

## **Plague.**

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not attended with any complaint except a slight itching on going to bed after exercise, or any stimulating liquor.

The causes have been said to be fruit taken in too large a quantity, mushrooms, alternations of heat or cold, the friction of flannel, and the heat of a tropical region. It appears to resemble the maculæ hepaticæ of Sennertus. No internal medicine seems to produce a considerable or a permanent change in these spots.

**PLAGUE, in medicine.**—This term is frequently employed in a great number of diseases which do not properly belong to the class. The cholera, for example, which so lately ravaged three quarters of our globe, was spoken of as a species of plague, than which nothing could have been more inaccurate. Of that genus of the order *spasmi* an account is given under the article **CHOLERA**.

Dr. Cullen places the plague among the exanthemata, defining it a typhus, very highly contagious, and attended with extreme debility.

The plague is the most violent, rapid, and suddenly fatal form of putrid or asthenic fever. In the beginning it is sometimes attended with inflammatory symptoms, particularly in the higher latitudes, but it speedily becomes very highly putrid. Whatever be the nature of its miasmata, the effects are immediately to diminish, and, according to the degree of its power, to extinguish the vital power, dissolving the texture of the blood, whence arise the purple spots.

The plague approaches with a chilliness and shivering, often with coldness only, which continues for a long time. This is followed by violent vomiting, a painful oppression of the breast, and a burning heat, particularly in the internal parts, which continue till death changes the scene, or till the eruption of a bubo or a parotis affords relief to the sufferer. Sometimes the disease is mortal before the signs of fever approach, the broad purple spots which denote the highest degree of malignity coming out even while the person is engaged in business: these spots recede and return before the approach of death. Sometimes swellings appear, without having been preceded by a fever or any violent symptom. The breath and perspiration are very offensive. The pathognomonic symptoms are the buboes and carbuncles which appear in various parts of the body. If these are absent, the disease is generally styled a putrid or a malignant fever.

The more particular symptoms are very early and considerable prostration of strength, with every mark of debility in the vital and animal actions, frequent hæmorrhages, indistinctness of vision, coma, and loss of speech. On dissection the heart and liver are found to be greatly enlarged. The whole train of symptoms marks excessive debility, but the disease is seldom highly putrid: in many cases it is in no respect so. Since the inflammations and abscesses of the glands, usually the parotid, the axillary, or the inguinal, appear at no determined period of the fever, sometimes even without a regular febrile attack, and are occasionally wanting, there is no foundation for arranging plague among the exanthemata, and it should be reduced to the asthenic remittents: we say remittents, because in the beginning remissions are sometimes observed, and because the most dangerous asthenic fevers are usually of this kind.

ARTS & SCIENCES.—VOL. II.

The disease is not, as supposed, highly infectious. It is described as propagated like the epidemic catarrh by miasmata conveyed through the air, and re-appearing in places to which this scourge is familiar at regular seasons, but by no means at the periods of extreme heat; on the contrary, in the hottest seasons it often vanishes. When not depending on miasmata it may be conveyed in woollen or cotton goods, which contain the contagious matter from an infected person, but contact or confinement with the patient in a close room is necessary for its full activity.

The plague used to visit England every thirty or forty years; but a much longer period has now elapsed without its occurrence, and during this time our connexion with the east has been more considerable. This will not be readily attributed to the practice of quarantines, which appear to be carelessly executed, and indeed the directions are highly injudicious. The period is too long for the disease to lie latent in the crew; and too short for the ventilation of the goods. Our escape may therefore be owing to different habits, to a diet more antiseptic, to more free air, &c.; but these would probably prevent only its spreading. If imported, some victim would fall the sacrifice, but there is little reason for thinking that it would ever be general, or very generally fatal.

Assalini, who was attached to the French army in Egypt, calls it only the epidemic fever; yet, if the plague is to be distinguished by any concurrence of symptoms, it was undoubtedly the same disease.

If this author's observations, and indeed those of the French and English surgeons who attended the armies in Egypt, be true, the nature and source of the disease will appear to be very different from the representations of former practitioners. All these concur in the opinion that it is not highly infectious; many that it is slightly if at all so; and, instead of deriving it from peculiar miasmata, and of considering the eastern countries as its great source, they attribute its appearance to common marsh miasmata, and its propagation to superstition, filth, and inattention. Assalini traces its progress in the French armies with great care; and, if his facts are true, these positions follow as rigorous conclusions. We have said that it is not *highly* infectious, of which a strong proof is that those connected with the sick are seldom infected unless confined in the rooms. Casual intercourse is certainly by no means dangerous, as is shown by the medical attendants having very seldom suffered. When they appear to be infected, it is by no means certain that they may not suffer from its original cause, miasmata, since the strictest confinement does not ensure perfect security. In one point of view it is therefore epidemic, in another endemic; for the miasmata which in Germany and England produce tertians, in Hungary petechial fevers, in Italy remittents, in Syria and Egypt seem to occasion the plague. Many of the absurdities detailed by Thucydides, Lucretius, and Boccaccio, appear to have no foundation. Negroes, who resist the yellow fever of America and the West Indies, an epidemic apparently more violent and fatal than the plague, yield easily to the latter. It has been disputed whether this disease attacks the same person twice; it is in general supposed that it may, though a second seizure rarely occurs in the same epidemic. M. Sotira, one of the attendants on the

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*Plague Cyclopaedia 1825*



French army, seems to think that when the bubo freely suppurates the patient is afterwards invulnerable from this poison.

In Europe the disease is spread only by infection; it cannot be styled an epidemic, for the separation of the healthy invariably preserves them. During the plague at Rome in 1656 and 1657 all the monasteries escaped. The prisons were equally free, notwithstanding their closeness and filth. According to the certificates annexed to the treatises on the plague of Marseilles, a similar security was obtained by separating the healthy from the diseased. Even in its native country seclusion is of service, since it inspires confidence, and the night air is avoided.

The plague, we have said, consists in extreme debility in every function. "I have drank neither wine nor spirits," said General Menou, "yet I am as giddy as a drunken man: the taste in my mouth is insupportably offensive, and I am so weak that I can no longer walk: my legs seem as if they were made of cotton." The eyes are red, the head heavy, and the sensibility often extinguished. The patient feels an anxious wish to sleep. The anxiety soon increases to palpitation, and that to syncope; the pulse is peculiarly irregular; the vomitings of bile are often incessant; the speech is faltering; the motions are unsteady, with a wandering delirium and convulsions. It is impossible to accumulate symptoms which would together show a greater deficiency of the vis vitæ, and its consequence the accumulation of blood in the heart, the lungs, the biliary system, and the brain. The marks of putrescency are less striking; for debility is more often the cause of extravasations under the skin than a putrid dissolution of the blood. In the plague, persons often walk out with the spots, as they are called, on the skin, not feeling any disease but debility.

The cure of the plague was formerly supposed to be a desperate attempt. We now know that though a dangerous disease it is more often conquered than victorious; nor is there the slightest doubt, but, if it should ever be again introduced into this kingdom, that it would soon excite little alarm. There are many epidemics which have been, for a time, more fatal than the plague would probably be in the present state of society, with judicious political regulations.

M. Cochetot, known by the interesting relation which he has published of his captivity on the western coast of Africa, has brought from that country a formula for the cure of the plague, written in the Arabic language. The following is a translation:—

"In the name of the compassionate and merciful God. All good comes from God, and his creatures have no other power than that which was granted them by the Most High. Thanks to his mercy, the children of Adam have found great benefit from the use of oil, not only as a drink, as wherewith to anoint and purify themselves, but, independent of these three uses, God has assigned a fourth property to the same in behalf of those attacked with plague. From the first moment of the setting in of the complaint, the patient should drink a certain quantity of oil, as much as he possibly can, five or six *okia* (ounces) at least. All he drinks above this quantity will but do him good. After having drank this oil, he is to anoint the whole body with tepid oil; he is then to lie down in bed, where he is to cover himself well up, in such

a manner as to procure a profuse perspiration, for the perspiration is the sure harbinger of tranquillity. After this treatment the patient will experience more and more relief with the help of the Most High. Health and power (in every thing) are in the hands of God; there is no other than him."

The great source of difficulty to the practical physician has been the good effects of *bleeding*. Sydenham employed it to a considerable extent, preceded only, as he tells us, by Botallus, who bled largely in almost every complaint. Yet Oribasius long before had employed this remedy in his own case; for, when the plague was epidemic in Asia, he was seized with the disease; and on the second day, *during the remission*, scarified his legs, taking away two pounds of blood. Modern authors, and particularly Dr. Russell, have been more cautious, limiting the evacuation to a single bleeding, and then only when the disease attacks with symptoms of inflammation.

When symptoms of indigestion appear, and even when the disease has attacked after a full meal, it has been usual to give an *emetic*. Probably in every case this remedy is proper, since, from the accumulations in the liver, bilious discharges are common and useful. These are usually directed so as to keep up a slight diarrhoea; but excessive evacuations in either way are injurious. Samoilowitz, and the Russian practitioners, strongly recommend the early use of emetics. Slight purgatives of the saline or acid kind are also useful through the whole course of the disease.

*Diaphoresis* is the evacuation which relieves most certainly and effectually; and this is usually kept up by warm liquids, vegetable acids, often by opium. In cases of great languor and debility, the warmer opiates, as the *confectio opiata*, are employed, assisted often by camphor and ammonia. Yet on the whole these appear, on comparing the testimony of different authors, to be less generally effectual, though sometimes essentially necessary from the debility which prevails. In the early stages, to drink freely of the camphorated julep, with a large proportion of the vegetable acids, seems particularly useful.

*Frictions with ice* seem to have been employed exclusively in Russia, and Samoilowitz gives several cases in which they succeeded. His patients were however chiefly among the strong and robust. Were we to estimate the utility of this remedy by what we have been told of the effects of cold applications in typhus, we should consider it as dangerous in a disease occasioning such great debility. He used a large piece of ice with a polished surface, formed by friction against another piece, and rubbed the arms, the legs, and thighs chiefly, the abdomen slightly, and the breast scarcely at all. Rubbing the spine with alcohol, impregnated with aromatics, is recommended by Sortira, who remarks that animals wounded in the vertebræ are recovered by spirituous and aromatic injections on the membranes of the spinal marrow.

In every stage of this complaint, wine given in proportion to the debility is useful; and, in the highly asthenic cases, bark and the mineral acids have been freely employed. These are spoken of so vaguely that we suspect they have been seldom necessary. They must often, however, be the only resources.

The conduct of the buboes has been the subject of much controversy. It is necessary, however, to remark that these are not the only external affections in this



disease. Carbuncles are occasionally observed at the conclusion, sometimes in the commencement of the plague. These were usually called *tokens*. It is in general advised to bring the bubo to a suppuration, though this is always difficult; but to open it before this process is at least begun appears to be a useless torture. Poultices, cataplasms, and even the actual cautery, often fail; and, if the bubo does not suppurate, the danger is supposed to be more considerable. This may however be the case though the tumour is not critical; for the want of suppuration is often a symptom only of considerable debility. Friction with warm tepid oils was found the most easy and effectual method: perhaps mercurial ointment might have been more successful.

To guard against the plague is an object of no little importance; and this subject divides itself into the means of preventing its importation from the countries where it is occasionally epidemic, and those of preserving the health of individuals during its ravages. Late observations have greatly assisted us in each respect.

The regulations of quarantines are vexatious and ineffectual; nor can there be a doubt but that if the seeds of the plague were contained in any vessel from the Levant the disease would be propagated in this country; but still the danger would be inconsiderable. The period of forty days, originally perhaps determined by religious observances, is not necessary to ascertain the state of health of individuals, when we reflect that they have been already more than a month on their voyage, and in varied climates. A medical man would not run the slightest risk in examining individuals, who, if free from infection, might be immediately liberated. The goods would require a much longer time unless ventilated; but, if in a raw unmanufactured state, a very slight ventilation would be sufficient; nor need any one fear to engage in the task if he took advantage of a fresh breeze, and stood to the windward. The great danger would arise from manufactured apparel, unless it were of leather. This should be ventilated with the utmost care and caution. Yet the clothes which the owner wore during the voyage would be probably incapable of conveying the disease, if he himself were in health. Perhaps it would be less expensive, and would be infinitely less vexatious, if all the wearing apparel of the crew were destroyed in case of the slightest suspicion of infection.

If the plague were to reach a town, it would be easy we think to prevent its spreading, if the family were not permitted to mix with others till their health was ascertained, and if the nurses or necessary attendants on the sick were cautiously to avoid communication with others, except at some distance. Every thing from the house should be cleaned and aired, the linen being immersed in water for some time, and then exposed to the air, before the operation of washing is begun. It has been the common error of physicians to disbelieve the existence of a plague till its mortality has forcibly evinced the truth. If then an epidemic fever has continued, and it is uncertain how far its contagious seeds have been dispersed, all crowds should be avoided. Those most certainly free should be suffered to leave the town, after perhaps a slight quarantine in the neighbourhood; and all suspected goods should be destroyed. To assert that the disease is not infectious is to lull persons into an incautious security; to say that it is

highly so renders the fever most highly dangerous, by depressing the spirits. In this country it is propagated by infection only, and with moderate caution may be avoided, notwithstanding an occasional communication with those who are diseased.

The necessary rules for this purpose are not numerous. If the mind is busily engaged, and the person has little time to reflect on his danger, it is greatly lessened. The good bishop of Marseilles escaped, by his hourly engagements in the works of benevolence. If not engaged, cheerfulness, confidence, and serenity, are the best guardians; and it is a kind fraud to tell those who must remain that with moderate caution there is not the slightest danger, and to make light of any accidental ailment, or even the first attack of the disease. To tell a person he has not the plague has been found the most certain mode of curing him when really infected.

Another rule of no little importance is to be often in the open air; to change the linen and the clothes frequently; and not again to put on woollen garments till they have been freely ventilated. The diet should be generous, and the wine in a larger quantity than usual. The bowels should be kept free, and perspiration at night be induced by warm liquids, with vegetable acids, and some portion of spirit. Every depressing passion should be avoided, as well as every cause of debility. Diemerbroeck remarked that newly-married persons were peculiarly subject to the infection of this disease.

Tonics are sometimes necessary, and the occasional use of the cold bath, of bark, and the mineral acids has been found useful. Camphor, an excellent antiseptic, palliates the appetite; and its effects in a bag round the neck are at least equivocal, probably imaginary. Above all, free open air is the best method of rendering the infectious matter effete; and a cheerful serenity, with the most frequent changes of clothes, every mode of supporting the strength, and a free discharge from the different excrementitious glands, the most certain means of preventing its effects.

Having thus given a view of the symptoms and treatment of plague, it may be interesting to trace the progress of its ravages, commencing with the earliest recorded notice of this terrible scourge of the human race.

Thucydides gives an account of a dreadful plague which happened at Athens about B.C. 430, and with which he himself was infected, while the Peloponnesians under the command of Archidamus wasted all her territory abroad; but of these two enemies the plague was by far the more severe. The most dreadful plague that ever raged at Rome was in the reign of Titus, A.D. 80. The emperor left no remedy unattempted to abate the malignity of the distemper, acting during its continuance like a father to his people. The same fatal disease raged in all the provinces of the Roman empire in the reign of M. Aurelius, A.D. 167, and was followed by a dreadful famine, earthquakes, inundations, and other calamities. About A.D. 430, the plague visited Britain, just after the Picts and Scots had made a formidable invasion of the southern part of the island. It raged with uncommon fury, and swept away most of those whom the sword and famine had spared, so that the living were scarcely sufficient to bury the dead.

Of all the diseases the remembrance of which has been preserved to us by history, the *black pestilence*



of the fourteenth century is that which caused the greatest ravages.

From documents furnished by Professor Hecker, it appears that the black pestilence was in fact the plague of the east, but with some additional features. Besides the swellings under the arm-pits, and in the groin, and the gangrenous tumours which characterize the plague, numerous black spots were observed over the whole surface of the body; the palate and tongue were black, and, as it were, filled with blood; and the patients were tormented with insatiable thirst. But the most distinguishing and aggravated feature of the black pestilence was the thorough alteration experienced by the lungs. These organs were struck with a gangrenous inflammation, which was indicated by acute pains in the chest, spitting of blood, and such an infection of the breath that parents even fled from their children. The disorder was communicated not only by contact with infected patients, but also by touching any thing which had belonged to them.

The black pestilence, originating in Upper Asia, descended towards the Caucasus and the Mediterranean Sea; and, instead of entering Europe through Russia, it first spread over the south, and after devastating the rest of Europe it entered that country. It followed the caravans which came from China across Central Asia, until it reached the shores of the Black Sea; thence it was conveyed by ships to Constantinople, the centre of commercial intercourse between Asia, Europe, and Africa. That capital was certainly the focus whence the pestilence darted its poisonous rays in every direction, except towards Muscovy. In the year 1347 it reached Sicily, some of the maritime cities of Italy, and Marseilles. In the following year it spread from the European shores of the Mediterranean into the interior of the continent. The northern parts of Italy, France, Germany, and England, were invaded by it in the same year; the northern kingdoms of Europe in 1349; and finally Russia in 1351; that is to say, four years after it reached Constantinople.

In France the pestilence advanced by Avignon, at that time the seat of the papacy. It broke out there in a frightful manner: many persons fell down suddenly, as if they had been struck by a thunderbolt. The patients rarely reached the third day: as soon as any one found himself affected with tumours, either in the groin or beneath the arms, he bade adieu to the world, and sought consolation only in the absolution granted to all the dying by Pope Clement VI.

In England the disorder was characterized, as it had been at Avignon, by an almost sudden mortality, consequent on the spitting of blood. The patients who exhibited this symptom sunk under the pestilence in twelve hours, and rarely survived to the second day. The malady spread rapidly throughout the country, and covered it with the dead. On the north seas, as previously on the Mediterranean, vessels were seen floating at the pleasure of the winds, deprived of their crews, and carrying only corpses.

The following estimates, which may be relied on as pretty correct, will give an idea of the losses sustained by the population of Europe at that time.

	<i>Inhabitants.</i>		<i>Inhabitants.</i>
Florence lost	60,000	Strasbourg	16,000
Venice	100,000	Basle	14,000
Marseilles (in 1 month)	56,000	Erfurth (at least)	16,000
Paris	50,000	London (at least)	100,000
Avignon	60,000	Norwich	50,000

About 200,000 country towns or villages were completely depopulated. At Paris, 500 patients died every day at the Hôtel-Dieu. Italy, we are informed, lost at least one half of her inhabitants. At Cairo, during the height of the pestilence, 10,000 or 12,000 died daily. In Mahomedan countries, on the great roads, and in the caravanseras, nothing was seen but deserted corpses.

If, notwithstanding all the progress made in the natural sciences, the doctors of the nineteenth century have failed in ascertaining what are the causes of the cholera, how much more reason have we to acknowledge our ignorance of the causes of the black pestilence. M. Hecker, however, has found in the history of the fourteenth century some facts which he thinks may be applied to explain the causes of its appearance! He considers that it was principally caused by great commotions in the interior parts of the globe. The following are some of the remarkable circumstances which he has collected from the history of that time.

About the year 1333, numerous earthquakes and volcanic eruptions did much mischief in Upper Asia, which in the year after successively appeared in Greece, Italy, France, and Germany. To these convulsions of the earth were added extraordinary inundations, which drowned the harvests, and loaded the atmosphere with moisture. These were succeeded by barren years, scarcity, famine, and great mortality. Clouds of locusts invaded the plains of Europe, and covered them with their dead bodies, which poisoned the air with putrid exhalations. And, lastly, dense mists, emitting a disagreeable smell, spread over whole countries, in consequence of which the inhabitants were exposed to various accidents.

It will be readily admitted that facts like these must produce an injurious effect upon the health of the generations that were contemporary with them; but are they sufficient to account for the deadly malady which shortly after manifested itself? In order to answer this question, we ought to know, at least, whether there is any constant proportion between the supposed causes of the black pestilence and the intensity of this scourge in the different countries which it devastated. M. Hecker's opinion, however, does not differ from that entertained by many physicians who lived in those times. The faculty of Paris, which was consulted on that occasion, assigned a mist or fog as the cause of the evil, and recommended the lighting of fires with aromatic plants. A learned man of Padua attributed the pest to an occult quality of the atmosphere. A physician of Avignon ascribed it (as some medical men in France in our day have done) to influences arising from the earth. In short, they knew at that time nearly as much as we do now concerning the real causes of this great pestilence, and many doctors endeavoured to account for them by having recourse to astrology.

Nothing is more afflicting than the details which have been transmitted to us of the moral effects produced by the black pestilence upon the generation who witnessed it. There doubtless were some happy exceptions; but among the majority this scourge called forth a manifestation of selfishness, frequently the most revolting, together with superstitious practices and fanatical excesses. Then, as we have since witnessed in France, the people began



by ascribing to poison the almost sudden deaths which they witnessed. The fanaticism of that age directed their suspicions against the Jews, who were the objects of general hatred, and whose riches moreover excited the cupidity of their enemies. Europe then presented one of the most frightful spectacles that can be conceived. The hapless Jews were seized, tortured, condemned, and burnt; in most cases the people did not wait for a judicial sentence, but themselves massacred the Israelites. They were heaped up by thousands in vast funeral piles. At Mayence, after a vain attempt at resistance, they shut themselves up in their quarters, to which they set fire, and *twelve thousand perished!* Pursued by the people, by the magistrates who ought to have protected them, and by the feudal lords, these miserable strangers found no asylum but in Lithuania, where Casimir the Great granted them his protection.

The disease also extended its frightful ravages to Ireland, and the following account of it is taken from the annals of a Franciscan monk of that period:—

"This year, and chiefly in the months of September and October, great numbers of bishops and prelates, ecclesiastical and religious, peers and others, and in general people of both sexes, flocked together by troops, in pilgrimage to the water of Inchmoling, insomuch that many thousands of souls might be seen there together for many days; some came on the score of devotion, but the greatest part for fear of the pestilence, which raged at that time with great violence. It first broke out near Dublin at Howth and Dalkeith; it almost destroyed and laid waste the cities of Dublin and Drogheda, insomuch that in Dublin alone, from the beginning of August to Christmas, 14,000 souls perished. This pestilence had its first beginning, as it is said, in the East, and, passing through the Saracens and infidels, slew 8000 legions of them. It seized the city of Avignon, where the Roman court then was, the January before it came among us, where the churches and cemeteries were not sufficient to receive the dead, and the pope ordered a new cemetery to be consecrated for depositing the bodies of those who died of the pestilence, insomuch that from the month of May to the translation of St. Thomas 50,000 bodies and upwards were buried in the same cemetery.

"This distemper prevailed in full force in Lent, and on the 6th day of March eight Dominican friars died. Scarcely a single person died in one house, but it commonly swept away husband, wife, children, and servants, all together." The author seems to have died of this plague, and to have had a foresight of his approaching fate; for he closes his annals in 1348, thus: "But I," says he, "friar John Clyn of the Franciscan order of the convent of Kilkenny, have in this book written the memorable things happening in my time, of which I was either an eye witness or learned them from the relation of such as were worthy of credit, and that these notable actions might not perish by time, and vanish out of the memory of our successors, seeing the many evils that encompass us, and every symptom placed as it were under a malevolent influence, expecting death among the dead until it comes; such things as I have heard delivered with veracity, and have strictly examined, I have reduced into writing; and lest the writing should perish with the writer, and the work fail with the workman, I leave behind me parchment for continuing it; if any man should have the good fortune

to survive this calamity, or any one of the race of Adam should escape this pestilence, to continue what I have begun."

Among the manuscripts of Sir Hans Sloane, preserved in the British Museum, is one entitled "ΛΟΙΜΟΓΡΑΦΙΑ, an Experimental Relation of the Plague, principally as it appeared in 1665, by William Boghurst, apothecary, in St. Giles's in the Fields." It is a thin quarto volume, and was intended for publication by its author as a general treatise on the disease. It contains numerous particulars, however, which are of a very interesting character, more especially as it details facts which fell under the personal notice of the writer. De Foe's *Journal of the Plague*, published in 1722, as most readers are aware, was a pure fiction.

Speaking of the "evil signs or presages of the plague," the writer says, "Among these were spots of different colours, hiccough, vomiting, carbuncles or buboes, shortness of breath, stoppage of urine, drowsiness and thirstiness, contraction of the jaws, and large and extended tumours. Almost all that caught the disease with fear died with tokens in two or three days. About the beginning most men got the disease with surfeiting, over-heating themselves, and disorderly living. Tokens appeared not much till about the middle of June, and carbuncles not till the latter end of July, but were very rife in the fall about September and October, and seized most on old people, adult, choleric, and melancholy people, and generally on dry and lean bodies. Children had none.

"If very hot weather followed a shower of rain, the disease increased. Those that married in the heat of this disease (if they had not had it before) almost all fell into it in a week or a fortnight after it, both in city and country, of which most died, especially the men. Black men of thin and lean constitutions were heavy laden with this disease, and died, all that I saw, in two or three days. People of the best complexions and merry dispositions had least of the disease, and if they had it fared the best under it. Pregnant females fared miserably. Strength of constitution was no safety. Death made the strongest assault upon strong bodies. All that I saw that were let blood in the disease, if they had been sick two, three, four, five days or more, died the same day. More of the good died than of the bad; more men than women; and more of dull complexions than fair.

"In the summer before the plague in 1664, there was such a multitude of flies that they lined the insides of houses; and, if any thread or string did hang down in any place, it was presently thick set with flies like a rope of onions, and swarms of ants covered the high-ways, that you might have taken a handful at a time. Also the small-pox was so rife in our parish that betwixt the church and the pound in St. Giles's, which is not above six-score paces, above forty families had the small-pox.

"This plague was ushered in with seven months' dry weather and westerly winds. The plague put itself forth in St. Giles's, St. Clement's, St. Paul's, Covent Garden, and St. Martin's, these three or four years, as I have been informed by the people themselves who had it in their houses in these parishes. The plague fell first upon the highest grounds. Highgate, Hampstead, and Acton also, all shared in it.

"Many people after a violent sweat, or taking a



strong cordial, presently had the tokens come out; so that every nurse could say that cochineal was a fine thing to bring out the tokens. Those that died of the plague died a very easy death generally: first, because it was speedy; secondly, because they died without convulsions. They did but of a sudden fetch their breath a little thick and short, and were presently gone. So that I have heard some say, 'How much am I bound to God, who takes me away by such an easy death!' One friend growing melancholy for another was one main cause of its going through a family, especially when they were shut up, which bred a sad apprehension and consternation on their spirits.

"Many women giving suck freed themselves of the plague by their children sucking it from them; but some continued well some days, sometimes weeks, and then fell into the disease after their children were dead. The wind blowing westward so long together from before Christmas until July, about seven months, was the cause the plague begun first at the west end of the city, as at St. Giles's and St. Martin's, Westminster. Afterwards it gradually insinuated and crept down Holborn and the Strand, and then into the city, and at last to the east end of the suburbs; so that it was half a year at the west end of the city before the east end and Stepney were infected, which was about the middle of July. Southwark being the south suburb was infected almost as soon as the west end. The disease spread not altogether by contagion at first, nor began at only one place, and spread further and further, as an eating spreading sore doth all over the body, but fell upon several places of the city and suburbs like rain even at the first, at St. Giles's, St. Martin's, Chancery Lane, Southwark, Houndsditch, and some places within the city, as at Procter's Houses."

The author states himself to have been bold and courageous in the exercise of his profession during the plague. He says he rendered himself familiar with the disease, knowing that to do good he must be neither nice nor fearful. He says he dressed forty sores a day; and held the pulses of some patients sweating in the bed half a quarter of an hour together, to give judgment and inform himself of variations. He let blood, gave glisters, though but to few, held them up in their beds to keep them from strangling and choking, half an hour together; commonly suffered their breathing in his face several times when they were dying; ate and drank with them; sat down by their bed-sides, and upon their beds, discoursing with them an hour together when he had time, and staid by them to see them die, and the manner of their death, and closed up their mouths and eyes; "then," he adds, "if people had nobody to help them (for help was scarce at such a time and place), I helped to lay them forth out of the bed, and afterwards into the coffin, and, last of all, accompanied them to the grave."

PLAN, in *architecture*, is particularly used for a draught of a building, as it appears on the ground, showing the extent, division, and distribution of its area or ground-plot into compartments, rooms, passages, &c. To render plans intelligible, it is usual to distinguish the massive portions with a black tint; the projections on the ground are drawn in full lines, and those supposed over them in dotted lines. The augmentations or alterations to be made are distinguished by a colour different from what is already built; and

the tints of each plan made lighter as the stories are raised. In large buildings it is usual to have three several plans for the first three stories.

PLANE, in *geometry*, denotes a flat surface, or one that lies evenly between its bounding lines: and, as a right line is the shortest extension from one point to another, so a plane surface is the shortest extension from one line to another.

In *astronomy*, *conics*, &c., the term *plane* is frequently used for an imaginary surface, supposed to cut and pass through solid bodies; and on this foundation is the whole doctrine of conic sections built.

In *mechanics*, planes are either horizontal, that is, parallel to the horizon, or inclined thereto. And the determining how far any given plane deviates from a horizontal line makes the whole business of levelling.

In *optics*, the planes of reflection and refraction are those drawn through the incident and reflected or refracted rays. In perspective we meet with the perspective plane, which is supposed to be pellucid, and perpendicular to the horizon; the horizontal plane, supposed to pass through the spectator's eye, parallel to the horizon; the geometrical plane, likewise parallel to the horizon, wherein the object to be represented is supposed to be placed, &c.

The plane of projection, in the stereographic projection of the sphere, is that on which the projection is made, corresponding to the perspective plane. See PROJECTION.

PLANE, in *joinery*.—The operation of forming a given surface, by taking away the superfluous wood, is called planing, and the tools themselves planes. The first tools used by joiners are bench planes, which generally consist of a jack-plane, for taking away the rough outline of the saw and the superfluous wood, only leaving so much as is sufficient to smooth the surface; the trying plane, to smooth or reduce the ridges left by the jack-plane, and to straighten or regulate the surface, whether it be plane or convex; the long plane, when the surface is required to be very straight; the jointer, for still greater exactness in this particular; and the smoothing plane, as its name implies, for smoothing, and giving the last finish to the work.

Besides the bench planes, there are others for forming surfaces of nearly every curve or shape, as rebating planes, grooving planes, and moulding planes. The rabbet, or rebating plane, is used for gradually taking from a board a groove in the form of a rectangular prism. This is used in cornices and other ornamental work. Rebating planes deliver their shavings at the side instead of the top. The plane employed in cutting a square groove in the edge of a board, so as to leave a ridge on each side, is called a *plough*, and the operation performed by it *ploughing*. To prevent the necessity of having various sized ploughs for the required grooves, a tool of this description, called a universal plough, is made use of. The stop and fence of this instrument are movable, and it admits different sizes of irons, according to the extent of the groove required.

Moulding planes are of course as various in their appearance as the forms they are intended to produce; the figure of the sole should exactly correspond with that of the iron, and in whetting them the utmost care should be taken to preserve the contour. To form the convex and concave surfaces of the rims