England; and the next year a spotted malignant fever followed it in London—as a daughter: that being the first announcement of that type, which, as spotted fever and the purples—sometimes alone, but generally attendant on the plague—was endemic in London through the sixteenth, seventeenth, and the first half of the eighteenth centuries, one century after the plague had disappeared from the Bills of Mortality.

During the hundred years' war and the War of the Roses, as well as those of the sixteenth century, there were great checks to national progress, so that at the end of that period the English stood inferior to Continental nations in the resources of civilisation through the sciences and the mechanical arts, in cultivation of the soil for more than corn and fodder, and in all the domestic comforts and luxuries. Linen was not commonly worn, and soap was first made in England in 1524. The diet was of flesh and fish, salted in winter, with coarse bread, peas, butter, and cheese, with beer for drink. By droughts, tempestuous weather, and vicissitudes of the seasons, murrains were induced, and these were duly followed up by famines and their attendant fevers, since the loss of cattle involved scanty tillage, with much lying in fallow, and their successive harvests ran short. The price of

corn would count extremely high in the summer, and then fevers would arise, all of a very adynamic type, from want of food; but when the crops were garnered, then the public health was restored, although three years may have been passed in want and affliction of dire amount. Epidemics of plague were frequent, and new infectious diseases arose, which were at first observed in the crowded cities and towns, from which they were disseminated into the farms, until the whole country was overrun and decimated; as in the Black Death, which left scarcely one in ten alive; or in the Famine Fever of 1314-15, which left scarcely enough alive to bury the dead; and that of 1270, when thousands perished by the roadside, and when it is recorded that parents devoured their own children. Of newly developed epidemic diseases there were malignant, spotted, typhus; the English sweating sickness, that at first carried off its victims usually in twenty-four hours; and the trousse-galant, or "cholera-morbus", that was equally rapid in destruction of life.

Physicians stood aghast, or decamped from scenes of which they had had no experience. Medicine was no helper, and its professors were but few; for London, with its 100,000 inhabitants, could count but thirteen of them in 1513. If it were so in the oft-stricken metropolis, who can imagine the horrors in provincial towns and country places?

The helpless populace, in their despair, were taught to believe that the Giver of all good gifts directed pestilences as ministers to avenge the misdeeds of His creatures, so as to bring them to more devout communion with Himself. It was deemed almost a sin to oppose, by human agencies, the imputed will and purpose of the Divinity in permitting disease and death to rule for a season, during which unwise measures were relied on to check the progress of the fatal disease. Instead of house-to-house inspection, there was, by orders of the Privy Council, a quarantine on infected houses, marked, as a caution to passers-by, with the pious exclamation, "Lord, have mercy upon us!" and a cross on the door, the colour of which was rated of importance, as it was ordered by Queen Elizabeth to be of blue, and by Charles II, of red colour. Depressing as such measures were by day, those of the night were more so, for then the streets resounded with the rolling of cart-wheels for carrying away the dead, to the melancholy cry of "Bring forth your dead", which were interred within the walls till the churchyards could hold no more.* On each occasion of an epidemic of plague, the cold

* In 1580, a Royal Proclamation was issued against new buildings within three miles of the gates of the City, and prohibiting the letting

of winter stepped in to cut it short for a season, but not to extirpate it, as year after year it showed itself again at the end of the spring. The outburst of 1603 was thus carried on annually until 1611, and every year there were tens of cases, until another great epidemic befell in 1625, which dwindled to no recorded death in 1629, and recrudesced with 1,317 deaths in 1630, and fell to none in the years 1633 and 1635. Such a freedom from plague had not been recorded in the seventeenth century; but in the succeeding year it came in force so great that the epidemic was not expended till 1648, and London was not without some recorded deaths annually, although at very low ebb in 1663 and 1664, with nine and six respectively, when it burst out with extreme virulence in 1665, when the Dutch fleet was at our doors, and it carried off, as Clarendon and others credited, no less than 100,000 of its inhabitants. In the following year there were 1,998 deaths, when, happily, the city was in flames. That necessitated rebuilding, or the same course of events would, in all probability, have recurred as after the outbursts of 1603, 1625, and 1636. For, even granting that on each of these occasions there was an importation of fomites from the Continent, yet that was only like the spark struck off into a tinder-box.

Now, it may be reasonably thought that if such was the course of events in the seventeenth century, of which all we know of the health of the city of London is from public records, may it not be credited that a similar state of things did exist, but unrecorded, in the preceding and still more remote ages?

The Bills of Mortality from 1603 to 1665—sixty-three years inclusive—show a total of burials of 864,656, and as the deaths by plague in the same period were recorded at 186,491, it follows that the ratio per 1,000 of these amounted to 215.7, including four great epidemics. The number of deaths from fevers, in twenty-seven years of the same period, being 70,154, their corresponding ratio was 161.7 per 1,000 in a total of 435,216 deaths.

of houses within the walls to more than one family. But among many more reasonable orders, such as to keep corpses out of churches and to allow of no wakes, this is inserted, "Skilful and learned physicians may be provided to minister to the sick." In 1641, a Parliamentary Proclamation sets forth, "The house visited with the Plague to be shut up whether any person therein do die or not: And the person so shut up to bear their own charge, if they be of abilitie. No person to be removed out of any infected house, but by leave of the Magistrate. If any person shall flee out of any house, at the time when the said house shall be infected with the Plague, such person so fleeing to be pursued by 'Hue and Cry', and the house where they should be found to be shut up, and they restrained in some such place as the Magistrate of the place where they shall be found, shall think fit."

Sydenham, who was the first to elaborate a general view of fevers, and to classify them definitely, considered them all to arise from some disorder or change in the crisis of the blood, from a commotion, or an inflammation, or a fermentation set up in the vital fluid to rid itself of some peccant matter. Thus, all those of intermitting or remitting types depended on a commotion in it; plague, and its satellite, pestilential fever, with blind furuncles which were called plague-tokens, without buboes, on an inflammation of it, which in bubonic plague affected the solids, *i.e.*, the corpuscles and the fibrinous particles, but which in the pestilential fever touched only the serous fluid. Besides these there were the exanthematous class, in which he assigned to each its special fermentation and ebullition, to throw off the "fomes" that were the essence of the disease. Thus it was that he marked differences in the fever accompanying and preceding the eruption, and wrote of variolous, dysenteric, and erysipelatous fevers, all, together with that of the plague and its pestilential fevers, being normally of the synochal type. The term putridity he gave to the secondary fever of confluent small-pox; and malignancy in any fever he attributed to unskilful practice; and to those that seemed to purify the mass of the blood he gave the name of depuratory fevers.*

The next special pestilence in London was the *sweating-sickness*, called the English-sweat by foreigners, because it was always disseminated by Englishmen. Caius styled it *Ephemera Pestilens*, or the One-day Pestilence, in his, the first professional account of it, published in 1552. It was brought into England amongst the irregular adventurers that made up the 3,000 fighting men of any nation who came over with the Earl of Richmond in 1485 to assert his claim to the crown of England. These vagrants were men of the stamp that were accustomed to generate ship and gaol fevers through the next two centuries.

They landed at Milford Haven on the 7th August 1485, after a crowded, ill-provided voyage of seven days, where they were joined by 2,000 Englishmen, and marched onwards, sickening by the way, till they encamped at Lichfield on the 18th (170 miles).

The battle of Bosworth was fought on the 22nd, and immediately after it the disease appeared in the army, of which scarcely more than the infected Englishmen reached

* Major Graunt's *Observations on Bills of Mortality*, chap. iii, Observation 38. Agues and fevers are entered promiscuously, yet in the few bills wherein they have been distinguished, it appears that not above one in forty of the whole are agues. Printed in A. D. 1664.

London, after a march of four days. The pestilence went thus very speedily through England, and grievously infected the city; and Holinshed chronicles of it that "scarcely one amongst an hundred that sickened of it escaped with life, for all in a manner, as soon as the sweate took them, or within a short time, yeelded up the ghost." It appeared in London on the 21st of September, and ended in about five weeks, affording no security against a second or third attack with equal violence.

Whilst the physicians stood appalled at this fearful unknown malady, the commoner sort of people found out for themselves a secure mode of treating it by ptisans and moderate warmth in bed, until the sweating stage was over. The epidemic passed away as quickly as it had come. Later epidemics came in 1506, 1517, 1528, and in 1550, after which it never appeared again. Speed writes of it on the last occasion, which was eight years after Caius had published his account of the nature of the disorder, thus: "This disease is not a sweate only (as it is thought and called), but a fever, as I saied, in the spirites by putrefaction venemous, with a fight, travaile, and laboure of nature againste the infection recevyed in the spirites, whereupon by chaunce foloweth a sweate, or issuith an humour compelled by nature, as also chaunceth in other sicknesses which consist in humours." The words of Speed are: "After which calamities" (defeats in France, with the surrender of Boulogne) "a great and mortall disease followed, namely, the sweating sicknesse, that raged extreamely through the land, wherein dyed the two sonnes of Charles Brandon, both of them Dukes of Suffolke, and nephews of Henry the VIII, besides an infinite number of men in their best strengths, which followed only Englishmen in foreigne cuntry, no other people infected therewith, whereby they were all feared and shunned in all places where they came." From this it would seem to have originated amongst King Edward VI.'s army in France, and to have been brought across to England by them, as it had been in 1485 by the Earl of Richmond's rabble-rout of mercenaries. Let the idea of infection be abstracted, and this remarkable disease bore the characteristics of a violent special type of miasmatic fever, that attacked alike all classes exposed to its causes.

It is remarkable that within this era of the sweating-sickness epidemics there occurred in London, in 1542, a severe epidemic of hot agues and fluxes—whether or not allied to it, in public opinion, it is not, however, stated; and there was also in 1544-45 a new disease brought from France, to which

the name of "Trousse-galant" was given. It may have been a severe form of choleraic fever; but that is uncertain.

Hecker was of opinion that it was a highly inflammatory fever, which destroyed its victims in a few hours; or, if they escaped with their lives, deprived them of hair and nails, and left them with a loathing for all animal food, inducing extreme debility. It seems also to have turned into the "verminous fever" of our own authorities, not heard of till then.

In 1545 London was afflicted with a great plague. It is certain that between 1518 and 1545 was a very troubled period of the reign of Henry VIII, and that in 1544 that king invaded France with an army of 30,000 men to assist the Imperialists. Although Boulogne was captured by the English, yet they returned home "in a sorely impoverished condition", and the invasion was short. There had been an invasion of France in 1522-23, when the Duke of Suffolk retreated when near to Paris; and also an invasion of Scotland in 1542, under a Duke of Norfolk, who defeated the Scotch in the Solway Marshes.

Besides this, the whole period was one of civil distresses at home; in it the last of the Plantagenets were cruelly beheaded, the supremacy of the Church was taken from the Pope of Rome and vested in the king, who then suppressed all the religious houses, which were the only places of succour to the poor and destitute and suffering, thereby increasing the poverty of the nation, when agriculture stood at its lowest ebb. In the last ten years of the period the king had five wives, two of whom he divorced, one he beheaded, one died in childbed, and the last survived him by chance; and it is said that in his reign 70,000 were hanged for theft alone.

Under these political, social, and domestic troubles, wherein all, from the nobles to the meanest of paupers, were undergoing changes and uncertainties—for nothing was stable—when the monarch himself, born to immense treasures which he had expended on schemes of ambition, was subsisting on wretched-out contributions, it is not to be wondered at that there were frequent epidemics that decimated not only the metropolis, but the country at large; and yet this was destined to be the chaos out of which the United Kingdom of Great Britain was finally to emerge.

On the continent there was no repose through the first half of the sixteenth century, when great questions were being submitted to the arbitrament of the sword, placing Europe on its modern basis: it was an age of revolutions and

organic changes, and amidst so many things that were new, there were even new types of diseases, all of the typhous character, and some of these were casualties that came and went again, whilst others left their stamp in the most prevalent epidemics of fever in later times.

The newly discovered continent of America was then but a property of the Spaniards, who in it made themselves masters of more productive gold mines than the world had ever before possessed, causing a great rise in all commodities and the necessaries of life: hence arose scarcity and poverty, the parents of adynamic diseases.

This new possession was a part and parcel of the new empire—the greatest Europe had seen since the days of Charlemagne—which was developed in an almost fortuitous manner through the decay of dynasties, that placed many crowns on the head of one capable monarch—the Emperor Charles V, who was a nephew of our King Henry VIII, by his marriage with Katharine of Arragon, a daughter of Ferdinand and Isabella, the grand-parents of Charles; and thus England became involved in the wars on the continent of Europe.

Of these there were four between France and Germany with Spain, in which Francis I, another grand monarch, disappointed at not being elected emperor, contested the kingdom of Naples, and was at length worsted by the outbreak of a pestilence in his camp before that city. Besides that, there was the invasion of the Turks, who advanced as far as Vienna, and besieged it, when they were terribly harassed by the English sweating-sickness, causing, perhaps, greater losses than were suffered by the sword.

Then there was—a new disease—the “trousse-galant”, that was so called because it carried off the young and most robust in a few hours, with intolerable sufferings, which in its accession was choleraic, and seems to have given rise to the word “Cholera-morbus”, which, if outlived, turned into a typhous fever, with a miliary and petechial eruption, and inflammation of the brain, that induced Sauvages to classify it as *Cephalitis Verminosa*, there being frequent evacuations of ascarides.

In 1545-6 there was war between England and France. Boulogne was captured and retained by treaty, after being besieged by the Duke of Orleans, the second son of Francis I, who died there of this disease, by which the besiegers were entirely cut up, being destroyed either in a few hours, or dying on the fourth or eleventh day. The 10,000 English defenders of it, it is said, suffered so much that they were

compelled to leave the town, and pitch a camp outside the walls, and the reluctant reinforcements felt that they were encountering sudden death. The disease was brought to England, and it may be supposed, to London, as Dr. Short notes that, in 1545, the *trousse-galant* overran France and England, and that Verminous fevers, a speciality of it in France, were prevalent in England. It was credited that in France, in 1548 and the following years, it carried off one-fourth of the inhabitants; after which it appears not to have returned epidemically.

In the first edition of the *Dictionnaire de l'Académie* it is defined—"a kind of violent disease which destroys quickly, and which is commonly called 'Cholera-morbus'. It is antiquated." It is remarkable that this definition was pronounced so long before the Asiatic cholera, which it resembles so closely, was heard of in Europe.

It was in the same epidemic cycle that another new disease appeared in Holland, according to Dr. Hecker, in 1517, and once more in 1557. On the first occasion it was preceded by "a thick, stinking fog, that for several days spread over the land". He styles it to have been a laryngo-pharyngeal affection of the most deadly nature; and we may accept as the same with the pharyngeal croup of writers previous to M. Bretonneau, who, in 1823, first designated it "diphtherite", and we diphtheritis.

At the same period the Germans were greatly afflicted by a low fever, with inflammation on the brain or its membranes, which appears to have been endemo-epidemic, and may have been induced by the great poverty consequent on, with the intensity of the mental and spiritual excitement inseparable from, the religious contentions of its armed enthusiasts; every man of whom pinned his life to his faith and religious opinions, and was ever ready to rush into deadly battle, keeping up its excitement and its terrors, from 1517, when Luther nailed up his theses against the sale of indulgences on the door of his church, until 1552, when the Protestant faith was secured by the signature of Charles V to the treaty of Passau.

We ought not to pass onwards without referring to another disease—the plague of immorality—which was one of direct contagion, by vicious contact alone, and not of infection of the atmosphere or of contagion otherwise, as those new epidemics already spoken of were; and which, unlike those that passed away and left no trace behind, has left its deplorable results from generation to generation impressed on man, and has brought upon him a dire category of his modern diseases.

Possibly this disease may have been a plague the Hebrews carried with them out from Egypt, against which the grandest and the first of all sanitary codes directed its wonderful, and often effectual, measures of prevention. But from that time history has no record of its having had any epidemic force until within the cycle we are now discussing, and it assumed that type in the last decade of the fifteenth century. Some have believed that it was introduced from America, and others from Africa, being there the yaws of negro races; and that, in any case, it was the Spaniards who brought it into Europe through Spain and Italy; but others have asserted its presence in Europe at earlier dates. However that may have been, it was first an epidemic in the allied Spanish-Italian camp besieging the French in Naples in 1495, and was dispersed widely on the cessation of the siege. It was said to have been in Paris in 1494, and in Edinburgh, which then held intimate relations with Paris, in 1496. It is not stated when it was first noticed in London, but it was probably about the same period. It received the name of *Morbus Gallicus* from the Italians, and of *Morbus Italicus* from the French; in our vulgate it was the French pox always, but technically *Morbus Gallicus*; then *Lues Venerea* from 1675, and Syphilis from 1800.

The earliest treatment of the disease was by guaiacum, the knowledge of which was derived from the natives of America—this was the Galenical treatment; but from Paracelsus, who was born about the year of the reputed introduction of the disease from America, the chemical therapeutics were derived, and the use of mercury was taught in England by G. Baker, in 1775. But Wm. Clowes, who served both in the navy and army of Queen Elizabeth, published a small book, *De Morbo Gallico*, in 1585, giving that treatment to salivation by what corresponded to our modern grey-powder and blue-ointment; and from his remark on Baker's *brochure*, it may have been first the practice of some earlier writers in English, and translated into French by M. Traheron (fol. iii, cap. 21), and reduced into English by Baker.

There is evidence that this foul disorder appeared epidemically in Italy, from which it flew apace through the nations of Western Europe; but from that time it may be said to have been domesticated in all civilised states.

The Exanthematic Fevers.—When we consider that up to the middle of the seventeenth century rather less was known of these highly contagious and infectious diseases than the Arabian physicians taught in the tenth century, since they

wrote of small-pox and measles being distinct diseases, whereas, with us, Sydenham was the first to discriminate them in practice, about 1674; and that scarlet fever was not diagnosed from measles before 1796, by Withering; surprise disappears that so little is known of the mediæval history of this group of diseases, which may be supposed to have been frequent in those times, although not diagnosticated.

It is for the same reason that, so far as that long period is concerned, they must be considered collectively by us, and what is said of the group must be taken to apply to a medley of diseases, confounded and uncertain, so far as concerning their history in that of Old London.

French authorities have asserted that small-pox was known in France in the sixth century, and that two of the family of the Merovingian King Dagobert died of it: which would imply that it might have been a Western epidemic about 630 A.D.

The first distinct account of it was by Rhazes, an Arabian physician, who was born about 852 and died in 932 A.D. He and other Arabian writers assert that small-pox and measles made their appearance in Arabia about the same time, near to the birth of Mahomet, which took place in 570, and that they were carried to Egypt in the army of the Khalif Omar, A.D. 638. The next attempt at conquest in North Africa was in 647, in the reign of Othman, when the Saracens, having won a great battle at 150 miles south of Carthage, with great slaughter, a great epidemic decimated their army, and compelled its retreat to Egypt. Thus the conquest of Barbary was deferred until 667, owing to a destructive epidemic; and as the plague-bubonic would seem to have been then unknown to Rhazes and other Arabian writers, will it not be reasonable to assume that the epidemic was one of small-pox? To continue the route of the disease into Europe with the Saracens, who conquered Spain in 714, we have reached a date about eighty-five years later than it is said to have been present in France; from either of which sources it may have made its way into England, of which the latter would appear the most probable.

On the authority of Dr. Gregory, we have it that there are in the British Museum some monkish MSS. of the ninth century, in which the word *variola*—diminutive of *varus*, a pimple—is to be found; and, therefore, in Anglo-Saxon, *variola* becomes *small-pock*, as the vulgar name for it then known in England, and, of course, known in the great centre of commerce with the Continent, and with France and Belgium in particular.

The diminutive name might have been applied to a milder form of pock than some other already well known, possibly a more severe type of eruptive fever, since extinct; or it may have presented itself in the discreet form only, of which Sydenham wrote so late as 1676, "that it is in no wise dangerous in itself." Again, as in more recent times, it must have appeared epidemically in combination with other forms of malignant diseases, as typhous fevers, and have been then grouped up in one pestilence, as the chroniclers usually characterised any very great mortality. However that may have been, I have not met with a distinct record of an epidemic small-pox in London earlier than 1614.

Previous to 1629 the Bills of Mortality gave only the numbers buried, and from that date there was a formula giving the diseases and casualties of which they died, in which flox and small-pox were together till 1702; measles standing alone till 1687, then combined with the above till 1702, when flox was omitted, and small-pox and measles were separated. What flox represented is not clear; but the facts indicate the uncertainty reigning up to 1702 with regard to the classification of measles, in which year there were several modifications in the Bills of Mortality of names and places of diseases.

It must be borne in mind that the Bills of Mortality were merely the exponent of the vulgar diagnosis of fatal diseases, as obtained by old women searchers, and tabulated by the parish clerks. Incorrectness or inexactness in popular views of epidemic diseases is excusable, whilst so much of uncertainty possessed the mind of the profession concerning them; for small-pox and measles were looked on by most as the same disease when Sydenham wrote his *Medical Observations* in 1676, although they had been reported as distinct diseases, in the Bills of Mortality, since 1629. Again, with regard to scarlet fever, which was referred to, and its squamous exfoliation mentioned, in the same volume, yet that eminent physician must have held an indefinite opinion of its etiology when stating that it arose "from the heat of the preceding summer, or from some other exciting cause", which shows that he had no idea of its highly specific character. Now, scarlet fever first appeared in the Bills of Mortality in 1700, yet it has been said that its distinction from measles was not placed beyond a doubt till Dr. Withering's essay on scarlet fever and sore throat appeared in 1778; the febrile symptoms being regarded as secondary and dependent on the local inflammation of the throat; and there can be no doubt that

epidemics of scarlet fever have been dealt with as those of malignant angina.

There was certainly an abnormal number of deaths by quinsy and sore throat, which having long been diseases of rare fatality, is suggestive that they were then, for the most part, results of the scarlatinous poison, which was not then recognised as of a specific nature.

On the relations between mortality from small-pox and measles, it happened not always, but quite as often as not—the general scale of increase from 1629 being equal, with the former disease far in advance—that its epidemic years were marked by a diminished frequency of measles, which showed their maxima in the years preceding and succeeding that of the small-pox.

After the great epidemic of 1614 there were under a hundred deaths a year, until 1633, when these mounted to 531, and to 1,354 in the next year; and were seen at 1,190 in 1649, at 1,279 in 1652, at 1,294 in 1655, fluctuating much betwixt those dates, and presenting a much increased number in the year previous to the climax, and after it a sudden fall.

By comparison of the statistics of small-pox in the first half of the seventeenth century with those of about the same years of the eighteenth century, when plague had become extinct in London, it is found that for the former period, when the plague was very active, the statistics afforded by Major Graunt for twenty years, were of total deaths 229,250, and of 10,676 deaths by fever and small-pox, which gives $46\frac{1}{2}$ per 1,000 of total deaths, when the statistics of Dr. Corbyn Morris, likewise abstracted out of the Bills of Mortality half a century later than the plague, are total deaths about 750,000, with 51,000 by small-pox, which gives 69 per 1,000 for a period during the last ten years of which inoculation stood firmly established, and was largely practised in London. This inference may be drawn: so long as plague held its ground, the exanthemata were usually in abeyance; but when the plague became extinct, then the exanthemata increased in amount and possibly in mortality, relatively to the total mortality from all causes.

This may be placed in a still stronger light by excluding the mortality by plague altogether, as a mere casualty, and then it is found that in the first half of the seventeenth century the small-pox filled 50 per 1,000 of the graves, and that in the same portion of the eighteenth century it took up 69 per 1,000 for its victims.

And in pursuing this momentous question further, until the end of the eighteenth century, when inoculation was in full

swing as a prophylactic from the confluent form, it is found that in the last ten years of that century the proportion was increased to 92 per 1,000.*

It is highly significant of the manner in which these pestilences interlocked with each other, sometimes two or three of them co-existing in the same year. The great plague of 1603 kept up its burials of thousands until 1611, when they were of hundreds, and then sank to tens or to digits until 1625, when another great epidemic occurred. Within that easy period, so far as plague is concerned, there was an epidemic of malignant fever in 1612; a pestilential small-pox in 1614, repeated in 1621; and an epidemic of measles and mumps, said to have been as destructive as the plague itself, from 1622 to 1625, when it was succeeded by the epidemic of plague that lapsed into the pestilential spotted fever in 1626.

Another point brought forward by the Bills of Mortality is, that a deficiency in the vegetable diet of Londoners may have conduced to debility that may have rendered them more susceptible of contagion or infection. From 1629 to 1750 scurvy was a direct cause of death, and as that disease is so rarely fatal ashore, it may be inferred that a few deaths from it indicate a wide spread of the diathesis. The deaths by it were numerous up to 1690, after which they fell rapidly in number, so that up to 1750 they rarely touched the proportion of 0·1 per 1,000, *i.e.*, of one in ten thousand of total deaths, which proves the advance of horticulture between the reigns of Charles I and George II.

Mr. President and Gentlemen, I shall now endeavour to present to your notice a crude arrangement in cycles, or eras, of those epidemics that have been recorded in London, sometimes in it alone, and sometimes in great part over the whole of the country.

1st Cycle.—From the ninth to the end of the thirteenth century, embracing the periods when the eastern and southern counties were constantly harassed by the Danes; that of the Conquest and its terrible sequences; that of the wars between king and nobles, when the face of the land became dotted with castles and strongholds, around which the serfs or cultivators crowded for safety, not daring to wander far from them to plough the soil. Then were the crusades, the wars in Ireland, Wales, and Scotland, all of which diminished the productiveness of the fields by the abstraction of hands. The often-repeated famines arose from these causes; and with

* Approximate Table in Appendix,

famines and murrains there came a fatal train of fevers, all adynamic, from want of food.

2nd Cycle.—From the middle of the fourteenth to the latter part of the fifteenth century, in which there was no internal improvement at home, whilst the flower of the manhood of England—nobles, yeomen, and freemen—was drafted, through a hundred years, under the banners of heroic kings and princes, to fight or to die on the field of battle, or to perish by epidemics or by slow diseases in their camps, in vain attempts to establish claims to the crowns of Scotland and of France.

In the year after the fall of Calais, the plague of the Levant showed itself in Western Europe, spread to England, and caused 100,000 deaths in London alone, and perhaps was never extinct until the city was burnt in the year 1666. After the French war came the domestic War of the Roses, that sprinkled our own fields with blood, and caused neglect of their cultivation.

3rd Cycle, was that of the Tudor period of our history, in which the foundations of modern England were laid amid wars with France, and Spain, and Holland, with abject tyranny, rebellions, revolutions, and civil wars at home, that cleared away the mists of the past, and ensured to England a rich and glorious future. During that cycle diseases hitherto unknown appeared, possessing a kind of national individuality. Of these there was, first, the English sweating-sickness, that made five distinct epidemics between 1486 and 1551 in London itself, not always, if ever, spreading into Scotland or Ireland, as it did to Hamburg in 1529, from which it infected the banks of the Rhine and central Germany to Vienna, where the besieging Turks suffered from it in 1529, and Denmark, Sweden, and Norway. 2nd. The Spanish, and Italian, and French epidemic type of Syphilis, that burst out in their camps at the siege of Naples in 1494, greatly influencing the event in that memorable siege; and after that it was dispersed rapidly through the mother countries of the various armies engaged, and very soon appeared in the capitals of Europe, including Edinburgh and London, and has since become a scourge of mankind. 3rd. The specially French "trousse-galant", a sort of choleraic fever or "cholera-morbus", just as deadly as the English "Sudor-Anglicanus". There were three visitations of it, the second of which occurred in 1545. In that year, King Henry VIII having invaded France with an army of 30,000 men in July, captured Boulogne in September, and quickly returned home "sorely impoverished". This disease having appeared in the

French camp, infected that of the English, with great loss of life. It was then imported by the soldiers to England, where it spread over the country. It never reappeared in England, but it continued in France several years. 4th. A disease of the diphtheritic type—a mucous-laryngo-pharyngitis—appeared in Holland in 1517, when the sweating sickness prevailed for the third time in England; it was very fatal, with rapid course, and it reappeared again in Holland in 1551, but not after. That year afforded striking instances of a correlation of various forms of epidemic diseases, concerning which Dr. Hecker writes: “that the English sweating-sickness of 1517 made its appearance not alone, but surrounded by a whole group of epidemics, and that these were called forth by general morbid influences of an unknown nature.” And again, of this cycle, he writes: “It was a century of *putrid malignant affections*, in which the typhous diseases were continually prevailing—a century replete with grand phenomena affecting human life in general, and continuing long after the period to which our researches refer.”

The dynasty of the Tudors, covering a hundred and eighteen years, 1485 to 1603, came in with the sweating-sickness, quite a new disease in London, and went out with a severe epidemic of plague. In its course, London suffered four great epidemics of plague, and five minor visitations of it; of the sweating-sickness, five epidemics; of famine fever, three; of spotted typhus, called English fever, four; of that called ship fever, and camp fever, two; of choleraic fever, one; of hot, burning intermitents, with dysentery, one. In fact, the City was a hotbed of plague, typhus, and adynamic fevers in general, and dysentery, throughout this cycle; and on three occasions it was deserted by the reigning monarch, on account of highly infectious diseases.

4th Cycle covered just the first half of the Stuart dynasty's rule, from 1603 to 1666. It was ushered in, in London, badly, by crowning a king in the midst of a severe epidemic of plague; in its mid-course it was the centre of a great political revolution; and its end is signalled in history for ever by a superlative epidemic of plague that destroyed nearly a hundred thousand of its inhabitants; and in the following year the habitats of that disease were destroyed in a grand conflagration of nine-tenths of its wood-built houses, out of whose ruins there rose a city with wider streets, sewerred, and its houses built of stone and brick. It may now be said that the wooden walls of an old hospital ship are not more

saturated with the germs of contagious and infectious diseases, than were the older wooden walls of the dwelling houses of Old London previous to the Great Fire. In this last cycle that lies within the scope of this paper, out of sixty-three years there were only three years without deaths by plague, of which there were four great epidemics that carried away, as badly reckoned victims, 145,634 persons, that may safely be computed to have exceeded 180,000, with at least 36,000 others in their interims. Besides these vast losses of life, London underwent, in this cycle, epidemics of malignant fever, of typhous-maculated and petechial, in types; and the exanthematous fevers, gathering unwonted severity; had destructive epidemics of small-pox in 1614 and 1629, and of measles with mumps, said to have been as fatal as the plague itself, in 1625.

Gentlemen, I believe that I have presented a fair display of the insanitary conditions prevalent in Old London, and my task is finished. Let me thank you for your kind attention.

A SYLLABUS OF THE EPIDEMICS OF THE LATER MIDDLE AGE, AND OF THE RENAISSANCE AGE,
FOR THE MOST PART INFECTING OLD LONDON.

The Era of the Plague in England from 1348 to 1666.

- Henry III.....1232-34.... Famine, with starvation and fever, through three years. In London alone 30,000 perished.
1270 Famine, with starvation and fever. Parents ate their children, and thousands died by the roadsides. In London alone 20,000 perished.
1314-15.... Famine with great mortality, so that interment was difficult.
- Edward III ...1348 The Black-Death, or plague from Asia. The first in Western Europe. In London alone 100,000 perished.
- Richard II ...1379 A great mortality throughout England.
1389 After a great murrain, followed a pestilence, with great mortality among youth, everywhere in town and country.
- Edward IV ...1468-70.... Three years of great mortality. In the year 1470, from September to November, in London, a destructive plague.
1477 A great plague throughout England.
1479 A great plague in London, in September to November.
- Henry VII ...1486 A new disease of deadly type—*Sudor Anglicus*, or the English sweating-sickness—raged in London and Southern England.
1496 Epidemic syphilis spread to the British, having shown itself first in the Spanish army besieging Naples.
1499-1500. A great plague in London. The King, with his Court, fled to Calais. In London 30,000 perished.
1502-1504. The plague in England, and in Germany.
1505 A pestilential spotted fever, followed after the plague in London, It received the name of English fever.
1506 The second epidemic of the English sweating-sickness in mild form, confined to London and England.
- Henry VIII...1509-10.... The plague in London, with a general famine. The young King sent 600 quarters of wheat to the citizens. In 1510 a severe epidemic of influenza spread over Europe.
1512-13.... The plague and famine in England.
1515 The plague of pestilence in London. In the Minories convent twenty-seven nuns, with laity and servants, died of it.
1517 A third epidemic of English sweating-sickness. In Holland, with plague, a very quickly fatal sore-throat, lasted only ten days. Qy. diphtheria.

- Henry VIII ...1521 A great mortality through England, after scarcity of provisions from a long drought.
 1522 The same spotted pestilential fever as in 1505.
 1526 A great plague in London, causing an adjournment of the law terms.
 1528 A fourth epidemic of the English sweating-sickness, and the so-called English fever of 1505 and 1526, abounded.
 1529-31... English sweating-sickness carried to Calais, where two successive Brandons, Dukes of Sussex, died of it. Dysentery epidemic.
 1538-40... Fatal dysentery and intermittent fevers were very prevalent.
 1543 The plague in London, causing an adjournment of the winter law terms.
 1544 A new, very fatal disease, called the "Trousse-galant", brought into England from France. "Cholera-morbus", followed by fever.
 1545 After the "Trousse-galant", verminous fevers, universal influenza, both fatal to youth, and also the plague, present in London.
- Edward VI ...1546 The plague, with pestilential, delirious fevers and diarrhœas.
 1548 Pestilential peripneumonies, spread from week to week over Europe.
 1549 Famine and a pestilential fever year in London.
 1551 The fifth and last sweating-sickness began at Shrewsbury and extended to London.
- Mary1555 Epidemic of the English spotted fever (pestilential). Same as in 1505 and 1522.
- Elizabeth1557-58... A long epidemic of hot-burning agues and remittents, with great mortality, in autumn of 1558. The two following years seasonable and healthy.
 1562-63... A great plague in London, with the country keeping healthy. A blue cross ordered on infected houses. Deaths in London, 20,136. In 1563 it spread widely in the country. A pestilential sore-throat overran most of the Continent.
 1566 The Hungarian camp-fever first spoken of.
 1568 The plague in London.
 1573-74... A great dearth of food in the first year, followed by a small plague. The theatres were then closed for the first time.
 1580 An epidemic of the English spotted-fever. Plague was said to have carried off 500,000 people in Cairo.
 1582 The plague in London. The Queen moved out of Norwich Palace to Richmond, and thence to Oatlands. The law terms adjourned for the winter.
 1586 Camp- and ship-typhus, called Hungarian fever, brought by the fleet from Lisbon. Spread over all England.
 1589 Great heat and drought. Plague in London, Lichfield, and Leicester. In summer many spotted tertians and quotidians.
 1592-93 ... A great plague in London, of which there died 17,890 persons.

- James I.....1602-1603. First year, influenza; and, in 1603, a great plague in London, of which 30,158 persons died, and 9,000 more in the following nine years.
- 1610 The Hungarian camp-fever spread in England by soldiers returned from Alsace.
- 1612 A malignant fever in England.
- 1614 A general epidemic through England of a pestilential small-pox.
- 1621 The small-pox epidemic, and very destructive of persons of all ages.
- 1622-25.... An epidemic fever, measles with mumps, of virulence scarcely short of the plague. It ended in London in 1625.
- Charles I1625-26.... A great plague in London, of which 63,000 died. In 1626 it changed to the pestilential spotted fever; and then, after 1628, the health of London was extraordinarily high.
- 1636 A great plague in London, of which 10,466 died, and 17,850 in the following thirteen years without interruption.
- 1643 The pestilential spotted fever of plague in London.
- 1645 Epidemic of the English pestilential fever and malignant dysentery widely spread; the plague of 1636 being still present in London. 1649, Epidemic of plague ceased.
- 1656 The small-pox and the dysentery very prevalent.
- Charles II.....1661-62.... The inflammatory, depuratory fever of Sydenham very prevalent in London.
- 1664 A year of abundant crops and harvests.
- 1665 The fifth great plague, which, according to Clarendon and others, may have carried off from 90,000 to 100,000 victims.
- 1666 The Great Fire of London, which destroyed nine-tenths of the city, with very small loss of life by casualties.

This Table is compiled chiefly from the writings of Dr. Short, on the Increase and Decrease of Mankind in London, together with quotations from chronicles and general histories.

A Scheme of Approximate Ratios per 1,000 of all Deaths from Plague, Fevers, Small-pox, and Measles, between 1629 and 1880, displaying the stages of Increase, Variation, and Decrease, at typical periods.

FROM THE BILLS OF MORTALITY.											REGISTRAR-GENERAL.		
Periods Inclusive.	Era of Plague Epidemics.			Neutral Era.				Era of Inoculation.		Era of Vaccination			
	1629-65.	1629-36.	1647-65.	1690-99.	1728-1757.			1780-89.	1790-99.	Voluntary.		Obligatory.	Compulsory.
										1820-29.	1830-39.	1841-50.	1870-80.
Plague and Fevers	199.35	169.15	243.82										
” ”	321.70	293.50	363.75										
Fevers	121.70	124.50	119.90	170.	66	80	95	128.25	109.90	39.78	55.76	39.90	16.41
Small-pox	39.50	26.90	43.50		66	80	95	63.66	86.94	34.42	43.72	16.85	19.63
Measles	2.50	2.45	2.60		Min.	Mean.	Max.	12.05	9.44	33.14	36.85	25.06	22.65
Small-pox and Measles	42.00	29.35	46.10	51.10				75.70	96.38	67.56	80.55	41.90	42.28
Ditto, ditto, and Fevers	163.75	151.60	166.00	222.				203.85	206.45	107.35	136.35	80.90	58.70
Ditto, ditto, ditto, and Plague	363.	329.30	409.80		1737-42	1728-57	1752-57						

Some points of chief interest as being reciprocally elucidatory.

- 1679. The last case of plague in London, it never having shown epidemic force in the rebuilding of London.
- 1721. The first variolous inoculation in London and in England.
- 1746. The Small-pox Hospital established in London, for inoculation of the poorer classes.
- 1754. Inoculation approved of by the Royal College of Physicians.
- 1798. Vaccination announced and practised by Dr. Jenner.
- 1801. The first decennial Census taken, being the foundation of Vital Statistics.
- 1809. The National Vaccine Institution founded in London.
- 1837. The office of Registrar-General appointed under the Poor-Law Administration.
- 1840. Compulsory vaccination ordained, and variolous inoculation made penal.
- 1855. Local Management Act passed; Board of Works formed, to effect a general system of sewerage.
- 1880. The last decennial period gives an increased mortality by small-pox.