

JOHN GRAUNT, CITIZEN OF LONDON

By D. F. RENN, F.I.A., F.S.S.

Captaine John Graunt (afterwards major) was borne 24^o. *die Aprilis* at the 7 Starres in Burchin Lane, in the parish of St Michael's Cornhill $\frac{1}{2}$ an houre before eight a clock on a munday morning, the signe being in the 9 degree of Gemini that day at 12 a clock, *Anno Domini* 1620.

JOHN AUBREY, *Brief Lives*.

THE son of Henry Graunt, a City haberdasher, John followed his father's trade, becoming ward officer and serving for two years on the Common Council. A man well thought of by his contemporaries, he was successively captain and major of the trained bands. In 1662 he published *Natural and Political OBSERVATIONS Mentioned in a following Index and made upon the Bills of Mortality: With reference to the Government, Religion, Trade, Growth, Ayre, Diseases, and the Several Changes of the said CITY*. This little book, which bought him lasting fame, is well worth reading even today.

Graunt begins by describing his data. In each parish of the City of London, searchers ('ancient matrons, sworn to their office') were required to view every corpse before burial and to inquire the cause of death, reporting their findings to the parish clerk. The latter took the returns each Tuesday night to the Parish Clerks' Hall, where the Bills were written up and printed, being distributed on the Thursday to subscribers of four shillings per annum. A general 'accout' was made up for the year ending on the Tuesday before Christmas. Bills of Mortality exist for 1592-95, and continuously from 1603. At first they merely gave the total numbers christened and buried (those dying of plague separately), but from 1624/25, an account of each parish was printed. In 1629 the causes of death were given under some sixty headings, and the total christenings and deaths separated by sex. We may smile at such causes as 'Affrighted', 'Kill'd by several Accidents' or 'Suddenly', yet 'other' causes still appear in the Bills' modern counterpart, the Weekly Return of the Registrar General.

Graunt considered critically the accuracy of the searchers' reports, what causes were obvious and what changes of popular nomenclature might influence. He revealed the rise of rickets as a new disease (or at least a new diagnosis), and showed that disgraceful causes of death went unreported except in parishes where such disease was rampant. The expansion of the out-parishes, and the very unequal populations of parishes, led him to conclude that trade was moving westward from the

City (the Court met regularly at Westminster). He further considered the lasting effects of the outbreaks of plague in 1592/93, 1603, 1625 and 1636, and disproved the popular belief linking plagues and coronations. Plague led to a falling-off of christenings in the City, and he showed that the metropolis was repopulated from the country, where births outran deaths. In support of this, Graunt quoted vital statistics of a Hampshire parish (like Petty, he came of Hampshire stock). Overestimating fertility rates and family size, but under-estimating mortality, Graunt nevertheless produced a very reasonable estimate of the population of London, which he checked from other calculations based on housing density. He blamed the recent heavy mortality on the introduction of sea-coal as a fuel; in 1662, the City ox has had to be roasted over coke in compliance with a Clean Air Act.

But it is to his Chapter XI that actuarial readers immediately turn. From the causes of death, Graunt estimated that 'Of 100 quick Conceptions, 36 die before they are six year old', and that the 7% of deaths described as 'Aged' were (following the Psalmist) aged seventy or more. Following a popular belief 'that it was reckoned an even lay that a man live ten years more', he took this to mean that one of the seven might attain age 76. Professor D. V. Glass has shown (*J.I.A.* 76, 60), that Graunt obtained values of l_{6+10t} ($t = 1, 2, \dots, 6$) by second difference interpolation from $l_0 = 100$, $l_6 = 64$, $l_{76} = 1$, that is, by differencing the deaths. He ignored accidental deaths (pointing out, very reasonably, that such accidents interrupted the normal course of life) and made no allowance for increasing population nor migration, and went on to use his l_x column as if it were T_x . We can pour scorn on such errors today, but Graunt was pioneering into the unknown, and deserves full credit for his exploration.

The *Observations* were dedicated to the Lord Privy Seal, and to the new Royal Society, through its President, Sir Robert Moray, and was dated from Birchen Lane, 25 January 1662½. The response seems to have been remarkably swift: Graunt was proposed for election to the Royal Society on 9 February 1662 and was admitted fifteen days later. Charles II interested himself in the election, charging his Society 'that if they found any more such tradesmen, they should be sure to admit them without any more ado'. Revised editions of the *Observations* were brought out in 1665, with an appendix bringing the Bills up to date, vital statistics from Tiverton in Devon and Cranbrook in Kent (with an apology that nothing was available from the North to round off the picture) and, topically enough, recent plague statistics from various European cities.

Graunt's other writings were minor, and the *Observations* have been

put forward as the work of his friend Sir William Petty, who certainly was closely connected with the book. The matter is incapable of proof, but the work shews a detailed knowledge of the City and its inhabitants such as Graunt possessed, and Petty's later Observations on the *Dublin* Bills (reflecting his Irish interests) is complementary rather than supplementary to it.

What financial loss Graunt suffered as a result of the Great Plague and Fire is unknown, but about this time he became a Roman Catholic, and gave up his public appointments. His connexion with the management of the New River Company dates from after the Fire, so denying that his Popish leanings led to a stoppage of water to fight the flames. His name disappears from the Royal Society list after 1666, and he retired from business and seems to have fallen on hard times, despite his friends' efforts to help. Graunt died of jaundice at Birchin Lane on Easter Eve (18 April) 1674, being buried in St Dunstan in the West, Fleet Street, on the following Wednesday 'under the piewes (alias hoggesties) of the north side of the middle aisle'. Aubrey concludes 'What pitty 'tis so great an Ornament of the Citty should be buryed so obscurely'. The church has been rebuilt, but perhaps we may borrow the memorial of a generation later, from the cathedral at the other end of Fleet Street:

Lector, si monumentum requiris, circumspice.