INTRODUCTION.

By J. F. PAYNE, M.D.

The treatise, which is now, by the liberality of the Epidemiological Society of London, printed for the first time, has long remained in manuscript in the library of the British Museum. It is a contemporary account of the last epidemic of Oriental Plague in this country, generally known as the Great Plague of London. In presenting it to the public, a few words of introduction seem required to explain the importance of this record in the history of epidemics, and to draw attention to some of the interesting points which it raises for discussion.

Our knowledge of the epidemic of 1665 is based more upon the official records, and the observations of laymen, than on medical reports. The latter, indeed, are few and unsatisfactory, partly because not many physicians remained to observe the epidemic, and partly because those who undertook to discuss the subject were, with one exception, very incompetent. The one exception was Nathanael Hodges, of whose well-known work I will only say here that it is far from rendering the account now published superfluous. Our author, Boghurst, gives a view of the subject, in important respects, entirely opposed to that of Hodges; he enters more fully into detail, and though inferior in his manner of presenting the subject, he must, as it seems to the present editor, be pronounced more instructive as regards the matter of his treatise.

His theme, though remote from us in time, will never lose its interest for students of epidemics. The features of the disease as recorded in the seventeenth century have been reproduced with striking uniformity on many occasions in other parts of the world; and last of all, in this
very year we have accounts from the British settlement of
Hong Kong which furnish most instructive points of com-
parison with the Plague of London in 1665.

THE WRITER.

In the first place we may give such information as can
be obtained respecting the writer himself.

William Boghurst was an apothecary, keeping a shop at
the sign of the “White Hart”, in the parish of St. Giles-in-
the-Fields. Like many apothecaries both then and in later
times, he practised also as a physician, or rather, perhaps,
as a general practitioner, prescribing medicines and selling
them himself. Some notion of his professional status may
be gathered from an advertisement which has been quoted
by Mr. E. W. Brayley, in his edition of Defoe's Journal of
the Plague Year, from the Intelligencer newspaper for July
31st, 1665.*

"Whereas, Wm. Boghurst, Apothecary at the White Hart in St.
Giles-in-the-Fields, hath administered a long time to such as have
been infected with the Plague, to the number of 40, 50, or 60 patients
a day, with wonderful success, by God's blessing upon certain excel-
lent medicines which he hath, as a Water, a Lozenge, etc. Also an
Electuary Antidote, of but 8d. the oz: price. This is to notify that
the said Boghurst is willing to attend any person infected and desiring
his attendance, either in City, Suburbs, or Country, upon reasonable
terms, and that the remedies above mentioned are to be had at his
house or shop, at the White Hart aforesaid."

Such an advertisement was not, it should be remembered,
at that time so unprofessional as it would be now. From
other sources we learn that he was at that time 34 years of
age and already married.

Beside the present treatise, Boghurst was the author of
a long poem in English, entitled "Londinologia, Sive

* Mr. Brayley seems to have been the first to draw attention to Boghurst's
MS. It was drawn upon by the present writer for the article "Plague", in
the Encyclopaedia Britannica, and by Dr. Creighton, in his History of Epi-
demics; and it is even alluded to by Haeser, in his Geschichte der Medizin,
vol. iii. The proposal to print it was brought before the Epidemiological
Society in the Presidential Address, Session 1893-4.
Londini Encomium, The Antiquities and Excellencyes of London,” which also remains in MS. in the British Museum (Sloane MSS. 908, fol. 72-84). It shows the author to have been a most patriotic citizen, but would hardly repay quotation. From notes appended to this poem we learn that he died in London at the age of 54, and was buried at Ditton, in Kent. The notes give a copy of his epitaph at Ditton, which, as it includes all the other particulars that can be recovered about him, is here transcribed.

“Heer lyes Wm. Boghurst, citizen and apothecary of London, Sonne of William of the parish of Ditton [whose family are resident in this county]. He was an honest, just man, skillfull in his profession, and in the Greeke and Latine Tongue, delighting in the study of Antiquity; and plaid exceeding well upon the lute, which he took naturally. He left a sorrowfull widdow and six children, to whom hee afforded commendable Breeding. He died September 2nd, 1685, brought from London, according to his own desire, and heer buried.”

Hoping, and indeed believing, that the tombstone eulogy was at least on this occasion well deserved, we leave the worthy apothecary and scholar and go on to speak of his book.

The Manuscript.
The manuscript consists of eighty-five leaves, small quarto, neatly written, and evidently prepared for the press. The facsimile of the original title shows its general appearance. There is no evidence that it was ever printed; though it has been thought that the whole impression ready for publication may possibly have been burnt up in the Great Fire which destroyed, as is well known, the stocks of most of the city booksellers. It has been suggested, by Dr. Creighton, that the name at the foot of the title, which is torn off, may have been that of the intended or actual publisher. But it is not recorded in a way to imply this, and I have not been able to trace any known printer or bookseller of the time whose Christian name was Edmund; and it may have been merely the autograph of a former owner of the MS.* In preparing the text

* See, also, Note at end of Introduction, p. xxii.
for publication, some difficulty arose as to how far the eccentric and variable spelling of the original should be retained. Some of the peculiarities of orthography evidently arose from ignorance (as "plauge" for "plague"); others were mere slips of the pen, and others were individual eccentricities which would not have been respected by the printer. It seemed best, therefore, to correct the spelling, for the most part, so as to agree with what was usual in printed works of the period. But a certain number of peculiarities, which seem to have been specially affected by the author, have been retained, and will serve to give some individuality to the diction. The punctuation and the capricious use of capitals have been freely corrected.

Still greater difficulty has been experienced in presenting in an intelligible form the numerous and complicated prescriptions of the old apothecary, obscured as they are by wrong spelling, by puzzling contractions, and by crabbed handwriting. It may be thought, perhaps, that this obsolete pharmacology was hardly worth reprinting; but, on the other hand, a precise contemporary record of the medical practice of our forefathers will always have an historical value, independent of its relation to a particular epidemic; and this historical interest rather gains than loses with the lapse of time. These portions of the work have been carefully corrected by reference to the *Pharmacopoeia Londinensis* (edition of 1662), and to contemporary medical works. It is hoped that they have been made tolerably clear; but if some obscurity still remains, the reader will kindly remember that the blame must, at all events, be divided between the author and the editor.

**Medical Value of Boghurst's Treatise.**

This treatise contains undoubtedly the best medical account of the great epidemic, which has been preserved. In order to substantiate this statement, which constitutes the main reason for printing the document, it is necessary
INTRODUCTION.

briefly to speak of the other known medical treatises referring to the epidemic of 1665. The following list contains all which are in the possession of the editor, and appears to be more complete than any which has been published, though doubtless there are other works which have escaped notice. A few are referred to by Boghurst himself at the beginning of his treatise.

BOOKS PUBLISHED DURING OR IMMEDIATELY AFTER THE EPIDEMIC (1665-6).

1. A Brief Treatise of the Pestilence. Collected by W. Kemp, M.A. 1665. 4to.
2. A Discourse of the Plague. By Gideon Harvey, M.D. 1665. 4to.
3. A Mite Cast into the Treasury of the City of London, a Discourse on the Plague. By Theophilus Garencières, Dr. in Physic. 1665. 4to.
4. Loimotomia, or the Pest Anatomized. By George Thomson, M.D. 1666. 8vo. (With a plate representing a post-mortem examination of a pestilential body.)
5. Hygiene, or a Discourse upon Air, with Cautionary Rules for the Preservation of People in this Time of Sickness. By Thomas Cock. 1665. 4to.
6 Medela Pestilentiae. Theological Queries concerning the Plague; also Method for curing that Epidemical Distemper. (By Richard Kephale.) 1665. 4to.
7. Golgotha, or a Looking-glass for London, shewing the Causes of the present Plagues, with an humble Witness against the Cruel Practice of Shutting up unto Destruction. By J. V. (printed for the Author). 1665. 4to.
8. London's Deliverance Predicted; in a Short Discourse on Plagues in General. By John Gadbury (the Astrologer). Licensed August 25. 1665. 4to.
9. A Learned Treatise of the Plague, wherein the Two Questions: Whether it may be Infectious or no; and whether it may be shunned of Christians by going aside are resolved. Written in Latine by the famous Theodore Beza Vezelian. (Edited by Edward Percivall.) 1665. 4to.
10. London's Dreadful Visitation, or a Collection of all the Bills of Mortality from Dec. 27, 1664, to Dec. 19, 1665. By the Company of Parish Clerks of London. 1665. 4to.
11. Directions for the Cure of the Plague, as for Preventing the Infection, etc., set down by the College of Physicians. By the King's Majesties Special Command. 1665. 4to. (Preface dated May 25th, 1665.)

12. Directions for the Prevention and Cure of the Plague Fitted for the Poorer sort. 1665. 4to.

Anonymous; but refers to Mr. Coniers, at the "Unicorn" in Fleet Street, probably an apothecary, and the author.

13. Several Choice Histories, etc., of the Plague. By Isbrandus Diemerbroick. Translated into English. Feb. 1st, 1666. 4to. (No translator's or editor's name.)

14. God's Terrible Voice in the City. By T. Vincent, some time Minister of Maudlin's, Milk Street. 5th ed. 1667. 8vo.

[Though chiefly theological and devotional, contains the most striking pictures of the state of the city at the time which have been preserved.]

15. Defoe's Journal of the Plague Year, written by "a citizen who continued all the while in London," published in 1722, should also be mentioned, because, though a fiction, it gives a wonderful picture, founded on printed accounts, and possibly on oral tradition, of the epidemic. It has been suggested by Mr. E. W. Brayley and Dr. Creighton that Defoe may have seen Boghurst's MS., but this is purely conjectural, and there is nothing special to confirm it.

Beside contemporary accounts there are some notices written by eminent physicians some time after the epidemic, and by Hodges, Sydenham, and Willis.

16. Nathaniel Hodges' Loimologia, sive Pestis Nuperæ apud Populum Londinensem grassantis narratio. 1672. 8vo.

This was translated into English by John Quincy, and published in 1720.

A smaller tract in English was written by Hodges in 1666 (dated May 8th), with the title, "An Account of the Plague in a letter to a Person of Quality." It must have been published then, but is only known by a reprint in "A Collection of Scarce Pieces relating to the Plague in 1665," published in 1721, the original edition having, apparently, entirely perished.

17. Sydenham's account is contained in his Observationes Medicæ circa Morborum acutorum historiam et curacionem, London, 1676, 8vo (Sect. II, Cap. 2), reprinted in the Latin and English editions of his works. It is unfortunate that this great observer saw very little of the Plague, since he left London at the
beginning of June, when the epidemic was little advanced, and did not return till its decline. As his practice was chiefly among the rich, it is probable that he saw very few cases of "the Poor's Plague", as it was called.*

18. Willis's account of the disease in his treatise, "De Febribus" (first published in 1659), found in the Latin and English editions of his works, is based upon the epidemics in the time of the Civil Wars. A short tract with his name, "A Plain and Easy Method for the Plague, written in 1666 by T. Willis, M.D.", was published in 1691, professedly from Willis's papers, but I have seen a copy dated 1666, and it must have been really printed then. It is of little moment.

19. Of foreign works on the Plague only one need be specially mentioned, which Boghurst has made use of in the theoretical part of his work, viz.:

Isbrandus Diemerbroeck; Tractatus de Peste. 1st ed., Arnhem, 1646. 4to. 2nd ed., Amsterdam, 1665. 4to.

This, one of the most scientific works on Plague in the 17th century, is remarkable for a number of histories of cases, which give a more exact notion of the disease than any systematic account. It was regarded as the great authority on the plague at this time, and some few cases were, as mentioned above (13) translated into English.

CRITICISM OF PLAGUE LITERATURE.

A few remarks will now be made on some of the above works, to show what relation, if any, they had to Boghurst's treatise. Kemp's treatise (1) is a mere commonplace compilation. The author seems to have been in medical practice, but gives no information as to the existing epidemic. Harvey's and Garencières' works are trivial catch-penny publications, intended to recommend the writers to practice. Harvey (2), writing about Midsummer, makes the unfortunate forecast that the present

* Of the one case which he reports from the beginning of May, he says he is uncertain whether it should be called plague or not; but since it lasted fourteen days, and there is no mention of buboes, it can hardly be so considered. The recorded mortality from plague at this time was very small (see Table at end).
epidemic portended no great mortality. Garencières (3) says: "the plague is one of the easiest diseases in the world to be cured, if it be taken within four hours after the first invasion; otherways and for the most part mortal." He dates his pamphlet September 14th, when the deaths were nearly 7,000 a week!

George Thomson (4) was a chemical physician, and claims great success for his method of treatment. He is the only writer of the time who gives an account of the post-mortem appearances of plague.

Cock's pamphlet (5) contains a strong protest, addressed to the Lord Mayor and the Aldermen, against the practice of shutting up infected houses. The rest of the book consists of cautions addressed to citizens returning to town. It probably appeared late in the year.

Richard Kephale (6) was a medical practitioner of some kind. Half his book is theological, half medical, containing a very fair though short account of the symptoms of plague from personal experience, which agrees in the main with Boghurst.

Golgotha (7) is a protest, in most unmeasured language, against the shutting up of infected houses. The writer was not a doctor, but probably a minister. He refers to medical tracts by Mr. Dixon and Dr. Middlethwite (Micklethwaite?), which I have not been able to trace.

Gadbury (8) deals chiefly with astrological matters, and pronounces that the month of October seems to promise well, which was doubtless suggested by the experience of previous epidemics, but hardly borne out. His most important statement is that he himself suffered from Plague at Christmas 1664, but recovered; and that his surgeon informed him he had many patients at that time with the same distemper; but few or none died, and it was kept quiet.

Beza's treatise (9) is theological, and intended to comfort the consciences of those who in such terrible epidemics sought safety in flight.

The collection of Bills of Mortality (10) furnish the most
authentic records of the progress of the epidemic, and have been used by all subsequent writers, especially by Defoe in his well-known narrative.

The Directions set down by the College of Physicians 11) are substantially the same as those issued in 1636 which were much fuller than any previously published. On this occasion, however, there is an appendix of Chymical Medicines for "those that were delighted only with such remedies".

The directions for the Poorer Sort (12) is an unofficial publication of somewhat the same kind.

The other publications enumerated call for no special comment till we come to the work of Hodges, which has always been accepted as the standard account of the epidemic of 1665. It will be instructive to compare it with Boghurst's work, first observing that among all the tracts already mentioned there is none which could have been of much use to Boghurst had he known them, and Hodges' book was evidently unknown to him, being published later; and it is therefore with justice that the apothecary claims to write from his own experience. Hodges gives a totally different account of the origin of the epidemic from that of Boghurst. He says it began with the introduction of certain packets of merchandise from Holland, which common fame asserted to have come from Turkey; and that the first deaths occurred in a house in Westminster (other accounts say with greater precision in Long Acre, and that the first sufferers were foreigners) at the close of 1664; and from there it spread through the city, just as in the next year a single spark caused a terrible conflagration. He also says that he saw a single case of plague about Christmas, which recovered.

Boghurst's account differs widely. He says that cases occurred at the close of 1664, and he was credibly informed that cases of plague had occurred for three or four years before in the parishes of St. Giles's or St. Clement's, St. Paul's, Covent Garden, and St. Martin's (cap. iv, p. 73).
The pestilence was checked by the cold of winter, but reared its head again in the spring; it crept slowly along from the west-end to the city, and through the city to the Eastern parishes (cap. iv, 90); also he says it did not spread from one centre, but fell on several parts at once, viz., on the Western suburbs, Southwark, Houndsditch, and certain places within the city (cap. iv, 92).

There can, I think, be no doubt that Boghurst's account is by far the more rational and probable. The gradual extension from east to west, is, as Dr. Creighton says in his History of Epidemics, clearly borne out by official statistics, and the point has been seized by Defoe in his reconstruction of the history. The statements of Hodges and others of the bales of cotton from Holland and so forth are not supported by any authentic data, and the mode in which the plague spread through the whole metropolis was not that which the theory of Hodges would require.

We should be led to conclude that the virus of the plague was in London for some years before, perhaps latent since the last epidemic, and now by certain circumstances, as has constantly been the case in the history of this strange disorder, stirred up into the extraordinary explosion of 1665.

In support of this view we may be permitted to give a brief retrospect of the history of bubonic plague in England.

**History of Plague in England.**

During the Middle Ages, though we often hear of pestilences, we have no authentic record of any outbreak of bubonic plague till the arrival of the great pestilence or Black Death in 1348. It is open to anyone to conjecture that some of the earlier mediæval pestilences may have been of this nature, but there is certainly no evidence of it. After this date, however, we have clear accounts of a succession of pestilences due to this disease, during the 15th, 16th, and 17th centuries. They are fully recorded (and
for the first time from original sources) in Dr. Creighton's *History of Epidemics in Britain*. The record shows the astonishing frequency and fatality of the disease. The authentic history of Plague in England, ending with 1666, is thus comprised within a period of about 300 years.

Passing over the earlier periods we come to the 17th century, which specially concerns us. The first great epidemic of this century was the terribly destructive one of 1603. It lingered on for some years, and even in 1609 the mortality was considerable. The second great plague was in 1625, causing great mortality, but almost limited to one year. The epidemic of 1636 was less destructive, but remarkable for its long continuance, considerable mortality being recorded every year up to 1647. After this year there was a sudden drop in the mortality, and the whole period of the Commonwealth and the Protectorate was practically exempt.* A few deaths are put down every year to plague, but the average hardly exceeded fifteen per annum, and the numbers are sometimes so small that it seems doubtful whether they had any significance whatever. Up to 1664 the recorded deaths continued to become fewer, and it must have seemed as if the great terror of London was finally disappearing. At all events, no one dreamt of danger. The proximity of plague at Amsterdam in 1664, and a few sporadic cases in London at the close of the year, may have caused some persons a little apprehension; but certainly no one expected that the epidemic would begin to show itself in May, take a sudden start in June, and produce, in

* The Puritans, not unnaturally perhaps, from their point of view, connected these events with political changes. Each of the great epidemics marked the accession of a new king, James and Charles; while the sudden decline coincided with the final overthrow of the Monarchy in 1648. Even Milton, pleading in 1660 for a "Free Commonwealth", speaks of "the frequent Plagues and Pestilences that then [in monarchical times] wasted this City, such as through God's mercy, we have never felt since." Perhaps, when leaving the city, five years later, to escape the pestilence, he may have felt confirmed in his reading of history. There are said to be extant some verses very doubtfully ascribed to Milton, in which the Plague of 1665 is spoken of as a divine judgment on the sins of Charles II. (Garnett's *Life of Milton.*
the autumn months, a mortality beyond anything previously known in London. As Boghurst himself states, "all prognosticks were vain; and the prophets quite at fault" (p. 20).

The extraordinary fact which struck contemporaries, as it has later historians, with astonishment, is that just when the disease seemed to be spontaneously dying out it suddenly sprang up again in the terrible epidemic of 1665, only to decline almost as rapidly, and then to vanish altogether. Some (the contagionist school) believed like Hodges that it was imported from Holland. Others (the localists) like Boghurst, that it originated in the old poison still lurking in the soil. On looking into the question, we find that the same problem presented itself in other parts of Europe, and was everywhere solved in one or the other way by opposing schools.

**Contagionist and Localist Explanations of Plague.**

It has always been a question whether the repeated recurrences of plague in Europe were to be attributed to reintroduction of the virus from the East, or to a fresh reawakening of a virus already endemic. Hirsch strongly asserts the former view, but there is much to be said on both sides. It is hardly necessary to consider the extreme localist view, that plague originated de novo in the insanitary conditions of European cities. London in 1665 was no doubt, according to modern notions, a dirty, ill-drained, unhealthy place; but was not a sinner in this respect above all other cities. There have been, and are, thousands of places equally dirty, where plague has never been heard of; and even supposing that specific diseases can thus originate spontaneously from local conditions, there is a special infelicity in explaining, by conditions present in so many parts of the world, the occurrence of a disease so remarkably limited and local in its distribution. That these conditions supplied a highly favour-
able, and perhaps the only possible soil for plague, is undoubted; but they can hardly explain its origin. Cadaveric infection again, upon which so much stress has been laid, is a special favouring condition, but not the original cause. The burial customs of old London were doubtless exceedingly bad, but they remained practically unchanged till the present century, when plague had long since ceased. The epidemic of 1665 did not originate in the City, with its numerous churchyards crowded into a small area, but in the suburbs, where the graveyards, however badly arranged, were few and far apart. These questions, however, are too large for discussion here.

In favour of Hirsch's view, there are the facts that the disease came originally from the East, that a general succession of epidemics from East to West was often observed, and its recession in the 17th and 18th centuries followed inversely the same law. In England, for instance, epidemics were often preceded by outbreaks in Holland, notably in 1625 and 1665, when destructive epidemics had occurred at Amsterdam in 1624 and 1664. In England, too, the incidence of the disease on seaport towns was far more severe than on those inland; and it is extraordinary how much more frequently and severely the East of England, which was in communication with the Continent, was affected than the West. Edinburgh and Leith, Newcastle, Yarmouth, Norwich, and Colchester, are names which recur with terrible frequency in the history of the Plague, while the western ports, Bristol and Plymouth, though they suffered severely, were less frequently affected, and became free from the disease earlier; the last outbreak at Bristol occurring in 1645, the last in Plymouth in 1626 and then from a special infection. There is no improbability in supposing that the eastern ports were often affected from Holland, or elsewhere on the Continent, when the plague was prevalent there in an epidemic form. In the then conditions of locomotion a contagion could more easily be carried over a hundred miles of sea than
over the same distance by land. The infection of Yarmouth before London, in the autumn of 1664, is a striking fact.

With regard to this epidemic of 1665, there is much to be said in favour of an importation from Holland. That was, at all events, the official belief, for in 1663, and early in 1664, great alarm was felt as to this source of danger, the disease being then very destructive in Amsterdam and other Dutch cities. Late in 1663 a lazaretto was established at Moll Haven, and in June 1664, quarantine against Holland was definitely proclaimed, though probably not efficiently maintained.* It does not seem impossible that while the indigenous disease was smouldering on in a mild fashion an importation of fresh virus from a focus of epidemic intensity might be sufficient to start a new outbreak.

On the other hand, there are strong arguments in favour of a local origin of the epidemic from an endemic virus. The frequent succession of epidemics in England during three centuries, the connection of the great epidemics by a few sporadic fatal cases almost every year (if the Bills of Mortality are to be trusted), and the persistence of conditions favourable to the conservation of the infection, are facts not to be overlooked, especially remembering the undoubted tendency of Plague, even in countries where it is quite at home, to recur in periodic waves.

It seems probable that London still contained sufficient plague virus to start a fresh epidemic, when the local and temporary conditions were favourable. The only temporary conditions of this kind that we know of are: first, the rapid growth of population in London, which caused terrible over-crowding, and must have overtasked the ordinary measures

* See the series of papers called "Remembrancia: An Analytical Index to Records in the Archives of the City of London, 1579-1664." Published in 1878. The correspondence between the Lords of the Council and the Corporation is very curious: the central authority, as usual, advocating restrictions; the municipal authority, in the interests of trade, inclined to procrastinate. The declaration of war in February 1665 decided the question.
of sanitation; and secondly, the long drought in the spring of 1665, which is referred to by Boghurst. The importance of this latter fact has been explained by Dr. Creighton, in accordance with Pettenkofer's laws, but, on the other hand, the great plague-year of 1625 was remarkably wet. The question is still one for discussion, and may be left to the judgment of the reader, guided by the valuable materials which Boghurst contributes.

MILD AND MALIGNANT FORMS OF PLAGUE.

Without pretending therefore to solve this difficult problem, I will point out one feature in the natural history of plague, only recently discriminated, on which our records throw some light. The disease Plague is clearly capable of existing in two forms, viz., the malignant epidemic form, communicable from place to place, and a mild non-febrile bubonic disease, rarely fatal and strictly endemic, not obviously transmissible from place to place. The latter form, *pestis minor*, or abortive plague, observed by Tholozan and others in the East, was recognised by the late Mr. Netten Radcliffe in his Reports and his article "Plague" in Quain's *Dictionary of Medicine,* and probably has existed in other plague-countries without being regarded as true plague.

Now, in London we hear from Hodges and Gadbury (quoted above) and also from Boghurst, of cases of plague, *of which few or none died*, occurring at the close of 1664, as well as presumably in previous years. Probably, therefore, the few recorded *deaths* corresponded to a relatively large number of cases of the mild disease, set down as simple buboes, not as plague. If so, this affection would supply the missing link of continuity between different epidemics.

* See also Transactions of the Epidemiological Society of London, vol. iv, 362, and Encyclopædia Britannica, article "Plague", by the present writer.
Existence of the Virus of Plague in the Soil.

Another important question connected with plague is the possibility of its being either primarily or secondarily an infection of the soil. This appears to be clearly indicated by the older and recent reports of plague in India and China, where one definite fact alleged is the poisoning of underground animals, such as rats, before human beings are affected. Similar observations are not recorded in any English epidemic, possibly in no contemporary Continental records, though statements of these occurrences as signs of a coming plague are met with in some old writers, which are evidently traditional, and derived from other conditions and climates than ours, as is shown by the animals said to be affected.* However, the existence of plague virus in the soil is a well ascertained fact in some countries, and hence more than one writer has spoken of the disease as miasmatic as well as contagious (Liebermeister, in Ziemmsen's Handbuch, article "Plague", as a probable view; and, tentatively, the present writer in the Encyclopaedia Britannica). Still, in a disease so clearly transmissible as plague, the virus must have an existence also above the soil, and cannot be, like that of ague, purely miasmatic.

Dr. Creighton, in his History of Epidemic Diseases, has, for the first time, definitely and clearly formulated the theory of a virus existing in the soil, and applied it, with the aid

* Thus Gilbert Skene, in his Description of the Pest, written in Edinburgh or Aberdeen in 1568, speaks of moles and serpents leaving the earth (animals certainly not met with in the streets of Scottish cities); Lodge (1603), of rats and moles. Hodges goes still further afield, speaking of serpents, conies, foxes. But these writers never say that they saw such things themselves. I cannot, therefore, agree with Dr. Creighton that these statements show actual observation of the same facts so often recorded in the East. The origin of all these traditional stories seems to have been the chapter of Avicenna's "Canon" (lib. iv, fen 1, tract iv, cap. 3), from which so many of the commonplace about the signs of a pestilence, in the European Plague-books were derived; and which may well have been founded on original observations in Arabia or Persia. No such fact is mentioned by Boghurst in London, or by Diemerbroeck in Holland. The former affirms that no brute animals were affected.
of Pettenkofer's theory of soil-water, to explain the origin and spread of the London plague of 1665, as described by Boghurst, whose history of the epidemic hardly bears any other interpretation than that of gradual infection, either of dwellings or of soil.*

Boghurst's own views as to the origin of plague in the soil may be left to the appreciation of the reader, but some of his speculations are curiously like Pettenkofer's theories of soil-infection, allowing for the absence of definite scientific observation; as when he speaks (cap. i) of time being necessary to produce a mature fermentation in the earth, and the resulting effluvia being drawn out of the soil by dry and hot weather.

**Relation of Plague to Fevers.**

One other point seems worthy of notice, the relation of plague to the other "fevers", especially typhus or spotted fever. There is no doubt that typhus and other fevers prevailed largely (causing 5000 deaths) during the plague epidemic of 1665, as they had done elsewhere in similar conditions. The question is whether the fever turned into the plague, as some physicians, both then and later, have supposed. It is generally admitted that the aspect and general symptoms of the two diseases have much in common; but Boghurst denies the connection emphatically, saying, "that though plague is generally accompanied by fever, this is no essential part of it; there have been pestilences without a fever, or any signs of putrefaction,

* This view is singularly confirmed by recent observations reported from China; since it is alleged, on the authority of M. Yersin, that the bacillus met with in the bodies of plague-patients has also been detected in the soil. It is also affirmed that while in Hong Kong the epidemic broke out among the human population before attacking the rats, at Canton the epidemic broke out first among the rats; shewing, if true, that in Hong Kong the virus was recently imported, while in Canton it was endemic. It is curious to note that in Canton the population living in boats was unaffected, which is also stated by Defoe to have been the case in London in 1665. (Brit. Med. Journal, Oct. 6th, 1894, p. 786.)
INTRODUCTION.

and thousands have died of plague without any fever; and the remedies which do good in putrid fever are no use in plague” (cap. iv, etc.). He admits that many people had the spotted fever and plague together, and yet commonly lived! (cap. iv, par. 60). His statement that “all other diseases turned into the plague”, seems a little inconsistent; but the same allegation has often been made, and since we know that the coincidence of two specific infections is a rare event, it seems likely enough that so powerful a virus as that of plague should overpower others. Boghurst also enumerates the prevalence of spotted fever, small-pox, and measles, as among the forerunners of a pestilence.

The relations in time of the “fevers” to plague were not constant. Ever since the decline of plague in 1648 (and perhaps before, but the records are imperfect) there had been a great mortality from fever, and this increased from 1658-9 onwards, so that during the fifteen years preceding 1665, in which the plague had all but vanished, the fevers were gaining ground. The mortality from fever in 1664, though high, was not above the average of seven preceding years, and it seems unreasonable to suppose that the prevalence of fever had anything to do with the sudden outburst of plague in 1665, or that there was anything approaching to a conversion of fever into plague, as some contemporary physicians believed. In 1665 a very large mortality from fevers is recorded, but this would only seem to show that the same seasonal conditions which fostered plague fostered fevers also. On the whole, the supposed change of one form of fever into another, or into plague, seems to have been an error, natural enough in the infancy of clinical diagnosis, but still an error; and the malignant epidemic plague was probably developed out of the mild endemic, which went on from year to year.

Considering that it is hardly more than half-a-century since three diseases so distinct as typhus, enteric, and relapsing fever have been clearly discriminated, it is not wonderful that two centuries ago the whole family of
fevers seemed, to even good observers, a sort of protean dance of misty forms, changing their shape under the influence of shadowy forces, like the “Epidemic Constitution.”*

Only researches such as those which have been lately carried on in China by skilled observers are likely to bring this ancient disease within the ken of modern science, by isolating its living cause and studying the biology of the organism, both in and out of the body.

The following short chronological table of plague-years and mortality may be convenient for reference.

**Deaths from Plague in London in the Seventeenth Century, according to the Bills of Mortality.**

| Year       | Deaths | Year       | Deaths |
|------------|--------|------------|--------|
| 1603 (epidemic) | 33,347 | 1648       | 611    |
| 1609 (minor epidemic) | 4,240  | 1650-1662 (average) | 15    |
| 1625 (epidemic)    | 41,313 | 1663       | 12     |
| 1636 (minor epidemic) | 10,400 | 1664†      | 5      |
| 1637-1646 (average) | 1,500  | 1665 (epidemic) | 68,596 |
| 1647       | 3,597  | 1666       | 1,998  |

**Monthly Mortality in 1665.**

| Month   | Deaths |
|---------|--------|
| January | 0      |
| February| 1      |
| March   | 0      |
| April   | 2      |
| May     | 43     |
| June    | 590    |
| July    | 6,137  |
| August  | 17,036 |
| September | 26,230 |
| October | 14,373 |
| November| 3,449  |
| December| 734    |

The above statistics are taken from London's Dreadful Visitation, and Graunt's Observations on the Bills of Mortality. They present some trifling discrepancies, due to their being presented in a condensed form.

* In the Weekly Bills of Mortality for 1665, “Ague”, “Fever”, and “Spotted Fever” are clearly distinguished; but in the statistics here referred to all fevers are put together. The whole may be seen in Dr. Creighton's History of Epidemics, p. 533.

† At the close of 1664 some cases of mild plague, with very few deaths.
NOTE.

It has been suggested to me that the name at the foot of the title-page of this MS. may be that of Edmund Curll, the well-known (or notorious) publisher in the eighteenth century, and what remains of the surname so precisely corresponds with this interpretation, that I have no doubt it is the correct one. As, however, Curll was not born till 1675, and did not begin to publish till 1706, his name could have had no relation to the projected original publication; and, as suggested above, probably denoted merely ownership. If Curll ever intended to bring out the tract, it would probably have been during the panic about the Plague, in 1721; and of such publication there is no trace. As he dealt largely in MSS., he most probably sold this one to Sir Hans Sloane, with whose library it passed to the British Museum. The name "Curll" may perhaps have been intentionally torn out, as being of bad odour, and one that Sir Hans Sloane would not have been pleased to see on his books.

J. F. P.
Or an Experimentall Relation of the Plague of what hath happened Remarkable in the last Plague in the City of London. Demonstrating its Generation Progressse from commencing and subsequent Diseased and Accidents conuenient Signs, Good and Evil Meanes of Infection Method of Cure generall & Particular, with a Collection of Choice and TRIED Medicines for preservation and Cure by the practisse & Experience and Observation of

William Boghurst
Apothecary in St. Gile's in the Fields

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APOTHECARY IN ST. GILES IN THE fields

LONDON

1666