"BRING OUT YER DEAD": A CARTOGRAPHIC ANALYSIS OF THE SPREAD OF THE BLACK DEATH IN LONDON, ENGLAND, 1665*

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I. Introduction

The purpose of this paper is to explore the utility of computer-assisted cartography in the area of historical epidemiology. This effort is undertaken principally to complement and corroborate narratives of historically significant epidemics. By so doing, we hope to contribute to our knowledge of these important phenomena. Accounts contemporary to many of the epidemics as well as more recent historical investigations have dealt unsystematically, if at all, with the associated spatial patterns. It is only when history and geography are integrated, however, that they reveal a genuine picture of conditions as they were. (1) The presentation here is limited to selected observations from our initial inquiry into the spatial patterns of the "black death" as it occurred in London in 1665.

That the "black death", or Plague, was a significant epidemic is clearly reflected in the returns from the Bills of Mortality for London and its environs for the period extending from December 1664 through December 1665.(2) The Bills show a total return of deaths from the Plague of 68,596, approximately fifteen percent of

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the accepted estimated population of 460,000.(3) Though largely unsubstantiated, it is claimed by some that the total may be deficient by up to 25,000 deaths.(4) If this is the case then the percentage of the population killed climbs to over twenty percent.

An even grimmer picture of the devastation of the Plague is realized when it is observed that the Bills record a continuous notation of deaths from the Plague only from the first week in May of 1665. Earlier returns for the year indicate an increased number of deaths due to "fever" and "dropsie" which may have been terms used to disguise some early Plague-related deaths. Nevertheless, during a period in 1665 that spans only about eight months some fifteen to twenty percent of the population of London perished.

II. The Plague

We know today that there are three types of Plague, viz. septicemic, pneumonic, and bubonic. It was probably the latter, characterized by the swollen and edematous mass of inflamed lymphatic glands (buboes), and transmitted from infected rats and humans by the flea (principally Xenopsylla cheopsis), which was responsible for the great majority of deaths.

The residents of 17th century London, however, had precious little idea of the different types of plague and not the remotest notion of its host and vector. Instead of rats and fleas, the common foe of the London populace was "miasma", a poisonous gas which might emanate from the breath of gods or demons, be evoked from the earth by stars; or, be due to noxious emanations from a soil polluted by the decay of human corpses.(5) It was toward the combat of this poisonous air that the efforts of the entire population were turned. Perfumes, pomanders, and the pungent smoke of fires were among the preventive measures recommended by the College of Physicians.(6)

We now know, of course, that the efficacy of these measures was by and large nil. And, providing a false sense of security, they contributed to the high mortality among the population through delaying the departure of many to the countryside.

III. London and Environs

In 1665 the almost half a million people of London as then delimited were distributed among some one hundred and thirty parishes. The population in the ninety-seven parishes within the walls of medieval London was between 100-150,000.(Figure 1) Approximately 350,000 people were distributed among the sixteen parishes "without" the walls and in Southwark, the twelve "out-parishes" in Middlesex and Surrey, and the five in the city and Liberties of Westminster.

The City of London within the walls was populated with poorer classes, who pursued a livelihood from the merchants and wealthier citizens. But the population was densest in the outermost fringe where the poorest classes were predominant. The parishes adjacent to the wall, though stifling by the close contact of too many people, were old enough to have been opened up by streets. The out-parishes, where they touched these, did not have even this small advantage of space and air. They had no main arteries and were comprised of seemingly impenetrable "rookeries" of filthy courts and blind alleys. Some 300,000 Londoners were subjected to life in parishes such as these.

IV. The Bills of Mortality

It was the duty of each parish clerk to record the "vital statistics" of the parish. This included the number christened and the number buried. In the instances of death an attempt was made to label the cause.

During Plague epidemics an essential means for "controlling" its spread was knowledge of its location. To this end two searchers were appointed in each parish. It was the job of the searchers to examine the body of every person who died. During the Plague of 1665 the searchers were accompanied in their task by appointed "able and discreet Chirurgeons"(sic). (7) They reported to the clerk of the parish, who, in turn, would forward the certificate to the warden of the Parish Clerks. The warden would then send the weekly certificate for all the parishes to the mayor, and he to the minister of state. (8)

The accuracy of the Bills, thus compiled, nevertheless has come into question. Inaccuracies on the part of the

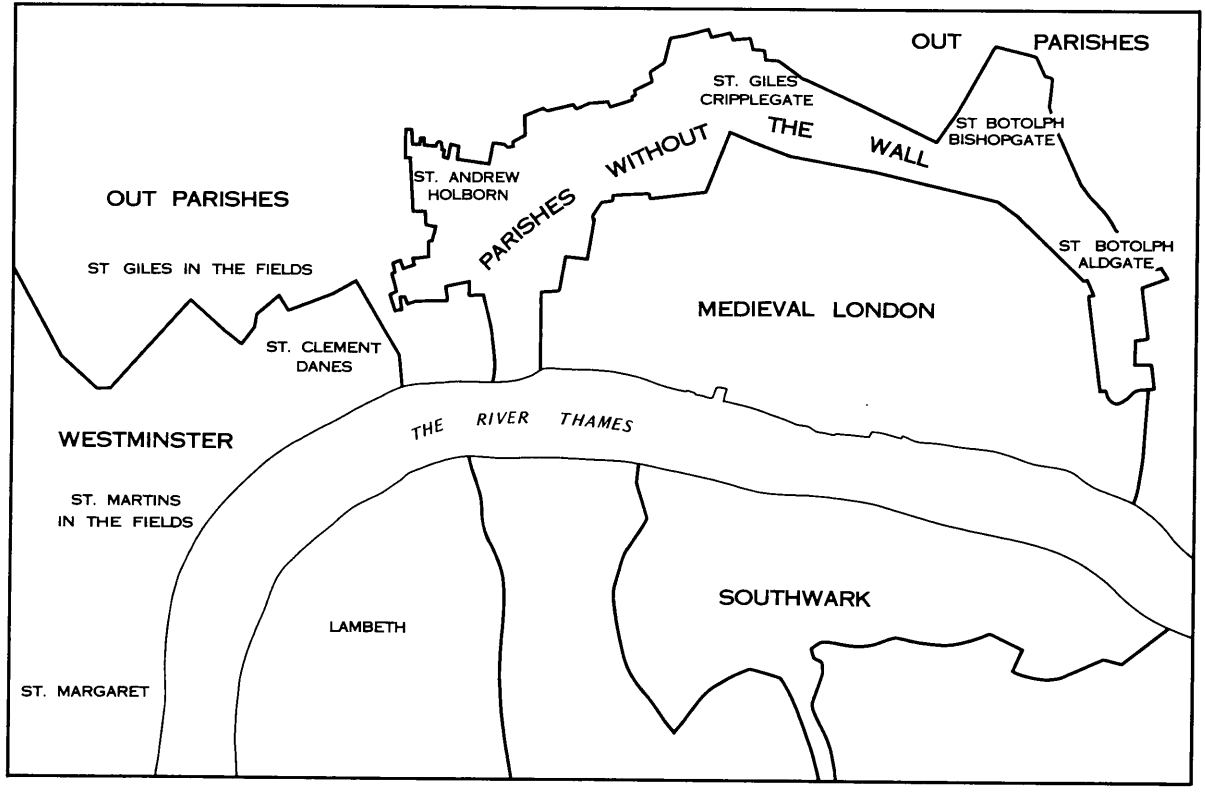


Figure 1. London and Environs, 1665.

searchers, both honest and dishonest have been suggested. The hesitancy of affected families to report the sickness or deaths would also contribute to an underestimation of the Plague. It would be difficult for a family to disclose Plague, knowing full well that, according to law, all would be shut up together in the infected house for forty days.(9) It may be admitted that substantial underreporting of Plague occurred. On the other hand, some subsequent tests have confirmed their comparative accuracy.(10) If, as Creighton suggests, "we follow the bills -- and there is nothing else to follow" - the spatial origin and diffusion of the Plague may be demonstrated.(11)

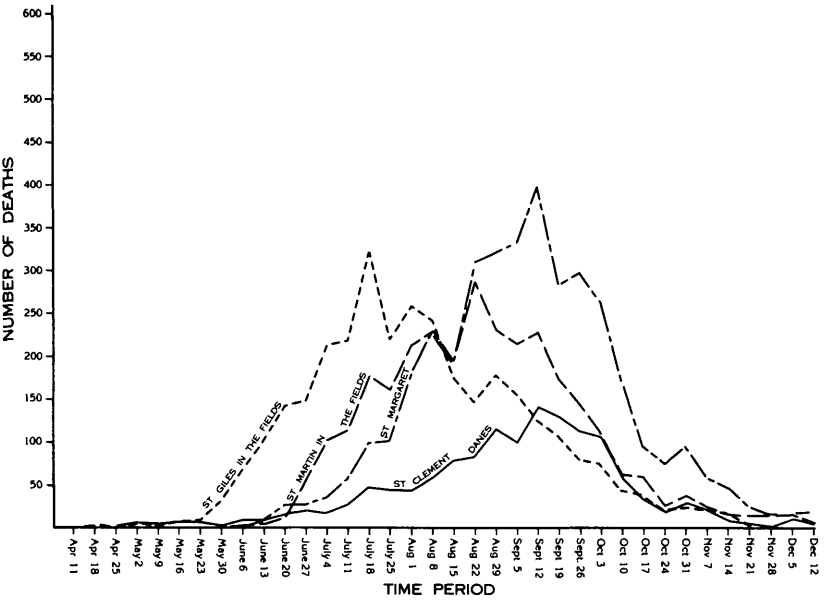
V. The Parish Boundaries

The boundaries of the one hundred and thirty parishes in London and the surrounding environs in 1665 were compiled from the Hollar (1666) map of the City of London, Westminster, and Southwark (12); and, that of the City of London, showing the parish boundaries prior to the Union of Parishes Act of 1907 (i.e., pre-Fire). (13) Despite the amalgamation of churches which followed the Great Fire of 1666, the parish boundaries remained intact. (14) The boundaries of the parishes were digitized and the associated weekly totals of Plague deaths were coded with each parish.

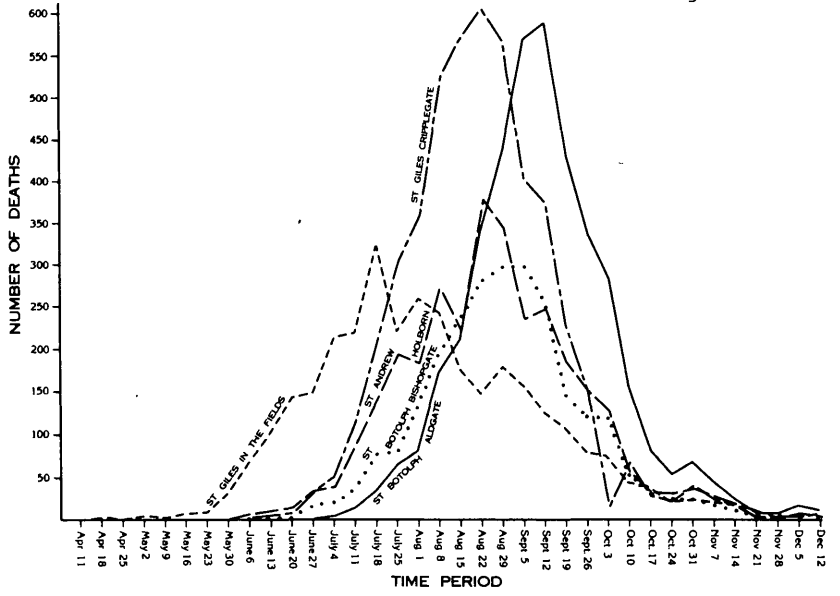
VI. The Origin

Though no first case(s) can be positively traced, there is no difficulty in determining where the first outbreak of the Plague in epidemic form occurred. It was in the parish of St. Giles-in-the-Fields. This parish (Figure 1) was situated upon the highest land about the City of London. St. Giles's church overlooked the slow ascent from the River Thames and lay northwest of the walled city. (15)

A comparison of the weekly totals of deaths from the Plague for all parishes indicates that the earliest reported deaths occurred in St. Giles' and that the epidemic began apace there during the week of May 23. Similarly, the Plague deaths appear to reach a peak earliest in this same parish, in the week of July 18 (Figure 2a). These observations tend to corroborate those of observers contemporary to the epidemic as well as those writing at later dates.(16, 17, 18) From here the



2a The Southward Diffusion of the Plague



2b The Westward Diffusion of the Plague

epidemic proceeded to encompass the whole of London.

Our discussion of the spread of the Plague across London must be limited here. For this reason we will present only selected observations of the diffusion of the Plague as it occurred in the "out-parishes" and those "without the walls". It is here that the great majority of deaths occurred and the nature of its diffusion can be readily demonstrated. The weekly death totals will be examined and compared for a sample of parishes extending to the south and west from St. Giles-in-the-Fields.

VII. The Diffusion - Southward

From St. Giles-in-the-Fields the Plague appears to have progressed in an almost classic wave-like pattern. The onset of the Plague in epidemic form in the parish contiguous to St. Giles-in-the-Fields, St. Martins-in-the-Fields, occurred about one month later, during the week of June 20. And, the weekly death total for St. Martins peaked some five weeks after that of St. Giles, during the week of August 22.

The next southward parish, St. Margaret Westminster, though apparently infected at about the same time as St. Martins, appears to have experienced about a two week delay in the onset of the epidemic. This temporal lag is continued through the week in which the weekly total of Plague deaths was a maximum. This peak occurred some three weeks later in St. Margaret Westminster (September 12) than in St. Martins.

The weekly death totals for St. Clement Danes, a parish contiguous to St. Giles and lying toward the south reflects a very different mortality pattern. Though reporting some of the earliest deaths from the Plague, the progress of the epidemic is significantly slower than that of St. Giles. In fact the deaths from Plague in St. Giles are well into decline before the weekly death total reaches a peak in St. Clement Danes parish. This difference may be explained in part by the nature of the land use in the portion of St. Giles contiguous to the parish and the nature of the other parishes contiguous to St. Clement Danes.

The border with St. Giles-in-the-Fields is comprised of Lincon's Inn Fields and Wild Court with its associated gardens. The adjacent parishes of St. Paul's Covent

Garden and St. Mary Savoy were, at this time, some of the least densely settled, and more elegant suburbs of London. It is quite possible, therefore, that St. Clement Danes parish was to a certain extent insulated for some time against the encroachment of the Plague from its origin.

VII. The Diffusion - Westward

Moving westward the Plague appears to have gained a solid foundation in St. Andrew Holborn about three or four weeks after St. Giles-in-the-Fields. The weekly death totals peaked some five weeks later, during the week of August 22.

The epidemic in St. Giles Cripplegate began in earnest during the week of July 4, and peaked at about the same time as St. Andrew Holborn.

Moving still further westward, the epidemic appears to have struck St. Boltoph's Bishopgate only two weeks after St. Giles Cripplegate, peaking here during the weeks of August 29 and September 5.

And, finally, several weeks after its appearance in St. Boltoph's Bishopgate, the epidemic took hold in St. Boltoph's Aldgate. The weekly death total reached a maximum here during the week of September 19.

Thus, from the onset of the epidemic in St. Giles-in-the-Fields during the week of May 23, the epidemic moved about the environs of London to the west, commencing in the most distant parish of St. Boltoph's Aldgate some two months after St. Giles. In fact, the graphs of Figure 2b indicate that the Plague was commencing in St. Boltoph's Aldgate at about the same time it was reaching its peak in St. Giles-in-the-Fields (the week of July 18). The Plague in this latter parish was in significant decline as it was in its ascendancy in the former.

VIII. Some General Observations

In accounts of observers contemporary to the Plague as well as those writing at later dates considerable emphasis is placed upon the spread of the epidemic from its origin in St. Giles-in-the-Fields westward. For example, much credence is given the account of Boghurst, a trained apothecary, in his Loimographia of 1666. He

asserts that from the west end of town "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 was infected, which was about the middle of July. Southwark, being the south suburb, was infected almost as soon as the west end."

From our observations Boghurst is essentially correct in the general progress of the Plague but errs considerably on his observations of its progress into the City as well as its occurrence in Southwark. No mention is made of its southward progress in Boghurst's account.

The observation by Defoe, writing in his Journal of the Plague year (1722), picturesquely describes the path of the Plague; "how it began at one end of the town, and proceeded gradually and slowly from one part to another; and like a dark cloud that passes over our heads, which as it thickens and overcasts the air at one end, clears up at the other end; so while the plague went on raging from west to east, as it went forwards east it abated in the west". Writing some sixty years after the event, it would appear that Defoe has intrepreted the Bills accurately, at least as concerns the diffusion of the Plague in the out-parishes and the parishes without-the-walls. The pattern within the walled City, however, appears somewhat more complex.

IX. Conclusion

What we have attempted here is a demonstration of the utility of computer-assisted cartography in the description and analysis of the spatial and temporal diffusion of the Plague in London in 1665. Pending expansion of our inquiry, we would suggest that some aspects of the observations of at least one contemporary observer are inaccurate and, that one writing somewhat later had intrepreted the Bills correctly, at least for one section of the City and environs. We would hope that through further mapping and analysis an accurate composite description of the Plague and its progress will be obtained.

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