

From the *Transactions* of the
Bristol and Gloucestershire Archaeological Society

The Population Geography of Samuel Rudder's Gloucestershire

by D. Gowing
1983, Vol. 101, 147-159

© The Society and the Author(s)

The Population Geography of Samuel Rudder's Gloucestershire

By DAVID GOWING

THE QUANTITY AND QUALITY of 19th-century sources allow the later stages of those processes which transformed Britain from a rural, pre-industrial society to an urban, industrial nation to be analysed in great detail. The earlier stages, including the 18th century which has been described as the 'Age of Transition',¹ provide a legacy of sources which in their completeness, national coverage and quality leave more to be desired. Only towards the end of that century, with the increasing worries of the French wars, do quasi-governmental agencies begin to create national data. The reports of the Board of Agriculture, the first national census (1801) and the parochial acreage returns (1801) can be seen as moves towards a greater interest by central government in the affairs of the nation, a policy and philosophy which lead to a data explosion for those studying the more recent past.

For the 18th century, a national picture of the evolution of the world's first industrial nation can only be pieced together through the aggregation of carefully constructed regional studies.² Informed commentators, such as Daniel Defoe and Arthur Young, provide a highly selective broad sweep of the landscape, economy and society of that period; but occasionally a county topographer provides a wealth of detail that goes beyond the more usual minutiae on churches, their incumbents and monuments, estates and their esquires. It is this extra detail, gathered through extensive fieldwork in the early 1770s which separates Samuel Rudder's work on Gloucestershire from that written by Sir Robert Atkyns and published in 1712.³

Rudder came from an Uley weaving family, but following his apprenticeship as a printer, he established himself as a printer and bookseller in Cirencester. Besides his printing business he sold groceries and patent medicines and acted as an auctioneer. He became prosperous enough to have shares in a canal company and a Birmingham copper company. At various times he was a member of the Weavers' Company of Cirencester, the town's constable and a sub-division clerk. Rudder was very much a practical, down to earth man, and a man of many interests, especially those changes in agriculture and industry which were so much a part of his times. The tone and content of his *New History of Gloucestershire* very much reflect Rudder's background and attitudes and contrast strikingly with the aristocratic background of Sir Robert Atkyns.

Rudder had written and published a history of Fairford church in 1763 and five years later produced a history of the parish and abbey of Hailes as an abstract to publicise his magnum opus, the *New History*. It was to take another eleven years of painstaking research, frustration and, at

1. D.M. George, *England in Transition* (1953).

2. E.A. Wrigley, ed., *An Introduction to English Historical Demography* (1966), provides an excellent starting point for this approach.

3. S. Rudder, *A New History of Gloucestershire* (Cirencester, 1779).

times, acrimonious exchanges with the publishers of the second edition of Atkyns' history, before the work was published.⁴ Rudder acknowledged his debt to earlier published and unpublished material and to Atkyns in particular, though he could not resist the temptation to announce his intention to correct the errors he perceived in that author's work. Nevertheless, the basic plan of the *New History* owes much to Atkyns, though Rudder was aware that by adopting the alphabetical arrangement of parishes this would lead to the repetition of information on agricultural practices, land use patterns and landscapes.⁵ It was for this reason that, following the introduction with its detail on religious foundations and the derivation of personal and place names, he included a short, but innovative section that established a broad, regional division of the county. For each of these divisions, Vale, Cotswold and Forest, he provided a summary of its economy. This is complemented by sections on the rivers, trade and manufactures of Gloucestershire which follow the description of its administrative framework and a listing of its knights of the shire and sheriffs. Then follows the first complete transcription of the Gloucestershire section of Domesday and the substantial, if highly derivative history of Gloucester City.⁶ It is, however, the subsequent six hundred pages of topographical description of the parishes which are of great interest today and which delayed the book's publication for so many years. One cannot but applaud Rudder's commitment to his self-appointed task and the consequent plethora of detail it produced. He visited all the parishes over a period of years, talked to their inhabitants, consulted the parish registers and observed the world around him. Postal enquiries were made of local gentry and incumbents. He sent out a pro forma questionnaire to the gentry seeking information on the present lord of the manor, annual payments to the poor from 1761–7, births and burials over the previous decade, the number of inhabitants and the numbers of particular categories of livestock. Where necessary, questions specific to a parish were also appended.⁷ Each parish was thus worthy of comment. Estimates of population, a description of relief and soils, dominant land use, raw materials, manufactures, major routes and market towns were added to the results of his enquiries. Thus, the historian and historical geographer are provided with a substantial data source. It is a truism that the sources used by academics were not written with their interests in mind and, as a consequence, the evaluation of such sources is an integral and necessary part of their use. To analyse fully this study of Gloucestershire would require a substantial book and this article proposes to restrict its field of interest to an examination of those comments which illuminate the county's population geography.

In his preface Rudder noted the recent concern that the nation was losing population but concluded that Gloucestershire had, in fact, increased its population during the century. This had occurred unevenly as a result of migration within the county.⁸ Rudder thus draws on population estimates made by the gentry or clergy, earlier 'censuses' where they existed, or made his own to complement the evidence from the parish registers for the periods 1700–09 and 1760–69. His intention was to explain significant changes since the earlier part of the century and, in passing, evaluate the rather rounded population estimates of Atkyns. It is impossible to check the accuracy of such estimates, but the inevitable lack of precision of the enquiry and the lack of expertise and resources of the local gentry and clergy suggest that caution should be

4. I am indebted to Major L.J.V. Rudder, of Bibury, for biographical details of his ancestor; and to N.M. Herbert, *Introduction to Rudder, New Hist. of Glos.* (reprint by Alan Sutton, Dursley, 1977).

5. Rudder, 396.

6. Herbert, *Intro.* VII.

7. *Ibid.* V–VI. The questions on livestock seem to have been ignored.

8. Rudder, *Preface to New Hist. of Glos.* VI.

exercised in the use of his figures. The variations in the date of the estimates or more frequently the lack of any specific date reinforce this caveat. It is clear that even the first national census in 1801 was deficient by as much as 5 per cent despite the specificity of that enquiry.⁹ Rudder uses his estimates not only to dispel the worries of population decline, but as a base figure against which he calculates crude death rates. The problems of the latter exercise will be considered below and it is sufficient here to suggest that one only uses the population figures to provide a general picture of change and geographical distribution within the county. For this purpose the deficiencies are of less significance and may be regarded as random in their occurrence.

Deane and Cole, in their major study of the British economy over three centuries, divide the counties into three groups based on the occupational data given in the 1811 census.¹⁰ FIG. 1 shows the broad distribution of these agricultural, industrial-commercial and mixed-economy counties. Gloucestershire is allocated to the second group largely on the basis of its rural mining, iron and cloth industries and because the convention of including Bristol within its boundaries is adopted. Thus, whereas the national growth rate in the period 1701–1781 was 3.7 per cent/decade, that for the industrial-commercial counties averaged 5.8 per cent, the rate for Gloucestershire being 6.2 per cent.¹¹ A direct comparison with figures derived from Atkyns and Rudder is not possible because of gaps in their data, different definitions of the county and variations in time span used in the comparison of population change. If Bristol and its Gloucestershire suburbs are excluded from consideration and a comparison of the two histories restricted to those parishes for which data are available in both, then the decennial growth (c. 1701–1771) was about 4.2 per cent.¹²

FIGS. 2 and 3 are both constructed from Rudder's data. The first shows population density and the second attempts to identify his quantitative and qualitative assessment of population change since Atkyns' time. The two figures should be seen as complementary, reflecting the unevenness of both population growth and its spatial distribution. FIG. 2 shows Bristol to be the only town of consequence as its suburbs spread west in fashionable Hotwells and Clifton, east into the coal-mining and metal-working parishes from St George to Bitton along the Avon Valley, and northwards into the newer coal-mining parishes of Wickwar, Yate and Iron Acton. The Bristol metropolitan area probably had a population of 50,000 which contrasts sharply with that of 5,300 for Gloucester.¹³ Only Tewkesbury, Cirencester and Tetbury exceeded 3,000. Cheltenham at this time had less than 1,500 population. It was known for its malt market¹⁴ but had yet to become the second home of London's 'candy-floss' society.¹⁵ The other major concentration of population was located in the woollen cloth manufacturing region. This straddled the Cotswold edge along the deeply incised valleys of the Frome and its tributaries which focussed on Stroud and, further south, along the valleys of the Little Avon and Ewelme.¹⁶ It is a limitation of the cartographic technique employed in FIG. 2 that the uniform sea of low densities that characterised the rural areas masks real differences in the distribution of population. Whereas the density of population was greater in the Vales of Berkeley and

9. W.A. Armstrong in Wrigley, 210, and in R. Lawton, ed., *The Census and Social Structure* (1978), 28–62.

10. P. Deane and W.A. Cole, eds., *British Economic Growth, 1688–1959* (2nd edn. Cambridge, 1969), Chap. III.

11. *Ibid.* 103, using estimate b) for 1781.

12. D. Gowing, 'Migration in Gloucestershire 1662–1865. A geographical evaluation of the documentary evidence related to the administration of the law of settlement and removal', (unpub. Ph.D. thesis, University of Southampton, 1979) 315. A copy has been lodged in the County Record Office, Gloucester.

13. The figures actually relate to 1743.

14. Rudder, 337.

15. A.M. Welch, 'Cheltenham as a Watering place', *Cheltenham Ladies College Magazine*, 37 (1898), 76.

16. J. Tann, *Gloucestershire Woollen Mills* (Newton Abbot, 1967).

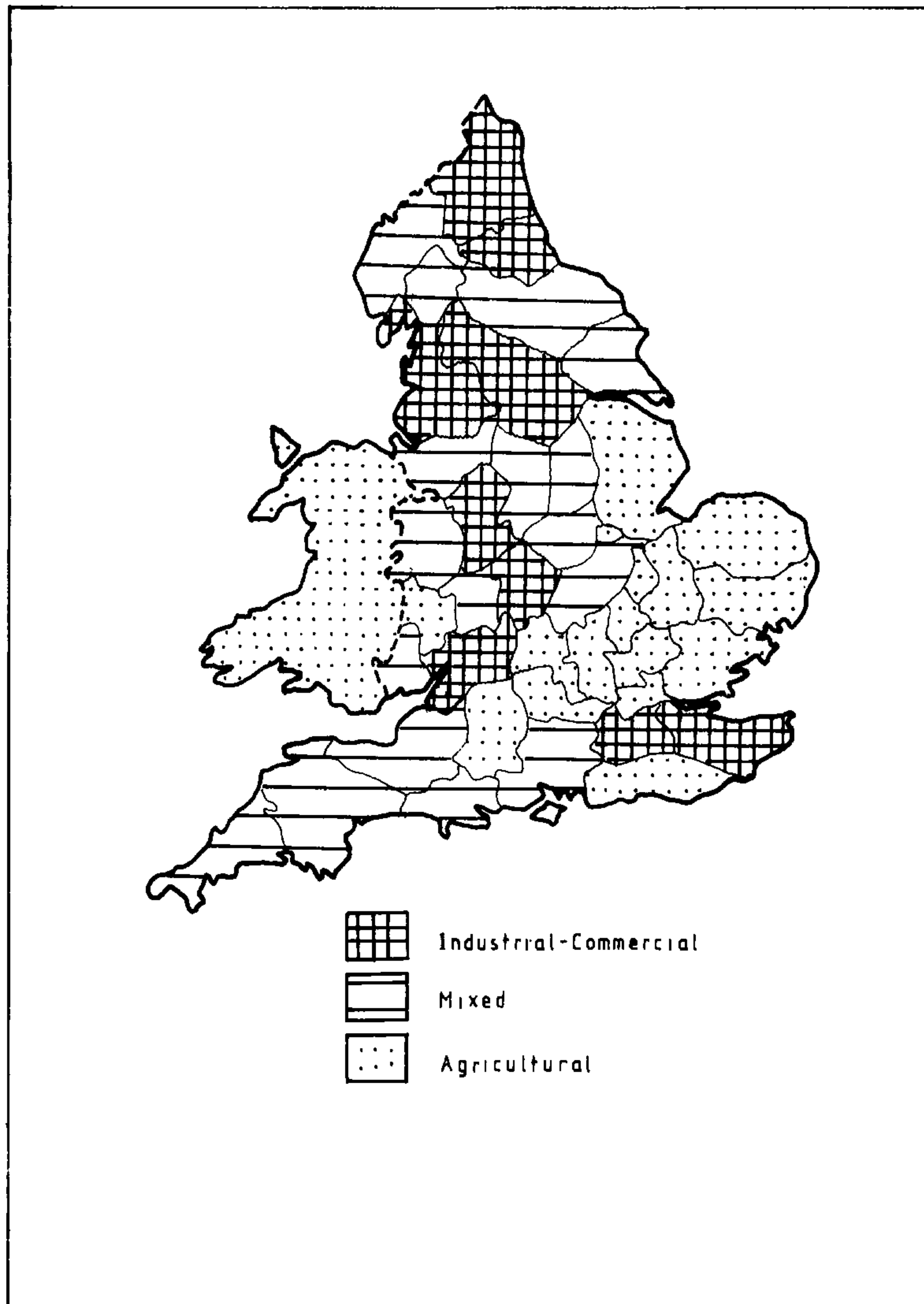


FIG. 1 Economic Regions of England and Wales in the 18th Century (after Deane and Cole)

Gloucester with their small dairy farms than on the Cotswolds with its larger arable and sheep farms, more people lived in the latter area. The map shows some indication of the iron industry in the Forest of Dean, its location reflecting the geological structure of the area where the iron-bearing Crease Limestone outcrops as a rim around the Coal Measures in the centre of the syncline. Rudder, however, limits his observations on population to the surrounding parishes, such as Lydney, Flaxley, English Bicknor, Staunton, Newland and St. Briavels. He neglects the extra-parochial districts of East and West Dean which, at that time, formed the inaccessible core of the Forest. It is true that the major development of this area postdates Rudder, though one

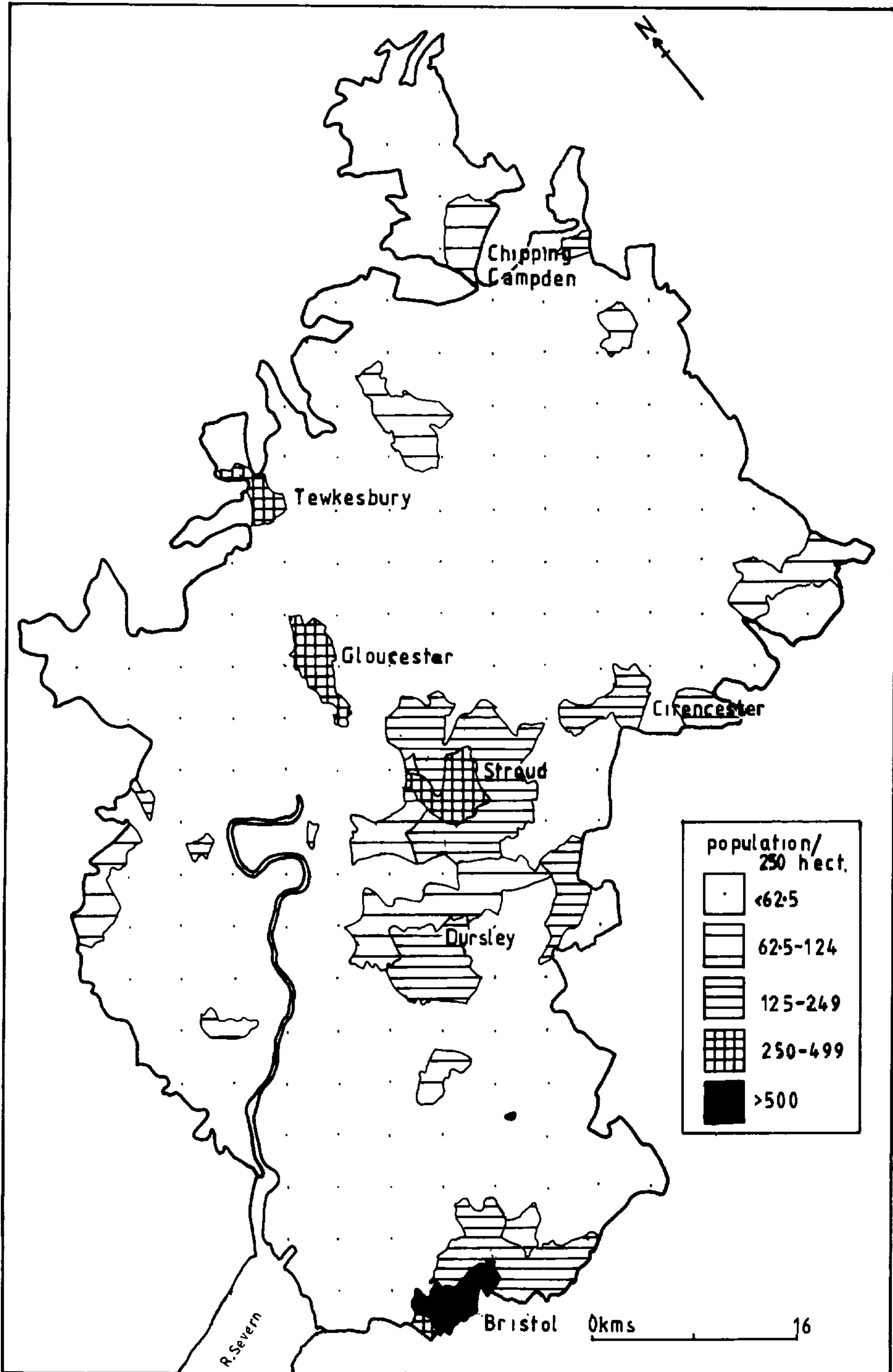


FIG. 2 Population Density in Gloucestershire c. 1771

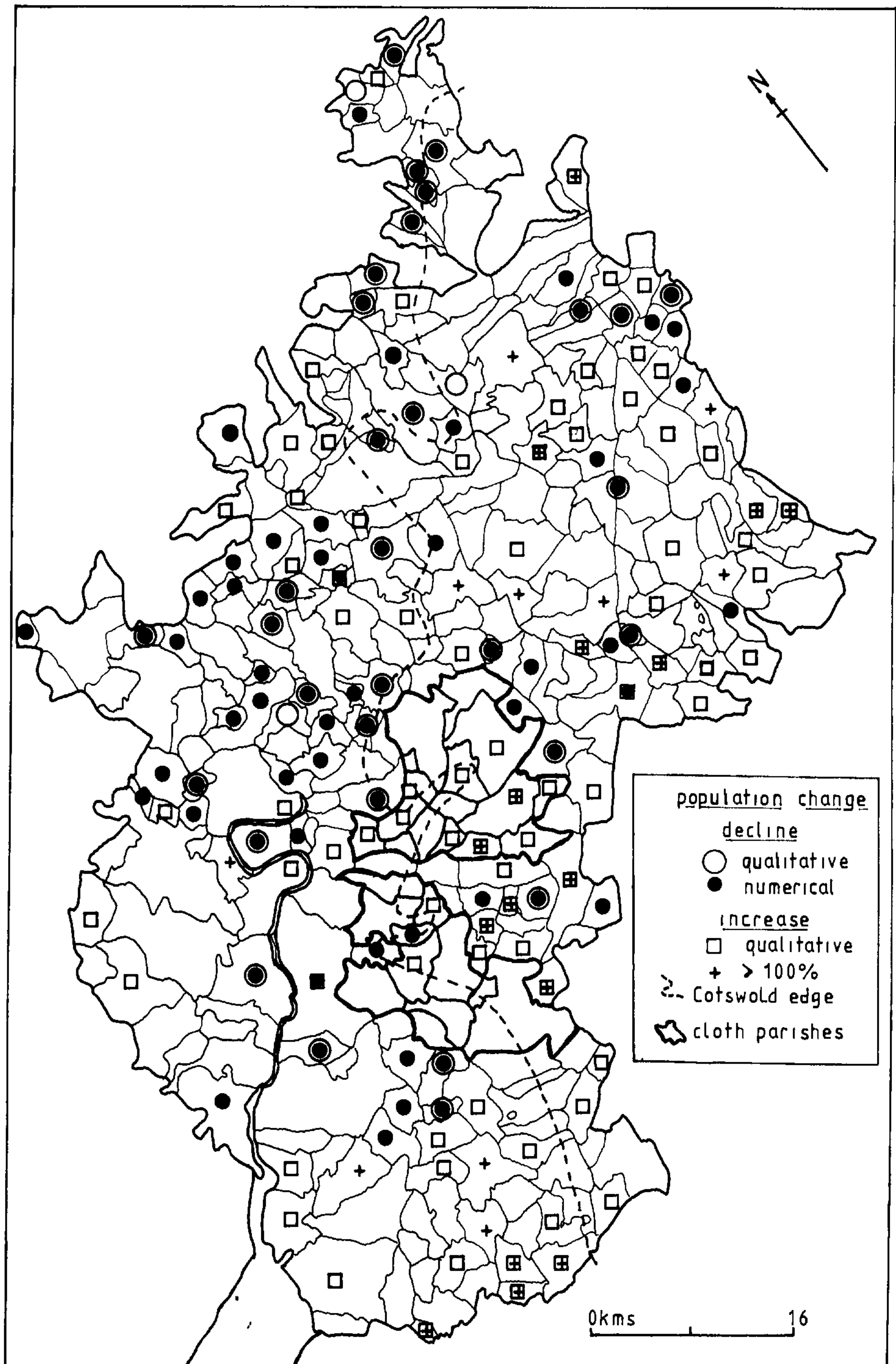


FIG. 3 Population Change in Gloucestershire *c.* 1701–*c.* 1771

cannot accept Atkyns' estimate of six houses for these forested central districts or Rudge's later figure of 48.¹⁷

FIG. 3 based on Rudder's population estimates and his perception of population change in each parish, may be seen as the detail giving substance to the preface of his *New History*. In the latter, the agricultural improvements of the Cotswolds and the prosperity of the manufacturing areas are contrasted with economic stagnation in the Vale. To him the enclosure of the Vale and its conversion to pastureland and dairying had reduced the demand for labour and resulted in migration to the hill country and market towns, where the population had, in some cases, doubled.¹⁸ The Vale from Berkeley northwards towards Tewkesbury was characterised by nil population growth if the estimates of Atkyns and Rudder are compared,¹⁹ and FIG. 3 highlights many parishes, especially in the Vale, in which the population had actually decreased. In contrast, the major population increases occurred in those areas of mining and manufacturing noted above, though in detail the cloth area around Stroud was growing at a much faster rate than that of Dursley and Wotton-under-Edge.²⁰ Even allowing for an increase in population which the improvement of agriculture on the Cotswolds could sustain, Rudder's figures exaggerate the growth of the area around Tetbury. This stems mainly from what appears to be an inflated estimate of 3,500 for the town itself, which seems out of line with his own comment on the level of the town's commercial activity²¹ and the 1811 census figure of 2,533.

Rudder may have correctly identified out-migration from the Vale, but his analysis of its cause and subsequent destination requires closer examination. Much of the Vale had been subjected to enclosure and conversion to pasture prior to the 18th century but there had been little activity in that region since Atkyns' time.²² Willersey, Ashton-under-Hill and Beekford had all been subject to some measure of enclosure within a half a dozen years of Rudder's investigations, yet Rudder makes no quantitative or qualitative comment on the population of the former two parishes. In the case of Beckford an increase in population since Atkyns' survey received no comment. Rudder makes no other specific references to vale enclosures and there seems to be little evidence to substantiate his belief that they were the cause of out-migration and population stagnation. The exception is Aston Subedge, though even here engrossment and not enclosure *per se* is the root cause of population decline.²³ Such depopulation, which in numerical terms was insignificant, is also linked by Rudder to a wider social issue. At Clifford Chambers and Standish landlords had pulled down cottages, and cottages at Beverstone on the Cotswolds had become dilapidated.²⁴ In his preface Rudder is quite clear that this activity was designed to prevent young people from marrying and settling in the parish. This practice was especially prevalent in rural areas, the intention being to deter newcomers who might add to the potential burden of the poor-rate. This occurred as a direct consequence of poor-law legislation which in the 17th century established the parish as the unit of administration. The existence of 'open' and 'close' parishes and their real and imagined consequences entertained the minds of central and local governments right into the second half of the 19th century.²⁵ Rudder makes very little comment,

17. Sir R. Atkyns, *The Ancient and Present State of Glostershire*, 200; T. Rudge, *General View of the Agriculture of the County of Gloucestershire* (Report to the Board of Agriculture, 1807), 360.

18. Rudder, *Preface* VI.

19. Gowing, 315.

20. Gowing, 96-97.

21. Rudder, 727.

22. W.E. Tate, 'Gloucestershire enclosure acts and awards', *Trans. B.G.A.S.*, LXIV (1943), 1-68.

23. Rudder, *Preface* VI, and 243.

24. *Ibid.* 375, 692, 284.

25. Gowing, 41-45.

considering the prevalence of this practice on the Cotswolds,²⁶ and one can only assume a certain deference and sensitivity to his likely readers. Whatever the criterion adopted to identify 'close' parishes, it is quite clear that the Cotswolds was an area where such practice was widespread²⁷ and it is improbable that any large scale movements to this part of the 'hill-country' could have occurred given this restrictive social environment.

In his preface Rudder also suggests that there had been migration from the Vale to the market towns. Further examination of this generalisation in the section on the parishes shows that this point is only made specifically about Cirencester,²⁸ though Gloucester, Cheltenham, Tewkesbury and, to a lesser extent, Dursley, Mitcheldean and Stow-on-the-Wold are identified as flourishing markets. However, a comparison of population estimates derived from Atkyns and Rudder reveals Tewkesbury as the only one to increase its population at a faster rate than the surrounding countryside.²⁹ Gloucester sustained a near zero growth rate and the others actually appeared to have lost population. Of the other markets in the Vale, Wickwar, Thornbury, Berkeley and Chipping Sodbury were all in decline according to Rudder. The latter suffered from the action of factors who by-passed the cheese market, and its growth was somewhat lower than the rest of the surrounding area of the Vale.³⁰ Berkeley and Thornbury both lay off the main Bristol–Gloucester turnpike and, whereas Berkeley and also Wickwar had lost population and were in general decline, Thornbury had grown substantially.

In the region west of the Severn, Mitcheldean market was well frequented, though this comment seems ill-placed against the loss of its cloth and pin industries, the lack of traffic on the Monmouth–Gloucester turnpike and a loss of population over the century.³¹ Elsewhere little positive comment is made about market viability, though the size of Newent market was adversely affected by the appalling state of the local roads.³² Coleford prospered as a town because of the mining and iron-smelting activities in its neighbourhood and Newnham was a prosperous Severn river port.³³

In spite of the innovations that were a part of Cotswold agriculture, not all of its market towns appeared to flourish. Cirencester was second only to Gloucester as the county's chief market, it had a wide variety of manufactures and it was located at a major intersection of turnpikes. Its apparent loss of population since Atkyns' time must be regarded as an error.³⁴ The exaggeration of Tetbury's growth noted above should not mask the relative prosperity which this town was enjoying in Rudder's time.³⁵ Marshfield with its specialised malt market was the only other market town to expand over the period. In contrast, Stow-on-the-Wold and Northleach had lost population and though Rudder makes no estimate for Chipping Campden it would seem that it had stagnated. Atkyns suggested a population of 1618 and by 1811 this had only increased by 66.³⁶

26. Ibid. 81–91.

27. Ibid. 302–306.

28. Rudder, 361.

29. Gowing, 306–308, 315.

30. Rudder, 819, 748, 269, 671. Rudder notes that this by-passing of the markets had also affected Gloucester (Barton Fair), Cirencester and Tetbury.

31. Ibid. 401.

32. Ibid. 561.

33. Ibid. 571; B.L.C. Johnson, 'New Light on the iron industry of the Forest of Dean', *Trans. B.G.A.S.* LXXII (1953), 129–43.

34. Rudder, 63 sqq., 345 sqq.

35. Ibid. 727–9.

36. Gowing, 302.

The fourth group of market towns belong to the hill country and the cloth manufacturing regions. Stroud, Minchinhampton and Bisley had grown substantially since Atkyns' time and, though comparative figures are not available, it would be safe to assume that Painswick and Horsley had also enjoyed the general prosperity of that industry.³⁷ The difficulties that Painswick and Bisley found as markets because of their inaccessibility and proximity to Stroud did not appear to affect seriously their overall growth.³⁸ Further south, Dursley market was well frequented and the town was a major centre for the cloth industry. The decline suggested by the population estimate should be regarded as misleading. Its neighbour, Wotton-under-Edge was in physical location not unlike that of Bisley.³⁹

In the light of these more detailed observations some further comments on migration are now possible. Firstly, only if a town had a narrow economic base would the viability of its market function have any serious effect on its growth. Towns like Berkeley, Wickwar and Northleach would be unattractive to migrants, whereas the cloth manufacturing centres and Tetbury, Cirencester, Tewkesbury, Newnham and Coleford would provide a wider range of employment opportunities. Secondly, detailed studies of 18th-century migration in Gloucestershire suggest that over 80 per cent of migrants travelled less than 32 kms and over 40 per cent of migrants less than 8 kms.⁴⁰ Movement across the Severn was limited because of the infrequency of ferry crossings and bridging-points.⁴¹ Within the county bridges existed at Gloucester and Maisemore while fording and ferrying was possible between Newnham and Arlingham. Ferries also existed at Lower Lode, near Tewkesbury, the Haw six miles above Gloucester, from Framilode to Westbury, Purton to Purton, Aust to Beachley (the Old Passage) and from Redwick to Port Skewett.⁴² However, those on the tidal river were notoriously dangerous. Defoe, writing in 1724, encapsulated the view of Everyman: 'The sea was so broad, the fame of the bore of the tides so formidable, the wind also made the water so rough and which was worse the boats to carry over both man and horse appeared so mean that in short none of us car'd to venture'.⁴³ In these circumstances, it is probable that the population exodus from the Vale was generally to the cloth parishes and, to a lesser extent, Tetbury and Cirencester. In this context, their function as market towns was not of great significance. Thirdly, there is a hidden dimension to migration in that crude population totals mask the complex flows of in- and out-migration, which in aggregate might be in balance, and the even more complex relationships between the migration and natural components of population change.

In evaluating this part of Rudder's history it is important to realise that both his estimates, and those of Atkyns, are imprecise and that it would be unwise to attach too much significance to individual parish figures. Here the qualitative statements provide a most valuable gauge, though it is likely that only recent and significant events would have been brought to his notice. It is quite clear from FIG. 3 that the correspondence with FIG. 2, based on purely quantitative data, is not always close.

The population estimates are complemented by data for baptisms and burials. Annual averages for the early part of the century are derived from Atkyns. Rudder matches these with aggregate

37. Rudder, 60 sqq; see also J. Tann, 'Aspects of the development of the Gloucestershire woollen industry', (Unpub. PhD. thesis, University of Leicester, 1964).

38. Rudder, 592, 289.

39. Ibid. 424, 847.

40. Gowing, 127, 215.

41. Ibid. 144, 236-9.

42. Rudder, 46-47.

43. D. Defoe, *A Tour through England and Wales* (1927), 2, 40.

totals for the decades 1700–09 and 1760–69, though he is not always consistent in his use of the time span and data are only quoted for a third of the county's parishes. A comparison of the rounded figures from Atkyns and the aggregate data from Rudder's investigations reveals errors in the former which can be attributed to the process of rounding data, transcription errors and uncertainties over comparability of the time periods used. Notwithstanding these limitations and the use of data for just two decades, the dominance of parishes in which baptisms exceed burials gives substance to Rudder's belief that the county's population had increased during the 18th century.⁴⁴

Rudder draws on the parish register data to calculate a mortality index (burials/total population) which is used in two ways. Firstly, he assumes a particular index for a parish and in conjunction with the burial data derives an estimate of the population. For example, an index of 1/40 is assumed for Avning and from the total of 214 burials for the period 1760–69 a population of 856 is estimated.⁴⁵ At Stow-on-the-Wold an index of 1/50 and average annual burials of 23.6, for the decade 1760–69, gives rise to a population of 1180.⁴⁶ Awre, St George and Stapleton provide further examples of the use of this unacceptable technique.⁴⁷ Rudder is, in fact, indulging in a circular argument. Equally unacceptable is Rudder's sleight of hand in modifying the index to make allowances for specific events such as the localised mortality crisis at Cherington or the burials of outsiders at Cirencester and Stapleton.⁴⁸ More seductive is his use of the index as a measure of the healthiness of a parish. For example, Clifford Chambers with a calculated index of 1/60 is regarded as very healthy and Bitton (1/42) is seen as healthy.⁴⁹ These indices are equivalent to crude death rates of 16.7/1000 and 23.8/1000 respectively. Numerous references are made to the healthiness of Cotswold parishes in contrast to Severnside parishes, though Rudder rarely quantifies such comments on the relative unhealthiness of the riverine parishes. In the case of Awre the index of 1/32 is not actually supported by parish register data while no data are provided to support the statement quoted below.

The air is rendered impure and unwholesome by the copious vapours and exhalations rising from the Severn, and from the low lands that are constantly drowned by floods and spring tides, which particularly affect Saul, Moreton and Frethorn. Yet here I was told, that this village was perfectly healthy, tho' it appeared to be far otherwise, from the pallid countenances of those I conversed with, who allowed, however, that the other above-mentioned neighbouring villages were greatly afflicted with agues and asthmatic disorders. On the contrary, the good people of Moreton assured me, that they were themselves free from these disorders, but that Saul and Frethorn were very subject to them. Thus wisely has providence reconciled mankind to their various situations . . .⁵⁰

Rudder does not actually pursue the underlying hypothesis of environmental factors affecting the spatial distribution of mortality with any sort of rigour, though from his comments it is clear that only the tidal parishes below Gloucester were considered unhealthy. In fact, he fails to make any comment on parishes above Gloucester like Dechrurst or Hasfield with indices of 1/35 and 1/36 respectively which characterise unhealthy parishes. Rudder attributes the former's low figure to the inadequacies of registration.⁵¹ Of the 22 riverine parishes in the county below

44. Rudder, *Preface* VI; see also Deane and Cole, 103.

45. Rudder, 246.

46. *Ibid.* 707.

47. *Ibid.* 249, 459, 694.

48. *Ibid.* 338, 368, 694.

49. *Ibid.* 382, 298.

50. *Ibid.* 644. See also Arlingham (232); Awre (246); Elberton, though not strictly riverine (437); Elmore (439); Longney (534); and Thornbury (749).

51. *Ibid.* 408, 457.

Gloucester no parish register data are quoted for 13 parishes and an index is only calculated in 3 cases. Nevertheless, this does not obviate the general belief that such a relationship existed. Marsh fever and ague were 18th-century descriptions of infectious diseases, ostensibly transmitted by noxious vapours and bad air. In this context, according to Rudder, the drainage schemes initiated by Richard Clutterbuck had not only improved the winter condition of the turnpike that bisected the village of Frampton-on-Severn, but removed the nuisance of ague.⁵² Recent research suggests that such illnesses were one form of malaria, transmitted by *Anopheles atroparvus* through the parasite *Plasmodium vivax* which was common at that time in saltmarsh and estuarine areas.⁵³ Dobson also identifies a strong spatial correlation between those Kent parishes where burials exceeded baptisms from 1661 to 1681 and low-lying coastal and estuarine parishes. Such parishes were in contrast to the downland and other inland parishes and exhibited death rates three or four times greater. Deaths were particularly prevalent in the late autumn and, to a lesser extent, the spring following exceptionally dry, hot summers. Children, the infirm and strangers were particularly prone to fatal attacks, while many of the residents suffered from recurrent debilitating attacks which reduced their life expectancy.⁵⁴ There is no evidence in Rudder to suggest that any Severnside parish recorded crisis mortality in the decade 1760–69 and a rigorous testing of any hypothesis related to life expectancy would require further analysis of riverine/non riverine parishes over a longer time span but linked to age specific mortality, climatic series and other data. Even so, there is great danger in isolating just one factor, which is in itself difficult to quantify and operationalise, to explain spatial variations in mortality. Mortality ratios not only reflect biological and climatic factors, but economic ones such as the type of agriculture, occupational structure, social organisation and the size and density of population.⁵⁵

Rudder does note mortality crises in the cloth-making parish of Bisley and the market town of Cirencester where smallpox and fever had been widespread.⁵⁶ The estimated mortality index of 1/30 for St George, an eastern industrial and coal-mining suburb of Bristol, reflected the self-evident truth that during this period urban and industrial areas with their greater population densities and more frequent contacts with outsiders suffered higher death rates than rural parishes.⁵⁷ This would be consonant with McKeown's conclusion that the high level of mortality in pre-industrial England was due primarily to infectious disease.⁵⁸ It is surprising that Rudder does not comment on the parishes in Gloucester City. If the data for each are standardised for the period 1759–68, the total burials and baptisms are 2085 and 1821 respectively. The deficit for St. Mary de Crypt being particularly great with only 199 baptisms against 453 burials. Given the significance of the city as county town, premier market and river port the implied in-migration flow was largely offset by this natural decrease in population.⁵⁹

Rudder's use of parish register data also raises more general questions. There is the almost inevitable problem of transcription errors which could be significant in the calculation of vital

52. Ibid. 452.

53. E.A. Wrigley and R.S. Schofield, *The Population History of England 1541–1871* (1981), 165; cf. above (pp. 111–22), P. Franklin, 'Malaria in Medieval Gloucestershire'.

54. M. Dobson, 'When malaria was an English disease', *Geographical Magazine*, LIV (1982), 94–100; see also C. Brent, 'Devastating epidemic in the countryside of eastern Sussex between harvest years 1558–1640', *Local Population Studies*, 14 (1975), 42–48; E.A. Wrigley, *Population and History* (1969), 100.

55. Wrigley and Schofield, 38, 154.

56. Rudder, 294, 368.

57. Wrigley and Schofield, 48, 165; Deane and Cole, 111; T. McKeown, *The Modern Rise of Population* (1976), 40; T. Malthus, *An Essay on the Principle of Population* (7th edn. 1872), 96, 200.

58. McKeown, 40.

59. Rudder, 181.

rates. A 21.8 per cent ($n = 24$) systematic, random sample of his parish data shows that transcription errors, in excess of an arbitrary 5 per cent, were made in nearly 30 per cent of the parishes. He shows an awareness of some of the limitations which all modern workers in historical demography corroborate.⁶⁰ He comments on the inadequacy of the registration at Coln St. Aldwyns, Deerhurst and Oldbury-on-the-Hill⁶¹ and the more significant problem of under-registration in parishes such as Avening, Bourton-on-the-Water, Cam, Cirencester, Chipping Campden, Horsley, Marshfield and Tewkesbury where dissenters formed numerically significant groups.⁶² However, he does not clearly understand that baptisms and burials are not necessarily synonymous with births and deaths and obviously he was not able to identify systematically lacunae in the registers in a way that would satisfy modern workers following the sort of guidelines established by the Cambridge Group. Wrigley argues that crude death rates rarely fell below 15/1000 (1/67 using Rudder's index) in rural areas and 20/1000 (1/50 Rudder) in urban situations in 18th-century England. Normally, they varied between 25–30/1000, whereas crude birth rates rarely fell below 30/1000. Attention is also drawn to the difficulty of deriving rates from small parishes.⁶³ For example, a parish with a population of 100 would only average one marriage annually and may not record one for up to five years.⁶⁴ Figures for baptisms and burials would be equally erratic. The great majority of Gloucestershire parishes had small populations. About 40 per cent of all parishes had less than 200 inhabitants in Rudder's time and 71 per cent had less than 500. In these circumstances one should treat with some caution many of the indices calculated by Rudder or derived from population and burial data which fell outside the acceptable limits noted above. For example, Coates has an index of 1/100 (C.D.R. of 10/1000), while for Naunton the calculated index is 1/117 and for Newnham 1/95, all of which suggest unacceptable demographic statistics.⁶⁵

The value of a mortality index equivalent to the crude death rate must also be questioned. It might be of some value in identifying broad regional differences in mortality, but it is only the most elementary index, as it is not related to the age structure of the communities being compared and the sections of population at risk. Two parishes may have comparable indices but the economic and demographic characteristics would be very different as between a prosperous industrial parish, attracting a great number of young migrants, and an isolated 'close' parish with an ageing population. Successful comparisons can only be made by the use of standardised mortality ratio and age specific death rates.⁶⁶ Rudder makes little use of the baptism data from which the natural increase could have been calculated and in doing so ignores the interrelationship between birth rates and death rates, between natural increase and total population change and changes in fertility and mortality.⁶⁷ This, of course, is to underestimate the difficulties involved in unravelling the complexities of demographic study. Even a cursory glance at a register reveals the volatile changes in the frequency of baptisms, burials and marriages over a short period of time, though it reveals nothing of the total population, its age profile or its migration characteristics which are needed to complete the demographic picture.

60. Wrigley (1965), 44 sqq.; Wrigley and Schofield, 15 sqq.

61. Rudder, 385, 405, 580.

62. Ibid. 249, 305, 319, 320, 368, 410, 502, 749.

63. Wrigley (1965), 54–56; Wrigley and Schofield, 181–2; Deane and Cole, 131; McKeown, 36, 65.

64. Wrigley (1965), 48; Wrigley and Schofield, 201.

65. Rudder, 393, 559, 572.

66. G.M. Howe, *National Atlas of Disease Mortality in the United Kingdom* (2nd edn. 1970); J.I. Clarke, *Population Geography* (2nd edn. Oxford 1972).

67. Wrigley and Schofield, 159–60.

One can argue that it is unfair to be critical of a writer for not having anticipated the techniques and accumulated wisdom of his successors to which he may have made a contribution. Nevertheless, the incompleteness of Rudder's parish register summary and its limited time span suggest that those demographers interested in the 18th-century population of the county should concentrate on the registers themselves and then only after a thorough understanding of their limitations as source material. The value of Rudder's work lies in the more general estimates of population and the spatial picture that can be derived from them. If these are used to complement the wealth of topographic and economic information which the author collected so assiduously, Rudder's history remains a major local source for study of one county in a period of rapid economic change.

January 1983