# THE GROWTH OF THE VALE OF LEVEN 1841-1891

by

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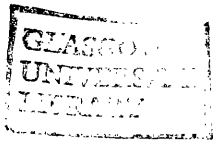

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Abstract

This thesis is concerned with the growth of the Bleaching, Printing and Dyeing Industry of the Vale of Leven (Dunbartonshire) in the second half of the 19th Century. Three main facets of this development are examined, namely the industrial growth, the corresponding urban growth and the evolving structure of the rising population. To set this period in perspective, and to lay the foundations of detailed analysis, progress prior to 1840 is also considered.

The thesis thus begins with an account of the rural background prior to industrialization, the locational attractions which were paramount in bring the industry to the Vale of Leven, and of early industrial and population growth. Urban growth is analysed through a study of large scale maps which trace developments from 1777 to 1899. The 1:2500 scale Ordnance Survey Maps of 1864 and 1899 are used for a detailed examination of the urban morphology. Earlier, smaller scale maps provide information on the evolution of the townscapes up to the beginning of the second half of the 19th Century. The population structure is analysed by using 10% samples drawn from the Household Schedules in the unpublished Census Enumerators' Books for the years 1851, 1871 and 1891. For each of these years the Age/Sex Structure, Household Sizes, Occupations and Origins of the population are considered in the main, and explanations for the changes which occur in the structure over this 40 year period are discussed. The post 1891 decline of the Industry is then briefly examined.

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Fig 5.3 Plan of the River Leven 1824 appears with the agreement of the Keeper of the Records of Scotland. (Its Scottish Record Office Reference Number is RHP967/4)

Abbreviations used in order of occurrence.

S.G.M. - Scottish Geographical Magazine.

T.I.B.G. or Trans. I.B.G.- Transactions of the Institute of British Geographers.

Scot. Stud. - Scottish Studies.

O.S.A. - Old Statistical Account.

N.S.A. - New Statistical Account.

C.E.B.s - Census Enumerators Books.

O.S. - Ordnance Survey.

L.H. - Lennox Herald.

Note - By the second half of the 19th Century bleaching, printing and dyeing operations were all carried out in most of the Vale of Leven Works. Therefore, the terms Bleachworks, Printworks and Dyeworks are to be taken as synonymous unless otherwise stated.

# CHAPTER I

## BACKGROUND TO THE DEVELOPMENT OF BLEACH, PRINT & DYE WORKS IN THE VALE OF LEVEN

### (a) THE RURAL LANDSCAPE

Before the introduction of the bleachfields[1] and during the earliest years of the bleach, print and dyeing industry the cultural landscape of the Leven Valley was one of the pre-improvement era where farmers were engaged in the old infield/outfield[2] system of agriculture. Between 1750 and 1880 approximately, a great deal of improving of farming techniques and enclosing of fields took place. The Agricultural Survey of Dunbartonshire (1811), states that "in a larger proportion (of farms) a very great deal of improvement has taken place"[3], when comparing conditions to those of 1770, but adds that farmers were torn between "following implicitly the practices of their fathers or blindly copying the improvements of their neighbours"[4]. During the period of improvement and enclosure the small "ferm tounes" (a cluster of tenant cottages numbering roughly between 4 and 20) were replaced by single farms. The small landowners who could not compete were forced to sell out to richer men whose capital had been derived from trade and industry. Early maps, e.g. Roy's Map, show that the first enclosures in the Vale of Leven were most likely made by the bleachfield proprietors who sectioned off tracts of land to be used for the open air bleaching of cloth.

With the growth of the river dependent industries in the Valley, two distinct elements of settlement evolved; (a) The Ferm Toun, or its successor the Single Farm, set on the valley slopes with a small path and horse track linking it to the roads below; and (b) the cottages of the printworkers, close to the works, and near the riverside, built along roads which had a surface of crushed rocks or gravel[5]. The roads had been "re-routed on the horizontal plane"[6], due to the development of industry which had resulted in an increase in both the numbers of people and heavy traffic using the roads. (Despite the fact that the River Leven was an obvious transport route, and that it came to be used to transport coal in the steam power era of the

1850s and later, cloth was always transported to and from the factories by cart[7].

## (b) LOCATIONAL DECISIONS

The first branch of the industry to be set up in the Vale of Leven was cloth bleaching. The bleaching process was carried out in open air bleachfields where cloth was spread out between rows of hedges to be bleached by the action of the sun in the summer months, and water was channelled from the river to be sprinkled on the cloth[8]. The gentle slopes of the Leven Valley were ideal sites for such developments and further advantage was to be had by using a seasonal agricultural labour force in the summer months when farm work was scarce[9]. However, "one of the most significant factors"[10] in the establishment of the bleachfields and the subsequent development of printing and dyeing, was the inexhaustable supply of fresh soft water, free from impurities and fed from Loch Lomond into the River Leven. As Wallwork[11] explains, the introduction of chemical bleaching into an area required great amounts of water, for example "a large printworks used 400 million gallons of water per annum"[12]. This water was used for boiling and bleaching the cloth; it was needed to dilute chemicals; to flush and rinse[13] excess chemicals from the cloth after each stage of the printing or dyeing process; it was used to dispose of effluent; and was of course important as a source of power either directly, or by steam raising[14]. Inevitably, a lack of water was a major factor in the failure of many works to expand and compete. Thus in this type of situation, closure was the final result. The Leven presented no such problem in this respect and was a prime site for such developments. The water was channelled from the river via man made lades (small canals). The meander loops of the Leven also facilitated an easy passage of water into the lade, through the works, and back into the river with its charge of effluent. (see figure 1:2)

## (c) THE DEVELOPMENT OF THE INDUSTRY UP TO 1840

The seeds of industrial growth in the Vale of Leven were sown in the first half of the 18th century, when the first cloth

(Fig. 1:1 The location of the settlements of the Vale of Leven.)

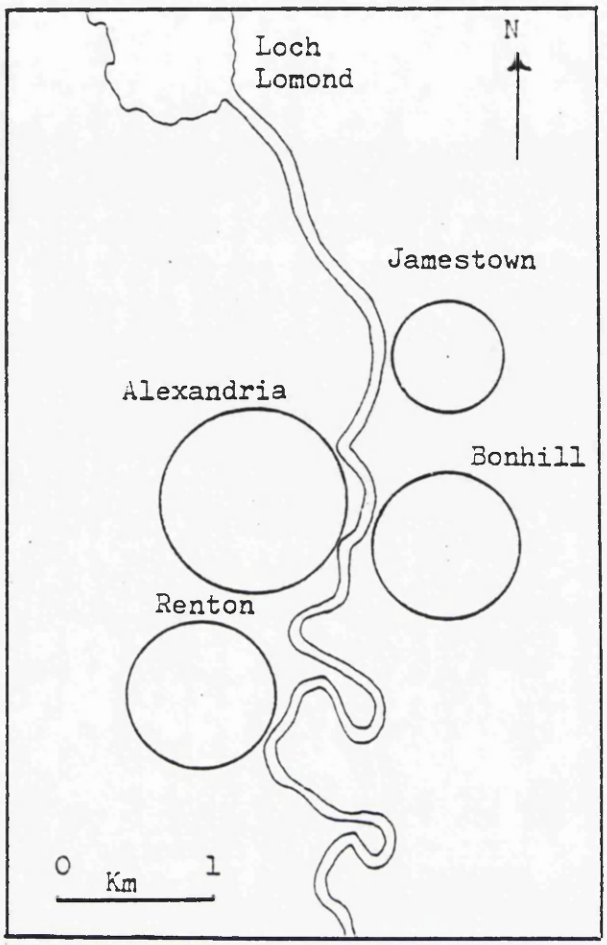
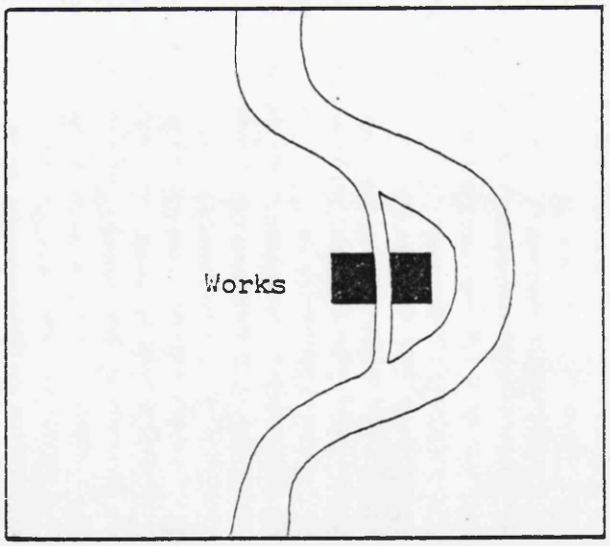



Fig. 1:2 below, schematic diagram to show use of meanders by Works.



bleachfields were established on the banks of the river. There is some confusion over the date of the setting up of the first bleachfield. This is understandable, however, as bleaching cloth, like most other branches of the textile industry, started as a cottage industry and gradually evolved into being a factory industry. From the evidence it would seem that a bleachfield may have been set up as early as 1729 at Dalquhurn, near to the present day village of Renton[15]. It can be positively established that a bleachfield of about 12 acres in extent had been laid out at Dalquhurn by 1728, probably as an extension of the earlier field. Evidence for the existence of this 'field stems from the fact that the improvement was subsidized by the Board of Trustees for Improving Fisheries & Manufactures in Scotland, which, after its establishment in 1727, was prepared to offer grants of up to £50 per acre for such projects[16].

In the second half of the 18th century further bleachfields were established along the Leven, together with print and dye works. Calico printing was introduced to the West of Scotland in 1742 and was brought to Cordale (near Renton) on the Leven in 1770, when William Stirling set up his works beside his uncle's bleachfield at Dalquhurn[17]. By the end of the century there were at least 9 works engaged in the bleaching, printing and dyeing of cloth and yarn, along with an engraving works where cylinders for printing cloth were engraved. Cylinder printing, which was a mechanical printing method began to replace the old manual block printing method, from about 1785 onwards, but both mechanical and manual printing co-existed up until the 1880's[18]. This and other improvements all down the production line of cloth manufacturing and processing can best be described as a chain reaction of events which led to the rapid expansion and growth of the bleach, print, and dye industries of the Vale of Leven. The spinning and weaving of cloth was transformed from a manual cottage industry to a mechanical factory one. Sulphuric acid introduced into the bleaching process "reduced the souring part of bleaching from 4 or 5 months to 4 or 5 days"and "freed the industry from seasonality and reliance on sunshine". This improvement "co-incided with the introduction of the commercial production of acid by Dr. Roebuck at Prestonpans from 1749." These advances

helped release the industry from a large part of the crippling burden of capital locked up in unfinished cloth[19]. Seasonal workers from the Highlands in particular, and from Ireland became permanent residents. With regard to Turkey Red dyeing[20], Irving[21] states that cloth in this process was oxidized outdoors until 1841, when a new chemical process, invented by a Mr. Steiner of Accrington in 1836, was brought to the Vale of Leven. As the works in the Vale of Leven had Turkey Red dyeing as their prime concern, it suggests that although bleaching had been non-seasonal since the 1750's, Turkey Red dyeing did not become an all year round process till 1841. Thus it would have been at that time when a large permanent labour force was required in the area, though bleach, print and dye workers certainly constituted a large part of the Vale of Leven's permanent residents before that date[22]. All the improvements which have been described led to a rapid expansion of the industry from about 1770 onwards. It adapted easily to the switch from Linen to Cotton cloth[23] in the late 18th century and expanded as steam power replaced water power in the middle of the 19th century.

## (d) THE SETTLEMENTS OF THE VALE OF LEVEN

Four main villages expanded in association with the works. On the west bank of the River Leven near the Dalquhurn works the village of Renton was built along the main Dumbarton to Luss road, to house workers at the bleach, print, and dye works. Further north on the same side of the river, Alexandria was built between the Dumbarton-Luss road and the site of a ferry across the river (which was replaced by Bonhill Bridge in 1834). This village again owed its existence almost entirely to the development of industry in the valley. Linked to Alexandria by the ferry was Bonhill village on the east bank. Bonhill village has a longer history than any other village in the valley and existed as a semi-dispersed farming community before being swamped by the influx of printworkers. In complete contrast is Jamestown on the east bank of the river, just to the north of Bonhill. It is the youngest settlement associated with the textile works in the valley, and was built in the middle of the 19th century by

Alexander Orr Ewing and consisted of "long ranges of 2 or 3 storey settlements... erected by Alexander Orr Ewing employer of almost all who reside there."[24]

THE POPULATION OF THE VALE OF LEVEN UP TO 1841

Bonhill Parish (which included Alexandria, Bonhill and Jamestown[25])

Websters[26] returns in 1755 - 901

From a list taken in Government Censuses [+ Old Statistical Account] - 1791 - 2,310
1801 - 2,460
1811 - 2,791
1821 - 3,003
1831 - 3,874
1841 - 6,919

The Old Statistical Account states that the population of the parish was decreasing till 1768 when the first printfield was erected[27].

No separate figures were available for Renton as it was part of Cardross Parish, though the Old Statistical Account for Cardross gives the figure for the village as 1,200 in 1793[28]. Other figures taken from Webster's returns and the Old Statistical Account and Government census lists for Cardross are:-

1755 - 795
1793 - 2,194 (see above)
1801 - 2,594
1811 - 2,859
1821 - 3,105
1831 - 3,596[29]
1841 - 3,616

Footnotes - Chapter 1

1. Possibly established around 1715 (Agnew, J. (1975) The Story of the Vale of Leven, P.8.)

2. Slaven, A. (1975) The Development of the West of Scotland, 1750-1960, Chapter 3.

3. Whyte, A. & Macfarlan, D. (1811) The Agriculture of the County of Dumbarton, Pp.28-29.

4. Ibid, P.40.

5. Ibid. P.260.

6. Ibid. P.260

7. Engineers report on the viability of a canal in the Vale of Leven (1841) contained in Murray, D - Collections for the History of Dumbartonshire.

8. Wallwork, K.J., The Calico Industry of Lancastria in the 1840's. Trans I.B.G. No. 45, Sept. 1965, Pp.143-157.

9. Ibid.

10. Ibid.

11. Ibid.

12. Ibid.

13. Bremner, D. (1869) The Industries of Scotland (their rise progress & present condition)Pp.298-299 (in reprint 1969).

14. Ibid, Pp.301 & 304.

15. Although Agnew - footnote 1, gives 1715 as a starting date - definite proof of bleaching in the Vale of Leven cannot be fixed earlier than 1727-29. Hamilton, H (1966) The Industrial Revolution in Scotland, P.102.

16. Ibid, P.102.

17. Slaven, A., Op. cit. P.82.

18. Irving, J. ,(1879) Book of Dunbartonshire, Vol.1, P.356.

19. Slaven, A., Op. Cit. P.82.

20. The type of dyeing which the Vale of Leven largely specialized in - See Bremner, Op. Cit., P.299.

21. Irving, J. , Op. Cit, Vol.1 P.356.

22. O.S.A. 1793, Vol.IX (reprint 1978) P.21-28.

23. The linen making machinery had been adapted for use in the production of cotton. Flax (for linen) was a difficult crop to cultivate and as a result, cotton supplies available from N. America were cheaper and more reliable than the flax from Britain and Europe. See Campbell, R.H. (1980) The Rise and Fall of Scottish Industry, P.18.

24. McLeod, D., (undated - 1880's?) Dumbarton, Vale of Leven & Loch Lomond, P.129.

25. The Terraced Houses of Jamestown were not in evidence until the publication of the 1st Edition of the Ordnance Survey Map for the area - surveyed around 1860.

26. Webster carried out a census of Scotland in 1755. His figures are quoted in the O.S.A.Op. Cit. P.11.

27. Ibid. P.12.

28. Ibid. P.26.

29. N.S.A., Vol. VIII, P.88 states that most of the increase between 1821 and 1831 was at Renton.

## CHAPTER II

## METHODOLOGY

The development of the industries of the Vale of Leven has been recorded in many local histories[1], but no cohesive chronological account has linked their growth to the expansion of both townscape and population. The Vale of Leven represents an important centre of the bleach, print and dyeing industry. The reasons for this concentration have been explained in the background section of this chapter and can be compared to similar processes operating elsewhere in Scotland[2]. This study will concentrate on the urban areas and their population, which depended on the bleaching, printing and dyeing industry of the Vale of Leven. The period chosen (1851-1891) for this study represents the years of greatest growth of population which can be linked directly to the growth of the industry as the main source of employment in the area. Therefore, for this study, three strands of research are relevant. Research into (a) the location and growth of the bleaching, printing and dyeing industry, (b) into the growth and form of the 19th century industrial town and (c) into the population structure of this type of town.

The historical geography of industry in Scotland has lacked specialist studies and as Whyte remarks "has been closely linked to the urban geography of individual cities and has usually been generalized"[3]. In this sense, then, the textile industry has been better served than most by W.H.K. Turner[4] who has concentrated mainly on the locational and economic forces associated with the growth and development of the industry. His area of interest has lain mainly in the textile region of East Central Scotland which was predominantly involved in spinning and weaving. There are parallels between the locational requirements of both the manufacturing and finishing sectors of the industry. In every instance Turner emphasizes the crucial importance of the stream based location[5]. Water was used as a source of power, either directly or latterly for steam raising. It was needed in the processing of the cloth, in rinsing and bleaching, for example.

Lack of a sufficient water supply was a serious obstacle to the growth and expansion of the industry[6]. These facts were not lost on the industrialists who "made fairly precise evaluations of the physical advantages which they (the sites) offered"[7]. Flat or gently sloping land was needed for bleaching the cloth outdoors in the early years of the industry; and meanders "allowed easy and powerful diversions of water"[8]. The River Leven provided the prospective textile industrialist with an inexhaustible supply of pure water, more important in bleaching & dyeing than in spinning and weaving[9], along with the required meanders and gently sloping valley sides. Another parallel between Turner's findings and the situation which existed on the Leven, was the use of carts to transport the cloth in the pre-railway era[10].

Whilst Turner's work has displayed the similarities which exist when the textile region of East Central Scotland which he has studied, is compared to the situation as it existed in the Vale of Leven, his work does not extend into detailed study of the morphology of the resultant townscapes, nor does it consider population structure or origins. His concern lies chiefly with the industry itself, its adaptation to technical change and topics such as power, labour, transport and communications[11]. In this study of the Vale of Leven, the focus is mainly on the labour force, their families and their townscapes, with the bleaching, printing and dyeing industry on which they depended for their livelihood, as an important theme running throughout.

The urban areas in the Vale of Leven existed primarily because of the textile industry, and were essentially 19th century additions to a precedingly rural area. The growth of these townscapes within the approximate time span which this study covers are analysed using available "large scale" maps and plans which exist for this period. Any analysis of this nature must owe something to the work of Conzen who states that maps must show "essential detail of layout in recognisable and measurable form"[12] and goes on to say that "the scale of 1:50,000 emerges as the smallest scale at which this requirement can still be reasonably satisfied"[13]. Conzen emphasizes that the town plan is

"not merely a street plan but covers the rest of the built up area as well. It consists of three distinct complexes of plan elements: the streets and their mutual association in a street system: the individual land parcels or plots and their aggregation in street blocks with distinct plot patterns and the buildings, or more precisely their block plans and the arrangement of these in the town plan as a whole".

"In the townscape these complexes do not exist in isolation but are inter connected in the sense that each element conditions the others' origins, physical relations, and functional significance, not just at present but in historical time. Thus the earlier forms and those of more general functional significance, like street spaces, tend to act as morphological frames conditioning the genesis and growth of subsequent forms and are often modified by them in turn. In this way streets, plots and buildings integrate in space and time to form individualized combinations of a dynamic rather than a static nature, recognizable in the town plan as distinct plan units. These again combine to form the major plan divisions of a town. Recognition and comprehension of the whole plan structure in these terms forms the subject of town plan analysis" [14].

Conzen's methods of analysis may be more appropriate to towns with a much longer history than the towns of the Vale of Leven, in towns where the "burgage cycle"[15] can be studied, for example, or where additions to the medieval core[16] are in evidence. However, an analysis using the Conzen methods could be applied to the area under study because there are six large scale maps which show Alexandria in particular at several stages of its development from 1833 to 1899. Therefore, despite the relatively short life and rapid development of the towns of the Vale of Leven, these maps reveal distinct stages in their growth and an attempt to analyse them is carried out in Chapter 5. In this chapter the work of Whitehand and Alauddin is also utilized. Their work considered the problem of the town plans of Scotland and they attempted a basic classification of the plans based on the arrangement of streets and land parcels. They divide the plans into two groups, "medieval" and "later"[18] types. In this latter category they do not include "additions to medieval plans/ or "twentieth century extensions"[19], but confine themselves to plans of entirely post-medieval character, and it is into this

category which the town plans of the Vale of Leven fit. They distinguish six types of "later" street systems namely (1) Grid Iron, (2) Regular Rectilinear, (3) Irregular Rectilinear, (4) Convergent, (5) Regular Single Street, (6) Irregular Single Street.[20] This is a very rudimentary scheme, as the authors readily admit when they state that, amongst other shortcomings "wide variations in plot pattern and in the block plans of buildings occur within the same street system"... "the need for more elaborate classification is evident". Another criticism which they level against their scheme is their distinction between regular rectilinear and regular single street types where they rightly state that "genetically many of the regular single streets are in the first stages in the development of a regular rectilinear street systems but the modest growth of population in these settlements never warranted the laying out of parallel streets"[21]. Despite the fact that their classification could hardly be considered as definitive, Whitehand and Alauddin's system goes some way towards a categorization of Scotland's town plans and is referred to in the analysis of the street patterns of Alexandria, Renton, Bonhill and Jamestown.

When considering the human patterns which were present in Scotland's 19th century towns, there is very little previous research which can be referred to. As Whyte says "The historical geography of Scotland's towns has been badly neglected"[22], and the greater part of research into the social and residential patterns of the 19th century urban areas in England is concerned with large cities as opposed to the small industrial town, as witnessed by the work of Ward[23], who has researched into the residential segregation of social classes and ethnic groups within the Victorian city, and Pooley[24], who studied population mobility in 19th century Liverpool. Residential segregation of the type investigated by Ward was probably more marked in the 19th century city than it was in small settlements of the type under consideration here. Local histories[25] and local oral tradition mention the fact that Irish immigrants in nearby Dumbarton lived in specific areas of the town, and in an

examination of the Census Enumerators' Books of the Vale of Leven there was some indication that families of the higher social classes tended to live on the outskirts of the villages. To attempt a quantitative study of residential segregation would be extremely difficult to undertake due to the limited nature of the source material i.e. the Census Enumerators' Books[26] which are not dynamic, and often give no indication of the precise location of households. Instead, this thesis concentrates on producing three static pictures of the human patterns in the Vale of Leven, as well as attempting an explanation of any significant changes which have occurred in this pattern from one census to the next. An examination of population mobility within a settlement, according to Pooley, was "perhaps the most important"dynamic process occurring in the city "as individual decisions about residential choice led to the development of distinctive social areas and to social and spatial change within an urban area"[27]. However, the major obstacle to a project of this type, as Pooley readily admits, "is the lack of a comprehensive data source", and a comparative source which allows "the matching of population listing for two or more periods"... Sources which have been used in Britain include the census, directories, rate books and electoral rolls. Unfortunately, the information given in each is not directly comparable"[28]. He also outlines several approaches to the subject using the sources mentioned and outlines an analysis which was carried out on 19th century Liverpool, linking census and directory material. The paucity of directories for the Vale of Leven within the timespan of this study would tend to rule out any such investigation in this thesis. As far as can be ascertained, there is also a lack of "personal diaries, information on the decision making processes and other personal accounts"[29] which, ideally, would be used in studies of mobility. In comparing the Enumerators' returns for each of the three censuses under study, a picture of population change emerges which gives an overview of the changing character of the population within the urban area of the Vale of Leven. Without a good deal of additional information of the type listed above, a study of individual population mobility is impossible.

The textile Industries which depended on water from the River Leven, were established, by necessity, on greenfield sites, and therefore colonization of the valley was essential if the industries were to have a sufficient labour supply. J.D.Marshall has researched into "Colonisation as a factor in the planting of towns in North West England"[30], and looks at the growth, ethnic composition and problems of these settlements, which were initially wholly dependant for their survival on a very narrow industrial base. Marshall stresses the differences between such "colonies" and a "fully developed town"[31] which takes steady shape by virtue of a multitude of decisions. He underlines two types of colonizing processes - (a) Primary, in which a settlement is brought into being where there was no significant point of settlement previously; and (b) Secondary, "whereby there was development away from, or parallel to, that of a pre-existing town, perhaps before ultimate absorption in the latter"[32]. In the case of the Vale of Leven, the settlements fall basically into the former category[33]. This present study does not set out to compare the settlements of the Vale of Leven to other industrial settlements, but is concerned with an examination of the internal composition of the settlements themselves. Whether or not these villages along the Leven Valley had close parallels elsewhere, is not the primary concern of this work, but Marshall's statement that the colonies were "distinct communities" distinguished "sharply from the surrounding rural or semi-rural society"[34] may be particularly apposite comment when applied to the communities of the Vale of Leven. The results obtained in this work by using the information from the Census Enumerators' books could be seen to have close affinities with Marshall's observations on the towns of North-West England, as definite parallels may be observed between the towns in both studies in terms of colonization and the distinctiveness of the population in the towns.

Chapters Vl, Vll and Vlll of this thesis employ the unpublished Census Enumerators' Books as the primary source of material. Whilst the use of the Census data is discussed fully in the next section, "Data Sources", utilization of these sources in Scotland has generally been scanty. Previous research has tended to fall into

one of three categories, (a) Population studies concentrating at a regional or county level[35], (b) Overall trends of population movement and migration both within and from Scotland[36], and (c) Population change in the Highlands and Islands[37]. Therefore, with possible exceptions in category (c), very little specific work using the Census data, has been carried out on an area much smaller than Regional or County size. One contrast to this is the work of Lamont[38], who carried out a factorial analysis of Glasgow using the 1871 and 1891 census data. In this study he concentrates on intra-urban change, rather than presenting two static pictures of the city. However, in this present study the problems and approaches are quite different, as an investigation into the population and townscapes of a group of interconnected and emergent towns, dependent almost totally upon one basic industry and implanted on a previously rural environment, are studied over the second half of the 19th century.

Footnotes - Chapter II

1. See for example Agnew, J., Op. Cit. Pp.3-30 or Macphail,I.M.M. A Short History of Dumbartonshire, Pp.64-65 & p.87. Other local histories also record the development of the industry and many of these are housed in the 'Local Collection' of Dumbarton Public Library.

2. See Turner's work quoted below.

3. Whyte, I.D. (1978) Scottish Historical Geography - A Review. S.G.M. 94, p.10.

4. Turner, W.H.K. His articles on the textile industry include - Some 18th Century Developments in the Textile Region of East Central Scotland S.G.M. 69 (1953) 10-21
The Significance of Water Power in Industrial Location - Some Perthshire examples S.G.M.74 (1958) 98-115.
The Textile Industry of Dunfermline & Kirkcaldy 1700-1900 S.G.M. 73 (1957) Pp.129-145.

5. Turner, W.H.K., The Evolution of the Pattern of the Textile Industry within Dundee, T.I.B.G. No. 18 (1952) Pp.107-119, P.109.

6. Ibid. P.111.

7. Turner, W.H.K., The Significance of Water Power in Industrial Location. Some Perthshire Examples. S.G.M.74,(1958) Pp.98-115

8. Ibid.

9. Wallwork, K.L., The Calico Printing Industry of Lancastria in the 1840's, Trans I.B.G. 45 (1968), Pp.143-157.

10. Turner, W.H.K., Op. Cit. S.G.M. 74.

11. Ibid.

12. Conzen, M.R.G., (1968) The Use of Town Plans in the Study of Urban History, P. 115. (in Dyos, H.J., (ed) The Study of Urban History.

13. Ibid. P.115.

14. Ibid. P.117.

15. Conzen, M.R.G. (1969 Edition), Alnwick, Northumberland, a Study of Town Plan Analysis, T.I.B.G. 27.

16. Ibid. The Plan Analysis of an English City Centre. Proc. I.G.U. symposium on Urban Geography, 1960.

17. Whitehand, J.W.R., & Alauddin K. (1969) The Town Plans of Scotland: Some Preliminary Considerations. S.G.M. 85, Pp.109-121.

18. Ibid, P.110.

19. Ibid, P.117 & 119.

20. Without using illustrated examples, several of the types require explanation. Regular Rectilinear type, is a plan where blocks of buildings are laid out at regular intervals to one another. It can be distinguished from Grid Iron types in as much as, in the former case, blocks are less obviously square and streets in one direction are most often wider and of greater significance than those running

perpendicular to them. Irregular Rectilinear, as the name suggests, has rectangular blocks of buildings but these are not always laid out parallel to each other.

21. Whitehand & Alauddin, Op. Cit. P.120.

22. Whyte, Op. Cit. P.9.

23. Ward, D. (1975), Victorian Towns - How Modern? Journal of Hist. Geog. 1, Pp.135-151.

24. Pooley, G. (1977) Population Mobility in the Victorian City. Abstract of Paper at I.B.G. Symposium on "Historical Demography" at Univ. of Newcastle.

25. E.g. An area of housing called Dennystoun was known as "Wee Dublin".

26. It was not until the 1891 census that street numbers were widely used in census returns from the Vale of Leven.

27. Pooley, G., Op. Cit. P.1.

28. Ibid.

29. Ibid.

30. Marshall, J.D., Colonisation as a Factor in the Planting of Towns in N.W. England in Dyos, H.J., (Ed) Op. Cit.

31. Ibid. P.220.

32. Ibid. P.220

33. Although a small hamlet may have existed close to the site of Alexandria before this town was built and a few houses may also have existed at Bonhill, there were no pre-existing villages as such, and no buildings at all on the site of Renton or Jamestown before their founding.

34. Ibid. P.216.

35. Whyte, Op. cit. P.6 quotes examples of Walton, K. Population Changes in N.E. Scotland 1696-1951. Scot. Stud. 5 Pp.149-80.
McIntosh, N.A., Changing Population Distribution in the Cart Basin in the 18th & 19th Centuries. Trans I.B.G. 22 1956, Pp.139-159.
Dewdney, J.C., Changes of Population Density in the County of Fife, S.G.M. 71, Pp.27-42, 1955.

36. Ibid. Quotes Osborne, R.H., The Movements of People in Scotland 1851-1951, Scot. Stud. 2, Pp.1-46, 1958.
Wood, J.D., Scottish Migration Overseas, S.G.M. 80 1964 Pp. 146-176.

37. Ibid. Quotes for example Storrie, M., The Census of Scotland as a source in the Historical Geography of Islay. S.G.M. 78, Pp.162-165.
Coull, J.R., Population Trends & Structures on the Island of Westray, Orkney, Scot. Stud.10, 1966, Pp.69-77
Robertson, I.M.L., Population Trends of Great Cumbrae Island, S.G.M. 89, 1973, Pp.53-62.

38. Lamont, D.W., Population, Migration & Social Area Change in Central Glasgow, 1871-1891. A study in applied factorial ecology. Unpublished Ph.D. thesis, Univ. of Glasgow, 1976.

## CHAPTER III

## DATA SOURCES & DATA COLLECTION

The data for this thesis falls into three distinct categories -

1. The Secondary Sources, which come from several sources, e.g. the 3 Statistical Accounts; Agricultural Surveys of Dunbartonshire, various local and general histories housed in the "Local Collection" at Dumbarton Public Library (these sources are quoted in detail in the bibliography; and Valuation Rolls housed in the Strathclyde Regional Archives in Glasgow.

2. Maps and plans of the Vale of Leven.

3. Unpublished Census Enumerators' Books which are kept in Register House, Edinburgh.

The use of Secondary material is straightforward, and wherever it is used, sources are quoted in the footnotes. Such material is employed mainly in Chapter I where the information was pieced together to produce an account of the Vale of Leven's industrial growth, its effects upon, and contribution to, the landscape, settlements and population of the valley up to the 1840's, thus providing a foundation for a detailed analysis of the development of the valley in the latter half of the 19th century, which is the main interest of this work. Background information from the sources mentioned above is also used to complement the analysed census data and maps, inasmuch as it may help to clarify the reasons behind morphological or population changes which become evident through analysis of the primary source material.

### MAP SOURCES

For a study of the Vale of Leven there are several maps which are suitable, namely:

(1) Charles Ross' Map of Dumbartonshire, 1777 Scale 1:63,360.
(2) Plan of the River Leven, 1824, Scale 1:12,900.
(3) Surveyors plans for the construction of 2 new roads in Alexandria, 1833, Scale 1:3,168.
(4) Map of the Vale of Leven, 1841, Scale 1:15,840
(5) 1st. Edn. of the Ordnance Survey, 1864, Scale 1:2,500

(6) An update of map (4), 1879, Scale 1:126,720.

(7) 2nd Edn. of the Ordnance Survey, 1899, Scale 1:2,500.

The analysis of the evolution of the townscapes of the Vale of Leven using large-scale maps utilises the work of M.R.G. Conzen, as stated in Chapter II. The above plans, in greater detail, are:-

Map (1) Charles Ross' Map of Dumbartonshire, 1777, Scale 1:63,360. This map shows the Vale of Leven still basically in a pre-industrial era, and still very rural in character.

Map (2) Plan of the River Leven, 1824, Scale 1:12,900 shows plans for a canal from the East of the Burgh of Dumbarton to Dalquhurn, proposed by a Mr. H. Baird. It shows all the bleach, print and dye works, the mill lades and blocks of housing in Dumbarton, Bonhill, Renton and Alexandria. These housing blocks were most likely generalized versions of the housing coverage in the valley, but they do give an indication of the size of the settlements and the initial areas of development of the factory villages.

Map (3) Surveyor's plans for the construction of 2 new roads in Alexandria, 1833, Scale 1:3,168. The surveyor in question, Humphrey Campbell, constructed a detailed plan of the area around Bank Street, Bridge Street and Main Street, as they were eventually to be known, showing field boundaries, land use and ownership. This plan was probably drawn up in conjunction with plans to build the Bonhill Bridge which was constructed in 1834.

Map (4) Map of the Vale of Leven, 1841 scale 1:15,840 was in fact entitled "A reduced plan of the proposed Vale of Leven Canal from Loch Lomond to the River Clyde, uniting with the Forth and Clyde Canal at Bowling" and was produced by James Thomson, an Engineer. Apart from the proposed canal, both works and settlements of the Vale of Leven are shown. Due to the small scale of the map, buildings are again generalized in blocks along the streets, but unlike Baird's Plan, there seems to have been some attempt to isolate individual buildings, possibly achieved because this plan has been reduced from a larger version.

Maps(5) 1864 and (7) 1899 are Ordnance Survey 1:2,500 large scale plans of the Vale of Leven and with plots of land, streets, housing blocks, public buildings and works all shown in accurate

detail, they provide excellent sources for a detailed analysis of the changing townscapes over a 35 year period.

Map (6) An update of Map (4) produced in Joseph Irving's Book of Dumbartonshire is of too small a scale to allow detailed analysis, but provides an indicator between the two large scale ordnance survey maps, as to when certain large plan units were added to the townscapes.

THE CENSUS ENUMERATORS BOOKS'

The Census Enumerators Books' (C.E.Bs) are unpublished documents and the Scottish ones are kept in Register House, Edinburgh. As they reveal hitherto uncollated information on the origins, occupations, and demographic characteristics of the population of the Vale of Leven, they are essential to the main themes of this work which are concerned with the colonisation of the valley.

The first Government sponsored Population Census of Great Britain was undertaken in 1801, and has been carried out at 10 year intervals since then[1]. According to Drake "it would appear likely that as, with the passage of time, the census became a familiar institution, and as general standards of education rose its accuracy would improve. Some evidence to support this comes from comments made in 1851 by enumerators who had carried out both the census of that year and also that of 1841. In London and the large towns it was noticed that fewer "operatives" had to appeal to their neighbours for assistance in filling in the schedules"[2]. "One registrar in particular noted that his enumerators noticed that they had not much of the 'rough Work' which they had to perform in 1841"[3]. The format of the Census and the questions it asked, varied from decade to decade, and these variations obviously affect the comparability of census data through time. There follows a comparison of the returns for one fictitious "household"[4] for 1841 and 1851. (The details of the family characteristics in terms of origin, age, occupation, sex and marital status remain the same throughout to highlight the differences in format between the 1841 census and the 1851 census).

1841

| Sch. No. | Name of Street | Name | Age M | Age F | Occupation | Origin Born in county | Born outside Scotland |
|---|---|---|---|---|---|---|---|
| 1 | Bonhill Pl. | Joseph Jones | 40 | | Calico Printer | N | I |
| | | Mary do | | 35 | | Y | |
| | | John do | 15 | | " " | Y | |
| | | James Cox | 30 | | Tailor | N | |



The only point in need of clarification here is the use of the scores across the line between the 2nd and 3rd columns. Two parallel lines as shown (//) indicate the beginning of a new household schedule, one line (/) indicates that the person or persons named below the line are living in the same household as those above, but are not part of the same family (i.e. they are boarders or visitors[5]). Under the columns marked "Origin" are the 2 sub-headings "Born in County" and "Born outside Scotland", under the former sub-heading a Y (indicating yes) means that the person concerned was born in the county (in this case Dunbartonshire), an N (indicating no) means that the person was born outside the county. If this column is blank, it means that the person is of non-Scottish birth and an entry will appear in the "Born outside Scotland" column (an I for Ireland, E for England and W for Wales, other countries were usually written in full.

1851

| Sch. No. | Name of Street | Name | Relationship to Head of Household | Condition | Age M | Age F | Trade | Origin |
|---|---|---|---|---|---|---|---|---|
| 1 | Bonhill Place | Joseph Jones | Head | Married | 40 | | Calico Printer | Lanark Glasgow |
| | | Mary do | Wife | " | | 33 | | Ireland |
| | | John do | Son | Unmarried | 12 | | " | |
| | | James Cox | Boarder | " | 27 | | Tailor | Bute: Rothesay |

There are obvious differences between the 1841 and 1851 census formats. Relationship to Head of Household, more specific information on place of origin within Scotland, exact age[6], and marital status can provide greater insight into family structures and migration, and this information is present in the 1851 returns, whereas it is not revealed in the returns for 1841.

The censuses for 1861, 1871, 1881 and 1891 are very similar in make-up to the 1851 census, apart from the adjustments outlined below. The 1861 census format differed from the preceeding census inasmuch as 2 extra columns were added to the extreme right hand side of the page, the headings were entitled "No. of children from 5-15 at school" and "No. of rooms with one or more window". In 1871 the only change from above is that the former column heading reads "No. of children from 5-13 attending school, or being educated at home".

In the 1881 census, street numbers were given[7] and the column on schooling has been removed. By 1891 two columns to the right of "occupation" had been added, and entitled "Employer" and "Employed" (an X is placed in the appropriate column). There is also a column entitled "Gaelic or Gaelic and English speaking". Another adjustment was the removal of the small scores on the line between the second and third columns after the 1841 census (two parallel scores // indicated the beginning of a new house or flat, one score / indicated that the person(s) below that line were visitors or boarders): Thus in 1841 a census schedule was given to each "family" and the division between any family and any boarder or visitor was marked with a single score. In 1851 a schedule was issued to each "occupier" i.e. someone in charge of a house or a separate flat or apartment, and the following instructions were issued "Under the last name in any house (i.e. a separate and distinct building, and not a mere story or flat), he should draw a line across the page as far as the fifth column. Where there is more than one occupier in the same house, he should draw a similar line under the last name of the family of each occupier; making the line, however, in this case commence a little on the left hand side of the third column... By the term "house" he must understand 'a distinct building, separated from

others by party walls'. Flats and sets of chambers, therefore, must not be reckoned as houses"[8]. Therefore, in the example used here for 1851, the fictitious family and their boarder occupy a separate "house" as defined above, and not merely a separate flat or apartment. Had they occupied only part of a house in this way, then at least one of the horizontal lines drawn across the page would have commenced"a little on the left hand side of the third column". In 1861 the long horizontal lines had been replaced by short strokes of the type used in 1841 (two parallel strokes replacing the longer horizontal line, and one stroke replacing the shorter horizontal line). Similar practises were continued in the 1871, 1881, and 1891 censuses.

No Census which relies on the general public to return information of the type outlined earlier in the section can possibly be held up to be totally accurate. However, as Tillot observed "for almost all purposes the extent of error .... is slight"[9], nonetheless, there must have been problems of misinterpretation of questions, dishonesty, genuine errors and omissions either by householders, enumerators or district registrars, (who copied out the returns) which in turn led to overall errors in the final returns. Some of the main problem areas are discussed below.

Problems of the Household

Up to 1851 the census unit (i.e. the group to whom one census schedule was issued) "was the somewhat ill defined 'family'"[10], in 1851 the 'occupier' is substituted for 'family'. In the Enumerators instructions the following was written with regard to the delivery of the householders' schedules "understanding by 'occupier' either the resident owner or any person who pays rent, whether (as a tenant) for the whole of the house or (as a lodger) for any distinct floor or apartment"[11]. On first inspection, this may appear to be a fairly straightforward and comprehensive instruction, but as Tillot points out "the Census Office had entirely failed to recognise the complexity and variety of possible living arrangements"[12] and he goes on to quote examples such as "the house occupied by two nuclear families - the

married son with his wife and child who paid no rent but occupied a separate part of the house and catered for themselves; or who helped with the rent, ate with the family, but slept in a separate apartment? Or - clearly a common source of difficulty - the single male lodger whose room was a separate apartment for which he paid rent but whose meals were taken with the landlord? Or the single female lodger who did for herself entirely? And what if any of these single persons were relatives?"[13]

Indeed lodgers and boarders are a problem in themselves, and are dealt with further on in this section. As is illustrated in Tillot's examples, the crude definition of "Occupier" in the Enumerators' instructions, led to confusion over who should not receive a Census Schedule to fill in. This complicates the work of the researcher, who has to draw a sample of these schedules in the course of his investigations. He may, for example, take two schedules for analysis from Enumeration District A, and unknown to him a single schedule sample which he draws from Enumeration District B could contain two families in identical circumstances to those above who would have been recorded separately had they been in District A. There is no way round this problem, particularly as the "Census family"[14] or the "co-residing group"[15] is regarded as the basic unit to be used in Census research.

Boarders and Lodgers in the 19th century censuses

The terms "boarder" and "lodger" are often confused, or are thought to mean the same thing. A lodger rents a separate room or apartment, whereas a boarder sits at a common table with the family. However, the Census Report for 1861[16] states that lodgers at a common table are part of the family (the word "boarders" should have been used instead of "lodgers"). Therefore, as far as the report was concerned, boarders and lodgers were one and the same thing, and yet in the instructions to the Enumerators it clearly states that lodgers are to be considered as separate occupiers and as such are to be issued with a separate schedule. Such contradictions naturally led to confusion in the minds of the Enumerators, and even in the same

enumeration district some "lodgers" were issued with separate schedules whilst others were included in the schedule of the family with whom they lodged. As the basic unit for this research is the co-residing group" which Anderson[17] recommends, the problem of boarders and lodgers is overcome in that if a lodger or boarder has been issued with a separate schedule paper then he "should be entered as part of the previous co-residing group"[18].

Problems of Addresses

Tillot states that in the towns of his sample area "most enumerators numbered each house arranging their schedules first for one side of the street, and then for the other, or, less frequently, taking all house numbers in sequence. More rarely, the enumerators will give no more than a street name... Even the careful ones could not find precise addresses for many houses in the scores of back to back courts of Sheffield... what is true of towns is doubly so for rural areas. In country areas there was rarely a street number to give"[19]. Street numbers were only introduced into the schedules for the Vale of Leven in any concentration in 1881, before this addresses were given in a haphazard fashion, probably because no addresses of a more precise nature were available. For example, one address was given as "Myrtle Bank", and another as "Miller's Land, Main Street" in the 1871 Census.

Lack of precise address information narrows the scope of geographical research in this field. It means that addresses of the type shown in the examples above cannot be linked to contemporary maps and plans of the area under study to produce a reconstruction of past residential patterns. Thus the data compiled from the first two censuses considered in this study, (those of 1851 and 1871) cannot be used in this manner and as such cannot be compared, in this way, to the 1891 census data with which it would have been possible to construct such a map. Therefore, the researcher must confine himself to comparison of overall patterns of occupation, birthplace and demographic characteristics which are directly comparable through time.

Occupation

The data on occupation for the Vale of Leven is, by and large, unequivocal and strightforward. As one would expect for an area which was colonised to provide labour for bleach, print and dye works; a high proportion of the occupations (see Chapter VI, VII, and VIII) are dependent on these works. There are, however, two points which could lead to inaccuracies in an investigation of the occupations of the Vale of Leven. Firstly, the term "Field Worker" often appears in the occupation column of the Enumeration books of the Vale of Leven. In its initial reading it would seem reasonable to assume that this occupation was an agricultural one, however two other entries are used regularly to denote agricultural occupations (apart from 'Farmer') and these are "Farm Worker" and "Agricultural Labourer". This leads to two pertinent questions. (a) Was a "Field Worker" just another term for a "Farm Worker" or "Agricultural Labourer"? and (b) What could possibly distinguish the "Field Worker" from the categories above? No satisfactory answer to either question can be found, until it is considered that a "Field Worker" may not be an agricultural worker at all. In the early history of the Vale of Leven's bleach, print and dye industry, the initial impetus to industrial growth was given by the setting up of bleachfields, which were literally open-air fields where cloth was laid out to be bleached by the action of the sun in the summer months. Even after bleaching became an indoor process (due to the introduction of chemical bleaching) the works were still referred to as the bleachfield or 'field, and it seems reasonable to assume that when a bleachfield worker was filling in his census schedule paper he would possibly write down his occupation as being a "Field Worker", just as a worker at the Turkey Red dye works wrote down "Craft Worker" (The Turkey Red dye works were often referred to as the "Craft"). The second point which could mislead concerns the occupations of young boys of approximately 10-14 years of age. Tillot observed that boys in this age group who were not scholars, and had not been recorded as having an occupation, had been given the same occupation as their fathers by the checkers, that is, the people who looked over the returns. He goes on to say

that many of these additions were in the form of pencilled in 'Dittoes', though some were written in with the appropriate wording, and that care should be taken especially when dealing with photographic copies of the Enumerators' books[20]. The Enumerators' books for the Vale of Leven which were used in this study, were the original manuscripts, and any differences in writing style, or any additions to the manuscript would have been recorded, had they existed. Nonetheless, a considerable number of boys were recorded as having the same occupation as their fathers, but this is not surprising, particularly when the father's occupation is, for example, "Printfield Labourer". Many of the children who worked in the printfields were given a job designation of their own, that of "Tearer"[21] and many whose fathers were tradesmen were given the status of apprentices, for example, the father is a Joiner and the son is described as a Joiner's Apprentice. It is unlikely that this last designation is a great source of inaccuracy, as it seems probable that many fathers would take on their sons as apprentices if at all possible.

The overall impression of the recording of "Occupation" in the census returns for the Vale of Leven in the second half of the 19th century, is that they have been meticulously recorded, and are thus, in their accuracy, commensurate with the other entries in the Enumerators' Books.

Birthplace.

The entries in the "Birthplace" column of the Enumerators' Books are, in most cases, concise and present no great difficulty to the researcher. As stated earlier, the role of colonisation and immigration in the Vale of Leven is of great significance and therefore an important facet of this study. It is, however, regretable that while an accurate picture of birthplace variations can be built up, the county of origin of an Irish born person is so rarely given (The Enumeration form only required the county and parish of birth if the person was of Scottish origin), as this could have led to an investigation into which particular parts of Ireland contributed the most to the substantial Irish immigration into the area.

Collection of Data

As Anderson[22] stated, research is best conducted using the co-residing group as the basic unit, as this can shed light upon such information as average family size, frequency of lodgers and the different places of birth within the one family (it would appear that many families within this period were very mobile and footloose, judging by the number of children in many families who do not share a common birthplace with either parents or their brothers and sisters).

It was decided that a sample of 10% of the Census Enumeration Schedules would prove to be representative and significant when analysed. It was also decided that three censuses would be studied within the latter half of the 19th century:- those of 1851, 1871 and 1891. As was indicated in an earlier section, these censuses are basically comparable and the 20 year gap between each analysed census allows for significant traits and changes to be monitored.

The method used to sample the data was a random sampling technique because if there is any rhythm or periodicity in the way the population has been listed then systematic sampling would obviously be mis-leading[23]. While it is not known whether or not this is the case in the Vale of Leven, it was thought safer, and less prone to bias to use a random sampling method. However, to ensure a wide spread of samples from throughout the villages of the Vale of Leven, a 10% sample was taken from <u>each</u> Census Enumeration District within the urban framework of the Valley, thus the sample can accurately be described as a stratified random sample[24].

Although the landscape of the Leven Valley at the time of each analysed census in this work was made up of both rural and urban elements, it was decided that samples would only be drawn from the urban units, that is, the villages of Bonhill, Jamestown, Alexandria and Renton. These villages were largely dependent on the bleach, print and dye works of the area for their growth and development, and it is the effect of industrialisation which prompted the urban growth, and resulted in the population influx which this thesis studies. Inclusion of "land ward" areas

(i.e. areas outside of the 4 main villages) is not desirable, as these areas were largely unaffected, in a social and demographic sense, by industrialisation. Related to this problem was the seemingly intractable one of whether or not to include the small hamlets outside of the main villages, such as those of Balloch and the Mill of Haldane. While it is true that printfield workers did live in such settlements, the decision to exclude them from the study rested on the fact that they existed primarily as farming or estate settlements, before and during industrialisation.

Another sampling problem which had to be tackled was due to the fact that, in several cases, there are both village and "landward" elements within the same Census Enumerator's Book. It was relatively easy to separate these elements, as they were often identified by the Enumerator himself (by using a phrase such as 'End of Village" written across the page after the last name of the last village household, and/or by leaving the remainder of the page blank) or by someone who checked the books after completion. It should also be noted at this juncture that in a case such as this (where an Enumeration Book has both urban and rural elements) the 10% sample is from the village schedules only.

Footnotes - Chapter III

1. With the exception of 1941.

2. Drake, M. (1972) The Census 1801-1891 in Wrigley, E.A., (ed) 19th Century Society. Essays in the use of quantitive methods for the study of social data, Pp.7-46. Quote from P.22.

3. Ibid P.22.

4. The "Household" or Co-residing Group is that group of people including any lodgers or boarders who are entered on the same Census Schedule paper. Lodgers and boarders who have been entered on a separate schedule paper are considered as belonging to the previous co-residing group.

5. Boarders are people who live with a family and eat their meals with that family. A visitor is a person who "does not usually live in the household, is a non-paying guest and makes more than half of his social and economic contribution to society in another community. Tillot, P.M. Sources of inaccuracy in the 1851 and 1861 censues in Wrigley, E.A., (Ed.) Op. Cit. Pp.82-133 Quote on P.113. The status of visitor was fairly common as Tillot (Ibid) remarks "many young children born in the place under review are found as visitors unattended by parents or relatives. Here one is perhaps meeting the common Victorian habit of boarding out children for whom there is no room at home" P.113.

6. In 1841 age was given to the nearest 5 years thus 1 to 5 = 5; 6 to 10 years = 10 years etc.

7. In large towns and cities street numbers were recorded in earlier censuses.

8. Tillot, Op. Cit., P.91.

9. Ibid, P.83

10. Ibid, P.90

11. From instructions to the enumerators and householders, quote from Ibid P.91.

12. Ibid, P.90.

13. Ibid, P.90

14. Up to 1851 the censal unit had been the "family", in 1851 "occupier" was substituted.

15. According to Anderson, M. Standard tabulation procedures for the census enumerators' books Pp.134-145 in Wrigley,E.A. (ed) Op Cit., the co-residing group should be used as the unit of analysis in the investigation of composition and relationships within residential units, P.136.

16. Tillot, Op. Cit. P.104.

17. Anderson, Op. Cit.

18. Ibid P.136.

19. Tillot Op. cit. Pp.105-106.

20. Ibid. P.123.

21. Usually a boy "who spread an even coating (of paste) over a woollen cloth stretched on a frame... The printer presses his block on the woollen cloth, and takes up a quantity of paste sufficient for one "impression" Bremner, D., The Industries of Scotland: Their rise, progress and present condition (1869), P.303.

22. Anderson, Op. cit. P.136.

23. See Schofield, R.S. Sampling in Historical research, in Wrigley, E.A., Op. cit. Pp.146-190. P.153 A hypothetical example of how misleading a systematic sample could be, would be to consider the case where the researcher samples every fourth household and by coincidence every fourth household either in a street or in a tenement block has been built to house larger families than normal. This would thus distort his sample in terms of household size and perhaps in terms of family structure, the number of lodgers, and so on.

24. That is a random sample taken from within each of many different strata of data, the strata in this case being the individual Census Enumerators Books.

## CHAPTER IV

## DATA ANALYSIS

Two distinct types of "raw data" are analysed.

(a) The large scale maps and plans of the Vale of Leven between 1824 and 1899.

(b) Sample data drawn from the Census Enumerators Books for the Vale of Leven for the years 1851, 1871 and 1891.

(a) The analysis of large scale maps and plans.

Only two large scale plans show accurately the intricate plot developments that occur in most urban areas; those are the 1864 and 1899 Ordnance Survey Maps which were surveyed in the 4 or 5 years preceding publication. It was decided that a study such as this which concentrates on other aspects of the development of the Vale of Leven, that is, the industrial and population growth, as well as on the growth of the townscapes and which also uses other maps of varying degrees of accuracy and differing scale, would have to employ a broader approach. This was best done by constructing a picture of morphological growth concentrating on plan units[1] which were being added to the settlements through time and examining housing types and the socio-economic groups for which these units were being built, rather than concentrating on slow plot repletion[2]. In the study of the Maps and Plans, the growth of the fabric of the printworks and the railway network are also charted, as is the role of the physical landscape in influencing the form of the settlements. The addition and location of new plan units are also related to the growing needs of population and industry.

(b) Census Enumerators Books (C.E.B.s') are unpublished sources kept in Register House, Edinburgh. Their format and the information which they provide is widely discussed in the previous chapter. The sample taken was a 10% sample of the household schedules in each urban enumeration district in the Vale of Leven. Landward[3] areas, although they did

possess many people who worked in the towns, were disregarded as they were not largely populated as a result of, nor did they mainly depend on the industry. Some enumeration districts overlapped town and country areas. Where this happened the enumerator usually wrote "end of landward part" or "beginning of village of Bonhill", for example, and as a result village returns could be distinguished from landward ones, therefore only village returns need be considered in these books. The method of sampling was to affix a number to each household in the book and choose 10% by using a random number table[4]. A 10% sample of each enumeration district was taken ensuring a fair spread of samples without resorting to systematic sampling which may have produced misleading results[5]. The sample, therefore, was not wholly random but could be most accurately described as a stratified random sample[6].

With the growth in population between 1851 and 1891, naturally the number of households grew and so the 10% sample in 1851 consisted of 180 households, whereas in 1891 the sample consisted of 376 households. It is appreciated that a 10% sample from a larger parent population would tend to be more accurate than one from a small parent population. However, dealing with such variables as Place of Origin and Occupation some larger percentages emerge, suggesting that error will be low. Fine distinctions between groups, e.g. the 2.9% of Lanarkshire origin (excluding Glasgow) and the 2.7% of Perthshire origin in 1851, are not possible, and perhaps hardly necessary, to analyse. Where there are large percentage differences in groups in, for example, origin or occupation data then not only is explanation possible, but very necessary. The accuracy of the sample data has been confirmed by reference to contemporary accounts, such as local newspapers and to histories such as those by Slaven (1975) and Handley (1964)[7].

Faced with such a range of widely differing variables which could be obtained from the samples, analysis had to be confined to several broad topics, the main ones being

Age/Sex structure, Occupations, Origins and Household sizes. Often analysis required cross-referencing between one topic and another, for example, origins of population under 15 years of age, or occupations of Irish born people. Such is the depth of the material that much work could still be carried out on relationships of various types of information taken from the C.E.B.s. The study of the differing patterns which emerge for each individual settlement or district could be another approach worth consideration. Much of this would require either bigger or more concentrated samples than have been used here. This study is deliberately broad based, analysing data from 3 census years for the urban areas of the Vale of Leven to give an indication of population composition, employment structure, places of birth of the population, household sizes, school provision and unemployment in each of the 3 census years chosen, 1851, 1871 and 1891. It was also the intention to attempt an explanation for some of the changes which occurred in these structures through time. The twenty year gap between study years was chosen (a) to encompass the second half of the 19th Century when Works both grew and ultimately declined, and (b) to allow for significant changes to take place within the intervening periods.

Results taken from the sample are presented in the form of Histograms, Line Graphs, Proportionally Divided Circles and Population Pyramids. The implications of these distributions are discussed in the light of contemporary industrial and social factors, the information for which comes from many sources, acknowledged in the footnotes, such as Statistical Accounts, Agricultural Accounts, Local and Regional and National Histories, local newspaper articles, and other contemporary accounts of the industries and population of the Vale of Leven.

Footnotes - Chapter IV.

1. "Any part of a town plan representing an individualized combination of streets, plots and buildings distinct from its neighbours..." Conzen, M.R.G. Op. cit (Alnwick) P.128.

2. There was plenty of land for expansion outwards, therefore, less need for repletion of plots. The time scale of urban growth in the Vale of Leven is also much shorter than in Medieval Burghs where burgage cycles were more important.

3. Rural areas in Parishes.

4. Theakstone, W.H., and Harrison, C. (1970) The Analysis of Geographical Data, Pp.110-111.

5. See footnote 23 in Chapter III.

6. Tidswell, V., (1976) Pattern and Process in Human Geography, Pp.18-19.

7. Histories such as Slaven, A (1975) The Development of the West of Scotland 1750-1960 and Handley, J. (1964) The Irish in Scotland.

## CHAPTER V

## URBAN GROWTH IN THE VALE OF LEVEN

A study of the growth of the urban fabric of the Vale of Leven is obviously dependent upon the availability of suitable large scale maps which show the Vale of Leven at various stages throughout its urban development. Due to the lack of such material, in particular accurate large scale maps of the area before the publication of the 1st Edition of the Ordance Survey 25 to 1 (1:2500) mile series in 1864, it is not possible to examine the growth of the settlements in a methodical way by, for example, analysing maps of the same scale and level of accuracy which were drawn up at regular intervals throughout the development of the urban form of the valley. Fortunately, the main period of industrial, and consequently urban growth was in the second half of the 19th century from which there are the 1st Edition Ordnance Survey Map mentioned above, together with the 2nd Edition Ordnance Survey Map of the same scale, published in 1899, which allows a direct comparison to be made between the situations of 1864 and 1899. However, investigation into the spread of urbanisation prior to this era is essential if a balanced view of the developments within the second half of the 19th Century is to be achieved.

Below is a list of the large scale maps and plans which are available for an analysis of the urban morphology of the Vale of Leven.[1]

(1) Charles Ross' Map of Dumbartonshire (1777) Scale 1:63,630.

(2) Plan of the River Leven (1824) Scale 1:12,900.

(3) Surveyors plans for the construction of two new roads in Alexandria (1833) Scale 1:3,168.

(4) Map of the Vale of Leven (1841) Scale 1:15,840

(5) 1st Edition of the Ordnance Survey (1864) Scale 1:2,500

(6) An update Revision of map (5) (1879) Scale 1:126,720.

(7) 2nd Edition of the Ordnance Survey (1899) Scale 1:2,500.

Charles Ross' Map of Dumbartonshire (1777)

The earliest map which can be used for a rudimentary analysis of the extent of settlements in the Leven Valley is the map by Charles Ross dated 1777. The key reproduced here (figure 5:1) is fairly specific. The map shows that the burgh of Dumbarton at the mouth of the Leven is the only nucleated settlement of any size in the valley at this time. Its High Street and Church Street (Kirk Vennel) are visible and the buildings which lie along the streets are represented as solid blocks. Farmsteads, roads, bleachfields and country houses are all meticulously mapped. The farms have names, many of which are still in use in the district to-day, for example, Ladyton, Nobleston and Napierston. There can be little doubt that the level of accuracy of the map is most probably high.

Apart from the town of Dumbarton itself and its associated cottages (taken to be those within 1 mile radius of the mid-point of the High Street) there are 26 small blocks, 15 on the West bank and 11 on the East bank, drawn along the Leven Valley proper, which represent, to quote from the key of Ross' Map, "Farmhouses and Cottages". By the term Leven Valley proper, is meant a broad band of land approximately 1km. in width on either side of the Leven excluding Dumbarton and its nearby cottages, running the length of the river to Loch Lomondside. Outside of this broad swath of land there are very few cottages except where the land on either side of the valley is less steep around Balloch and the southern limits of Loch Lomond. Balloch is not considered in detail in this study for reasons given in Chapter I. Other than the "Farmhouses and Cottages" there are buildings in a group entitled "Gentlemens seats and noted houses" and in a group which is not adequately dealt with in the key, but which appears to be somewhere between the two categories above. To clarify the position, it is best to consider all these buildings together in a category entitled Larger Houses, of which there are 10, 6 on the West Bank and 4 on the East Bank. There are also several named buildings and features. One bleachfield with building appears on the West Bank and on the same side of the river there are 2 printfields, one with an associated building and one without any indication of a structure of any kind.

Fig. 5:1 Detail from the Key of the Map of Dumbartonshire (1777) by Charles Ross.

Farm Houses & Cottages



Churches

Gentlemans Seats & Noted Houses

Woods

Roads

Key to Fig 5:2 The Vale of Leven 1777 derived from the Map drawn by Charles Ross

Farm Houses & Cottages .....

Gentlemans Seats& Noted Houses

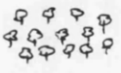
Main Roads

Churches +

Printfield = P

Bleachfield = B

Woodland



Levenside = L

There is also a Church and a School on the East Bank near the site of the present day village of Bonhill.

The form of the settlement along the valley is basically linear, following the line of the valley and lying on either side of the two main roads, one on either side of the River, which run roughly parallel to it. On both sides of the Leven the houses are situated on the side of the road away from the River, probably due to the danger of flooding, though at Balloch to the north and Dumbarton to the south, cottages on the west bank were nearer to the River. Of the two 'roads'[2] which passed through the valley at that time, one ran from Dumbarton to Luss on the west bank, and the other ran from Dumbarton to Stirling on the east bank. The roads were linked by a ferry at Balloch.

There is some evidence of early enclosures, particularly around the large house at Levenside (See Figure 5:2). However, whether these were of an ornamental of a more practical industrial or agricultural significance is difficult to ascertain from the map. The print fields and bleachfield were on the west bank of the River in close proximity to streams running down the valley sides which were used for sprinkling water on the cloth during the early outdoor bleaching process.

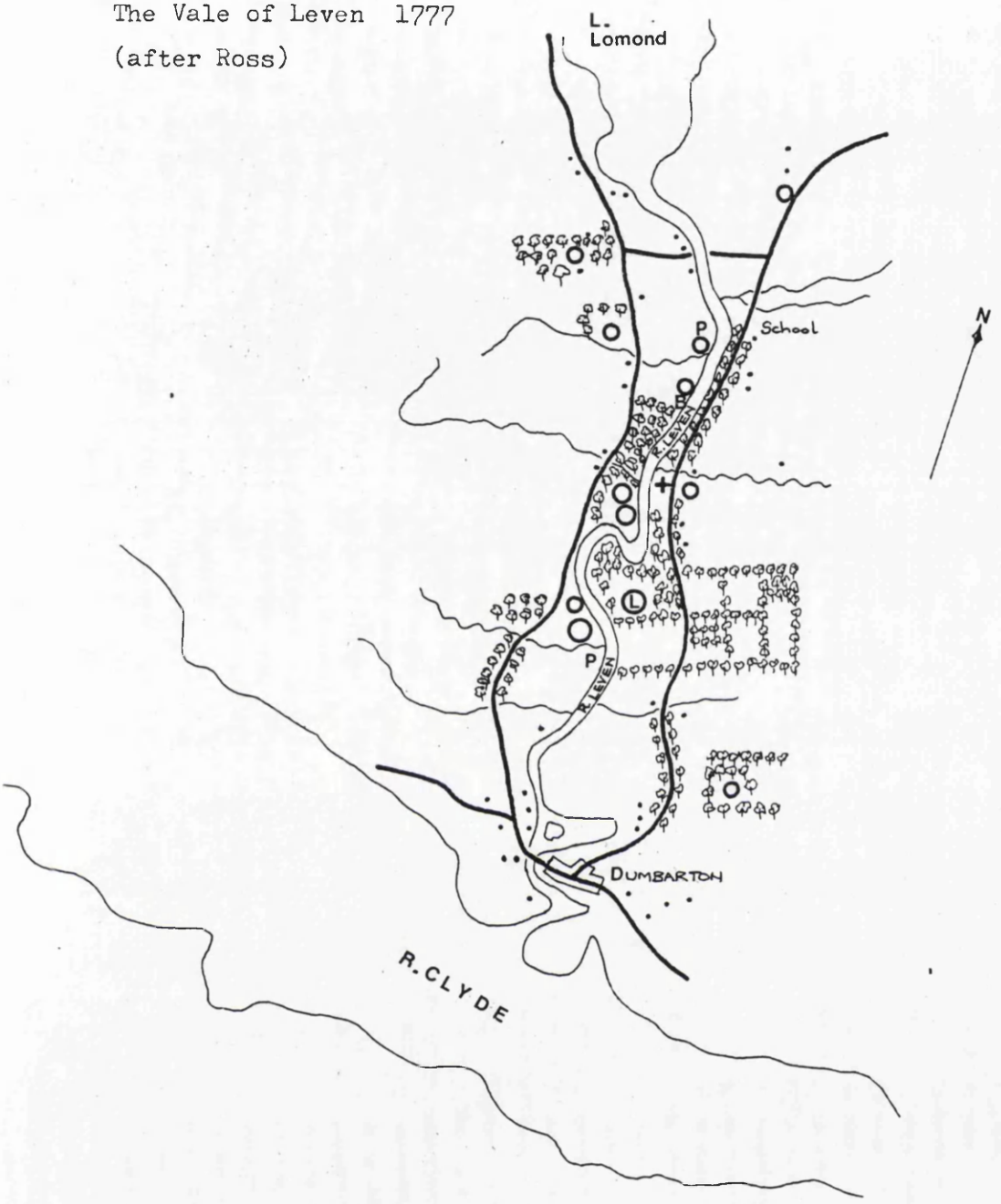
Settlement in the Valley (Dumbarton excluded) was of a semi-dispersed nature though densities are greater around Dumbarton Burgh and at the north end of the Valley around the site of present day Balloch. The middle section of the River valley which was eventually to be the area where the settlements of Alexandria, Renton, Bonhill and Jamestown were later to be established, was more sparsely populated at this time, although Bonhill seemed to provide some sort of focus for the east bank, as it had both a Church and a School where none are recorded elsewhere.

The landscape, therefore, was essentially rural, pre-industrial and pre-improvement in its state at this time, when farmers still practised the infield/outfield agricultural system[3]. After the date of the drawing of this map (1777) and up to the

Fig. 5:2

The Vale of Leven 1777

(after Ross)




1:63,360

0 1 2 3 km

Agricultural Survey of Dumbartonshire which was published in 1811[4], improvements did take place and farming was still the predominant land user in the Valley, whereas the bleachfields were small seasonal concerns. The population of the Valley was small, 901 in 1755, which had risen to 2,310 in 1791, by which time 3 printworks had been established[5].

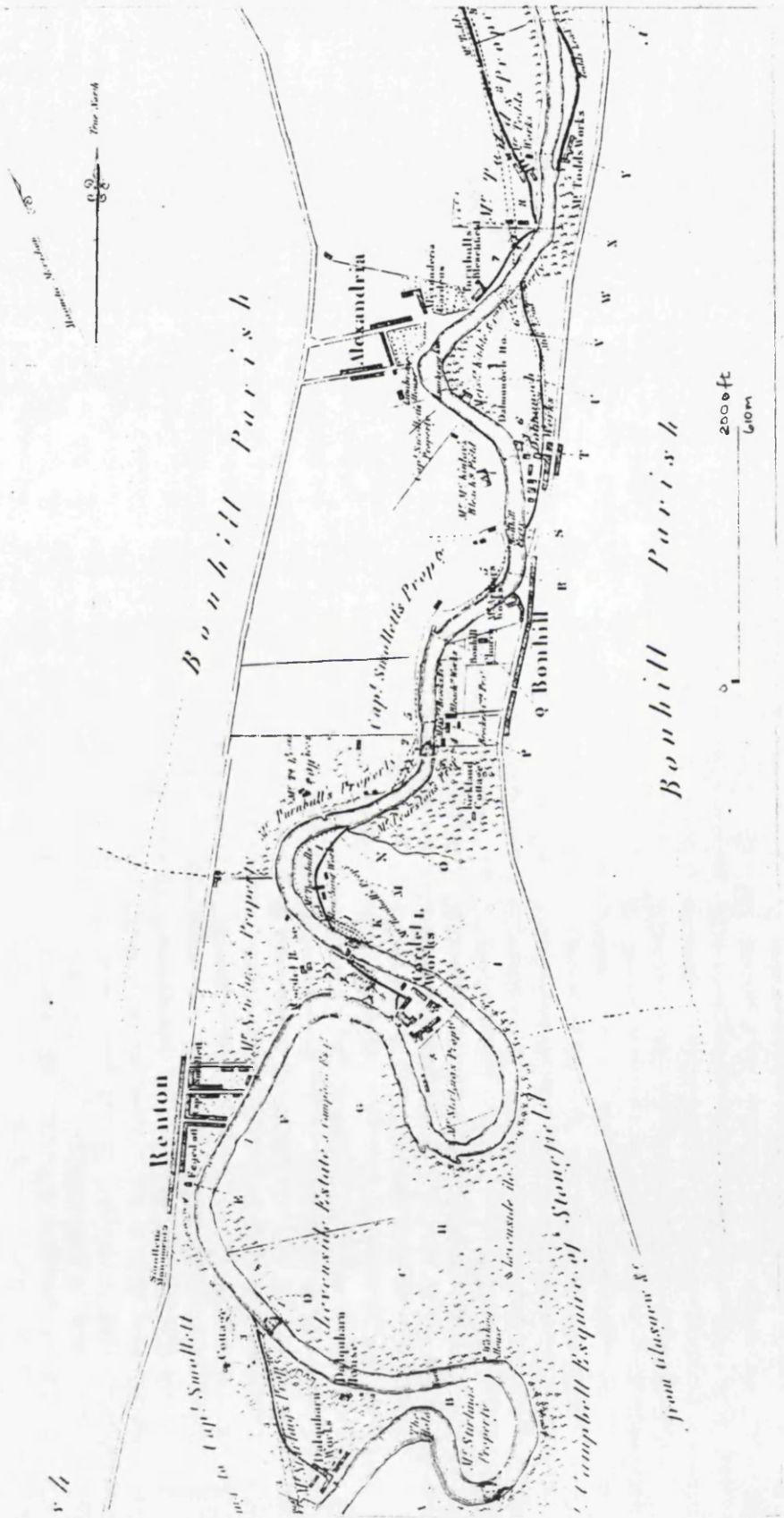
PLAN OF THE RIVER LEVEN, showing improvements proposed by H. Baird in 1824 (Fig. 5:3). The proposals in this plan outlined by H. Baird were to cut a canal from the River Leven between Dumbarton Rock and the Burgh of Dumbarton and which would run North roughly parallel with the course of the River, re-joining it at Dalquhurn. This plan, like James Thomson's[6] 16 years later, never came to fruition. However, this Plan of the Leven Valley provides many useful clues as to the development of the Bleach, Print and Dye works of the area as well as the development of the urban structure of the Valley. The scale of the Plan is too small to permit a full town plan analysis to be carried out, though main roads, streets building blocks and works are shown and comparisons can be made with later maps and plans, to build up a picture of the morphological development of the Valley settlements and works.

Obvious changes had taken place since the publication of Charles Ross' Map of the Valley (See fig.5:2) in 1777. The Valley by 1824 was no longer almost completely rural in character, although rural landuses were still dominant. As the Plan, (fig,5:3) shows, enclosures had taken place and were often close to the small Bleach, Print and Dye Works which had been set up near the River. Large estates had been enclosed such as the Levenside Estate belonging to a Mr. J Campbell, and the estates of the Buchanans, Smolletts and the Colquhouns, prominent local families and landowners in the area even up to the present day. Numerous trees had been planted within the enclosures, and gardens had been set up close to the village of Alexandria.

Industry

Bleach, Print and Dye Works typical of the early water power stage of the industrial revolution were in evidence by this time (1824).

Fig. 5:3 Plan of the River Leven 1824
(Baird's Plan reduced from original scale of 1:12,900
to a scale of 1:20,000)



From North to South along the Leven these were:- Mr. Todd's Works on the west bank and directly opposite on the east bank stood another works belonging to him. Further south on the west bank, just to the North of Alexandria, was Turnbull's Bleachfield and to the South of the village on the same bank stood McKinlay's Bleachfield, directly facing the Dalmunoch (sic) Works on the east Bank. Further South on the east bank beside Bonhill Village lay 2 works "Mr McArthur's Works" and "Messrs. Brock's & Co." Bleachworks. South of the village lay Mr. Turnbull's Bleaching Works. On the west bank and associated with Renton Village were the "Cordel Works" (Cordale) and the Dalquhurn Works". The Plan shows how the works utilized the meander loops in the construction of their mill lades (See Chapter I).

Settlements

In 1824 Alexandria was a hamlet consisting of 2 parallel streets leading from the Dumbarton to Luss Road, towards the River Leven, which were linked by a 3rd, smaller street at right angles to them which was close to the River itself. Building coverage was sparse. The more northerly street had what appears on the Plan to be a block of terraced housing on its northerly side, but this extended for just under half of its length. The more southerly street had a double ribbon of terraced buildings along it, but again this only extended for just under half of the street length. In both cases the building coverage was at the end of the street closest to the River and Works. The small link street had complete terraced coverage on its western side, and a further group of buildings with an 'L' shaped plan were situated close by, adjacent to Alexandria Gardens. The village itself was situated between McKinlay's Works and Turnbull's Bleachfield and shows marked similarities with the contemporary site of the village of Renton which was situated between the Cordale and Dalquhurn Works. The plan shows, surprisingly, that in the initial stages of growth planners did not utilize the obvious growth line of the Dumbarton/Luss road as the nucleus in the construction of Alexandria but instead built 2 parallel West to East running streets lying to the North of the area which was to become recognisable as the core of the town less than half a

Century later. There is no evidence of the existence of Bonhill Ferry Road (later to become an important part of the town's central area) which is in evidence by 1833 (see fig.5:4) apart from its initial beginnings at the ferry where it appears to strike westwards towards the Dumbarton/Luss Road before petering out a few metres from the ferry itself.

Renton, situated close to the River's west bank and flanked on either side by Works, had two distinct plan units. Like Alexandria further North it had, by 1824, occupied streets running west to east from the Dumbarton/Luss road towards the River and its towpath, as well as a well developed double ribbon of most probably terraced housing along this road itself. (Something which did not develop in Alexandria until later). The ribbon on the west side of the road was the longer of the two, being approximately 387m in length, as opposed to 264m in length on the east side. (This ribbon constituted the 1st plan unit). The second plan unit consisted of the 3 roads running down to the River. The most southerly one had a complete double ribbon of housing running its whole length. The middle street was developed down the westerly half of its length, that is, adjoining the Dumbarton/ Luss Road, on both sides with one small building fronting both it and the towpath. The 3rd street was at this time only partially developed on its south side with two small blocks discernible close to the towpath, along with one other building fronting on the towpath itself. Outside of the village proper were Dalquhurn House and Cordel House, each associated with the Bleachfield of the same name. As well as these buildings, there was a cottage roughly halfway between the Village and the Dalquhurn Works, and a small isolated building which was close to the future site of the Millburn Works, discussed later in this Chapter.

Bonhill, the oldest of the three villages in existence at this time, consisted of two long rows of buildings fronting the Dumbarton to Drymen Road on its easterly side and running from Bonhill Ferry southwards. There was also a small development on the west side of the road, immediately adjacent to the Ferry, as well as an undeveloped road leading from the Dumbarton/Drymen Road (Main Street) to the Bleachfield. A small double ribbon

development along Main Street existed to the North of the Ferry and was associated with the Dalmunoch Works. The only other building of note in the village was the Church.

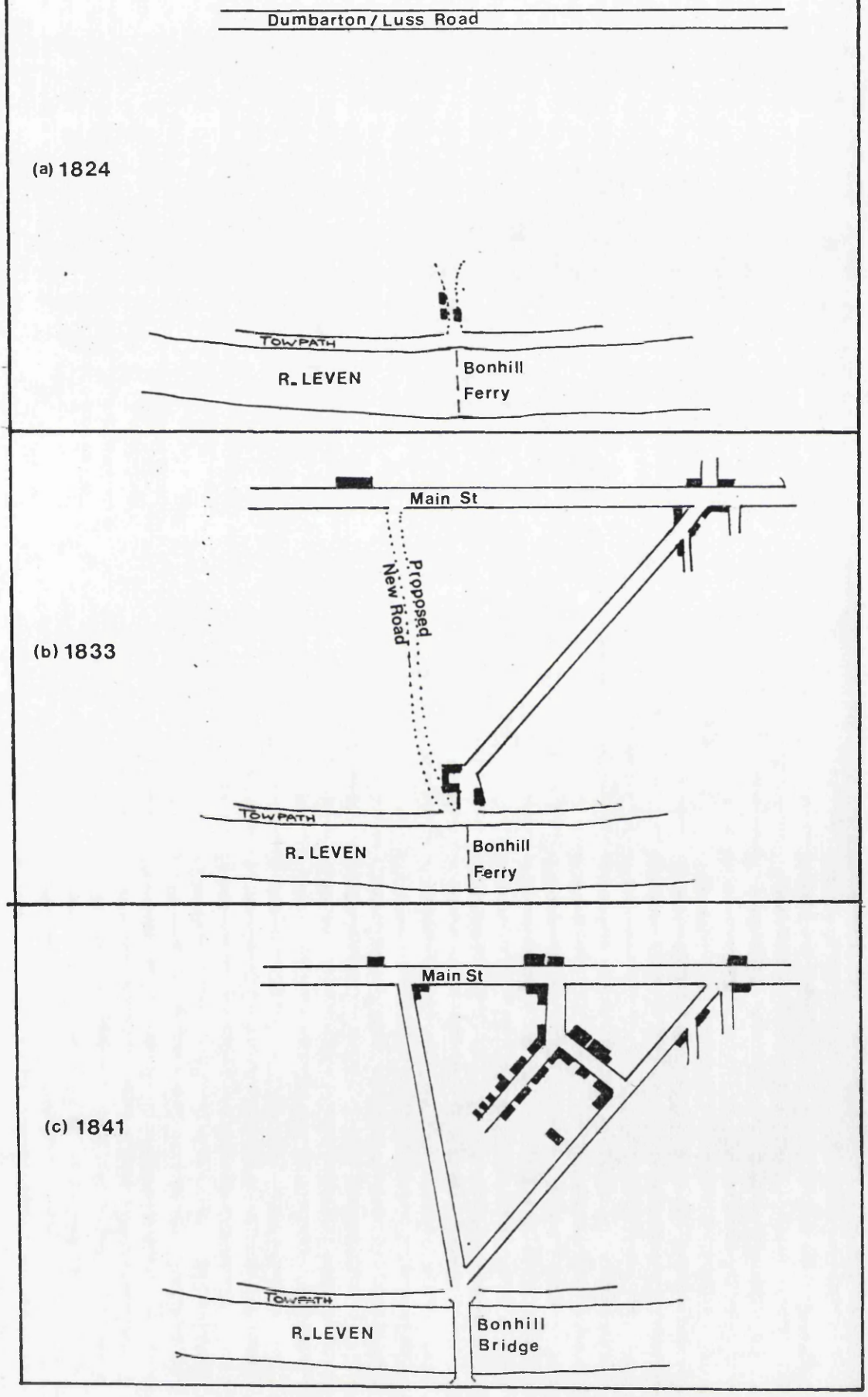
Conclusion

This Plan shows the Vale of Leven and its industries on the threshold of an extensive period of growth prior to the large influx of population between 1831 and 1841. The villages were in their initial stages of growth and depended completely on the Bleach, Print and Dye Industries for their existence. They possessed few amenities or services. The largest works, Dalquhurn and Cordel were served by Renton, the largest village while Bonhill and Alexandria served the remainder. Alexandria's scant building coverage and small size at this stage reflect the small scale of the works upon which it depended.

Renton and Alexandria showed marked similarities in plan, site and situation. In the early stages of their growth, however, one obvious difference in their development by 1824 was the lack of building coverage along the Dumbarton/Luss Road in Alexandria contrasting with the double ribbon of terraced housing evident in Renton along the same road. The development in Renton can most probably be explained by the fact that the Dumbarton/Luss Road in Renton ran close to the River and thus close to the Works. In Alexandria this Road ran some distance from the River (400m from it approximately) and suitable building land lay in between the road and the Works.

PLANS FOR THE CONSTRUCTION OF A NEW ROAD IN ALEXANDRIA (1833); Although this plan (See fig. 5:4(B) only shows a small part of the Vale of Leven, it was an area which was later to become the site of the main business area of the town of Alexandria. It provides excellent insight into the amount of urbanisation which had taken place upto this time (1833), and provides a marked contrast to figures which show the situation 31 years later. When generally examining the surveyors plans, the first impression is of a predominantly rural area, but Alexandria, and this part of the town in particular, was to become the main

Fig. 5:4 - Schematic diagrams to show early development of Alexandria's central area road network.



service and shopping centre of the 4 main settlements under consideration, and the town was later to become one of the most populous of the 4 settlements. Prior to 1833 the beginnings of a settlement and service centre existed, there was a small grocery which stood at the junction of the Dumbarton/Luss Road and Bonhill Ferry Road, which accounts for the fact that the town was known as "the Grocery"[7] prior to its rapid development in the middle of the 19th century.

The Plan shows proposals for the construction of a road from the Dumbarton/Luss turnpike road to link with a ferry over the River Leven (later to become the site of Bonhill Bridge). The small dark blocks represent buildings and a description of each parcel of land has been given by the surveyor as shown below.

| Letters on Plan | Description of Property |
|---|---|
| A | Houses & Garden |
| B | " " |
| C | House & " |
| DD | Arable Ground |
| E | " " |
| F | " " |
| G | " " |
| H | " " |
| I | " " |
| K | " " |
| T | House & Garden |
| L | House & Garden |
| M | Garden & Woodyard |
| NN | Houses & Gardens |
| PP | House & Stables |
| RR | Road |
| AA | Arable Ground |
| B | Small Garden |
| CC | Arable Ground |
| DD | " " |
| E | " " |
| F | Road & Towing Path |

(The table also included names of owners, occupiers and the parish.)

As the table shows, most of the land is either arable or consists of a sizeable "garden" and a house or houses. There is no real evidence of urbanization on the map though obvious enclosures had taken place since the publication of the Ross Map of 1777. Apart from the Dumbarton/Loss Road, the proposed road (Bridge Street) and the other road linking the Dumbarton/Luss road to the Ferry, the Bonhill Ferry Road, later to become Bank Street, there are no other lines of communication, apart from the River, visible on the Plan. The 3 roads referred to above were to become the focus for the main retail district of Alexandria, the triangle of ground enclosed by the roads became infilled with terraced housing and shops, whereas in 1833 the area contained 6 fields of "Arable Ground" and 4 smaller plots containing houses, gardens, and a woodyard. The roads at the time would be no more than country lanes with, at the most, crushed rock as a surface and partly bounded by dry stone dykes or hedgerows.

Apart from those mentioned in the course of the preceding paragraph, the only other buildings in the area were 2 stables and a Ferryhouse. Although Ferryfield Printworks had been established by this time, as the name suggests, close to the Ferry and workers houses did exist to the north of the area covered by this plan, as can be seen in Fig.5:3, the date of the building of these houses cannot be fixed exactly but it is unlikely that any major building programme had been undertaken since 1824. Though most probably an infilling along the roads, which lay perpendicular to the Dumbarton/Luss Road, had taken place.

James Thomson's Plan of Proposed Vale of Leven Canal, 1841

The Plan for a canal which would have been used to carry goods to and from the Bleach, Print, and Dye Works and which would have been linked up with the Forth and Clyde Canal at Bowling, was put to the Factory owners by engineer James Thomson in 1841.[8] He was trying to encourage them to support his venture by discarding the carts which they used to transport cloth to and from the works and thereby to use his proposed canal to transport their goods by boat. Apart from the lack of interest shown by the Industrialists, the construction of the Railway in 1850 put paid to the possibility of the canal being built.

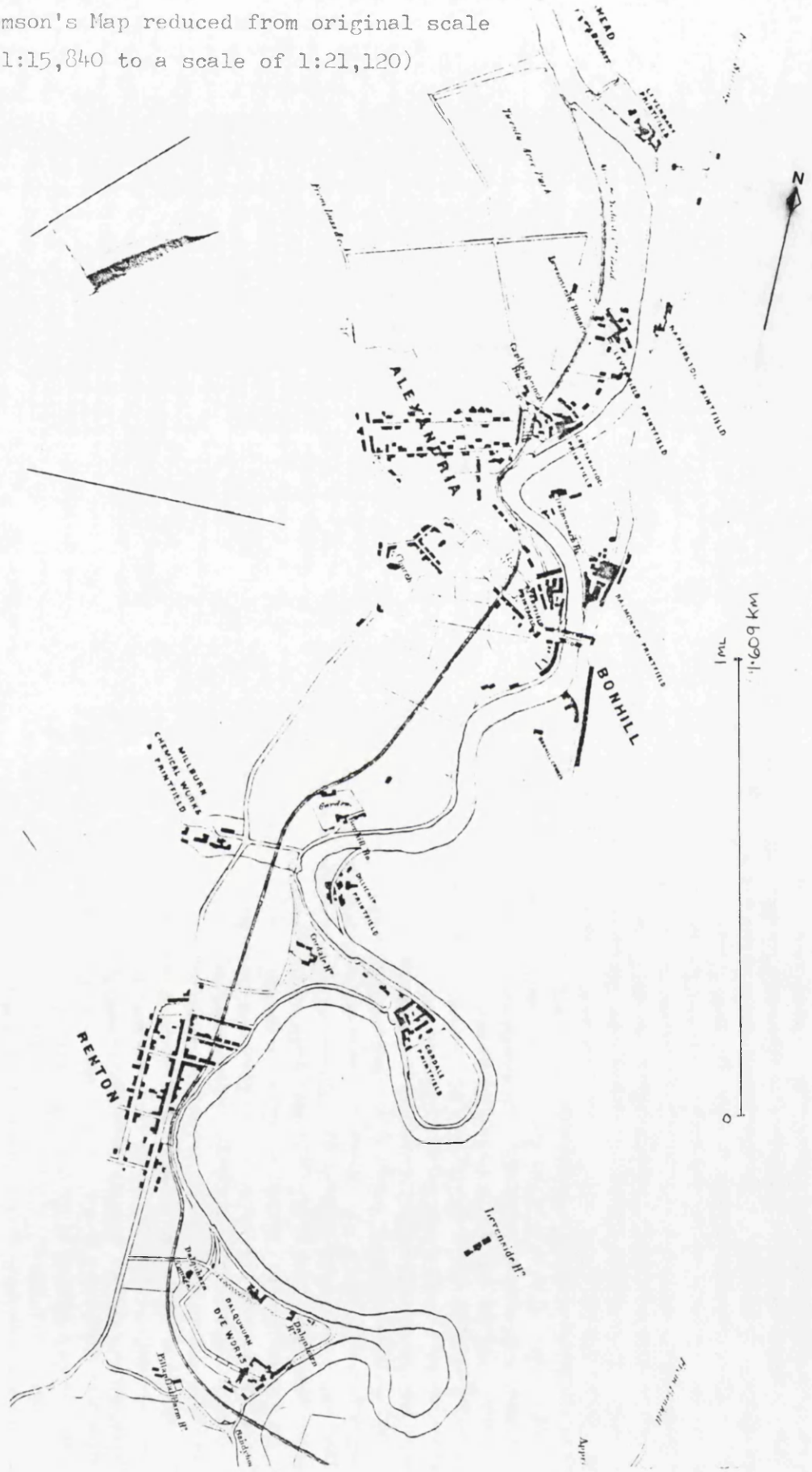
The Plan itself, scale 1:15,840, is of a rather small scale and like Baird's Plan, discussed earlier in this Chapter, is impossible to use for a full town plan analysis of Renton, Alexandria or Bonhill, but general building coverage and rudimentary street network is shown, as well as the Works themselves. The close proximity of the hamlets to the Works enables links to be established in terms of which workplace provided the bulk of employment for each settlement (see fig. 5:5). There is no suggestion here that, for example, Alexandria provided all the workers for Ferryfield Printworks and that none came from elsewhere, but merely that each settlement was the result of the building of a particular Works or group of Works. This dependence is not so obvious on later maps and plans which show the enlarged settlements in the process of spreading away from their original nuclei close to the Works and towards each other as in the case of Alexandria and Renton.

Industry

There are 10 Bleach, Print, and Dye Works identified on the Plan from north to south. These are "Levenbank Printfield" which lay to the north of Bonhill village and along with "Napierston Printfield" was on the east bank of the River. Directly opposite the latter on the west bank was the "Levenfield Printworks" and adjacent to this on the south was the "Croftangeioch Printfield". On the west bank the next works was the "Ferryfield Printworks" near the site of the old ferry linking Alexandria to Bonhill village and by 1841 the site of a suspension bridge. On the other side of the bridge directly opposite the Ferryfield Works was the "Dalmonach Printfield."

The above works were all associated with either Alexandria on the west bank or Bonhill on the east bank. To the south of these settlements stood the "Millburn Chemical Works & Printfield" which was situated on the west bank. This Works was more important for its manufacture of chemicals and dyes used in the local Bleach, Print, and Dye Works than for its printed cloth. It was the only works which was not situated directly on the banks of the Leven (it was about 220 yds, 201m to the west of the River bank), and probably used either or both of the 2 streams

Fig. 5:5 Map of the Vale of Leven 1841
(Thomson's Map reduced from original scale
of 1:15,840 to a scale of 1:21,120)



which flowed past the Works in its small scale printing operation. Facing this Work on the other side of the River was the "Dillichip Printfield" which lay to the southof Bonhill village. Further south of this again were situated the "Cordale Printfield" and the "Dalquhurn Dyeworks", though these large works were situated on the west bank and associated with the village of Renton. By this time the works were still using water power alongside some small steam engines and the widespread use of mechanical printing (cylinder printing) was still some way off. Dalquhurn represented an important industrial location as it was as far as the larger vessels could come up the Leven before transferring their cargo to "lighters", i.e. lighter vessels. It was also the southern-most limit of completely fresh water which was vital in the bleaching and dyeing processes.

Some interesting comparisons can be drawn between the Works as they stood in 1824 (in Baird's Plan) and the Works as they were shown by Thomson in 1841. (See Table 5:6)

Settlement

The extent of development in Alexandria's Bank Street/ Bridge Street area can be compared to its state only 8 years earlier when the Plan compiled by Humphrey Campbell was published. Since then there had been the addition of 2 streets, within the morphological frame imposed by the triangular configuration of the streets now known as Bank Street, Bridge Street and Main Street (the Dumbarton/Luss Road at Alexandria). One of these additional streets linked the Main Street with Bank Street and the other led from this new street towards, though not linking up with, Bridge Street (See fig. 5:4) Building had taken place along these streets, and coverage was heaviest on the latter street with the heaviest concentrations on the former at the end adjoining Bank Street (closer to the Works and River). This small nucleation stands out in stark contrast to the lack of buildings in Bank Street, and Bridge Street in particular, which still retained a predominantly rural character. There had, however, been some building on Bank Street since 1833, this was on its south-easterly side closest to the

TABLE 5:6

| NAME 1824 | NAME 1841 | Changes in Morphology Since 1824 |
|---|---|---|
| Messrs. Stewart & Co. Works. | Levenbank Printfield | A few buildings had been added |
| Mr. Todd's Works | Napierston Printfield | No major changes |
| Mr. Todd's Works | Levenfield Printfield | Approx. 5 small buildings added |
| Turnbull's Bleachfield | Croftangeioch Printfield | Greatly increased in size from simple L shape to larger more complex plan |
| Dalmunnoch Works | Dalmonnach Printfield | Infilling of open spaces between buildings, plus overall increase in size |
| Mr. McKinlay's Bleachfield | Ferryfield Printfield | Great increase in size from 1 small building to several larger buildings |
| Mr. Turnbull's Bleaching Works | Dillichip Printfield | Great increase in size from 3 or 4 small buildings to 8 buildings of various sizes |
| 2 small buildings existed in close proximity to site of Works, but were probable not associated with industry | Millburn Chemical & Dye Works | |
| Cordel Works | Cordale Printfield | Basically same framework with 1 or 2 additions to buildings |
| Dalquhurn Works | Dalquhurn Dye Works | " " " |

Due to the small and different scales of the Plans, it is impossible to be more precise about the changes which had taken place.

River and Works. Within Alexandria itself there were 3 other streets, (which lay parallel to each other) 2 of which were in evidence by 1824 (the extent of development in this area by 1833 is not known as this is not on the Plan by Campbell). These ran approximately west to east, 2 from the Dumbarton/Luss Road and one from the top of Bank Street, running down towards the River. Housing along these streets was intermittent, and not all of the buildings fronted the streets themselves, though heaviest concentrations existed along the streets linked to Main Street (Dumbarton/Luss Road). This provides an interesting contrast with the Plan of 1824 which shows double ribbons of what appears to be, terraced housing along sections of these streets. If both Plans are to be taken as accurate, then it suggests that some removalof buildings and/or rebuilding and redevelopment had taken place since 1824. It is possible that the 1824 Plan was somewhat stylised in its cartography, showing approximate blocks of housing coverage where the heaviest concentrations of housing, whether terraced or detached cottages, occurred. This latter explanation seems to be more likely. When these maps are compared to the 1st Edition of the Ordnance Survey (1864), the 1841 map is found to be of a high standard of accuracy, despite its relatively small scale. There is no evidence for redevelopment in the 1864 map and indeed the amount of available land means that early redevelopment between 1824 and 1841 was highly unlikely. In the 1841 Plan the position of each small block of buildings has been painstakingly plotted, and an intermittent pattern emerges. Another change in the structure of these streets since 1824 was the existence of small lanes linking the three parallel streets which constituted the original nucleus of the village. Extending outwith the small urban area of Alexandria was a system of undeveloped country lanes (1 extending northwards parallel to the River from Croftangeioch Printworks past Croftangeioch House to "Twenty Acre Park", see fig. 5:5, and 1 extending from the Dumbarton/ Luss Road eastwards towards the River and intersecting the former lane some $\frac{1}{4}$ of a mile (402m) to the North of the Village). These lanes were natural lines of expansion or in Conzen's terminology, arterial ribbons[9] which were available to builders and planners as the need for building land increased. Indeed,

they were perhaps constructed with this in mind as they are not in evidence in the 1824 Plan.

It is possible that only part of Bonhill Village is shown on the Plan, as the road (Main Street) along which Bonhill developed, leading from the village to Dumbarton, is not completely shown and it is possible that some houses existed in closer proximity to the Dillichip Works than is shown on the Plan. However, the part of Bonhill shown on this Plan is most obviously associated with the Dalmonach Printfield and perhaps the Ferryfield Works on the opposite bank of the River, easily accessible via the Toll Bridge opened in 1834. Along either side of the road leading from the Bridge towards Dumbarton are rows of terraced housing, although the row nearest the River is shorter than the development on the far side of the road (according to the Plan the terrace frontage on the River side of the road was 110 yards (100.5m approx), whereas on the side away from the River the frontage measured 302 yards (276 m approx).

Renton was still the largest settlement in the Valley, excluding Dumbarton, at this time, in terms of building coverage at least. The village comprised of two separate plan units. The first unit consisted of the developed part of the Dumbarton/ Luss road which constitutes Main Street, and a street running parallel to this, Back Street, which had been added since 1824. These two streets were linked by four lanes running perpendicular to them. Along the streets, building coverage was intermittent, though most buildings had their frontages directly on the streets themselves. Building coverage was greater on Main Street, which emphasizes the fact that building along this street pre-dated building in Back Street. Very little development had taken place along the four lanes, apart from the most northerly one, which could be of earlier construction than the other three which are equidistant and run exactly at right angles to the two major streets. The second plan unit was situated at the north end of the town where three streets, which appear on the 1824 Plan, ran perpendicularly from the Main Street towards the River; (A similar configuration to that of Alexandria at this time). Housing coverage is almost complete down either side of the most southerly of the two streets. As in 1824 no development had taken place

along the north side of the most northerly street, although the south side shows almost complete infilling by 1841 where only two blocks of housing, near the River had stood in 1824.

## The Early Development of the Vale of Leven (1777 to 1841)

### Conclusion

Before undertaking a detailed look at the growth and development of the Vale of Leven between 1841 and 1900, it is necessary to summarise urban and industrial growth upto the beginning of this period through comparisons of the 4 Plans already studied in this Chapter. In 1777, Ross's Plan showed a predominantly rural environment. Settlement was sparse and of a dispersed and semi-dispersed nature and the main provider of employment in the Valley was agriculture, despite the presence of three small Bleach/Printfields which employed a seasonal labour force in their mainly outdoor processes.

By 1824, ten Works associated with the textile processing industry had been set up along the banks of the Leven. These Works were generally of a small size, and judging from the nomenclature on Baird's Plan, were bleachfields and printfields (where much of the bleaching was carried on out of doors, and some small scale manual printing was done indoors). (See Chapter I.) There was a sharp distinction between these Works at the northern end of the River which were associated with Bonhill and Alexandria, and those at the Southern end of the River which were Printing and Dyeing Works associated with Renton, i.e. Cordel and Dalquhurn, which were bigger in areal extent[10], at this time than the other Works and were associated with the biggest village, Renton. Chemical bleaching had not yet been introduced and therefore a seasonal labour force would still have been employed at this time, particularly in Bonhill and Alexandria where the smaller Bleach and Print Works were situated. The main power supply was water diverted into lades which provided a powerful head of water to turn water wheels. The mill lades are prominent on the 1824 Plan. Only three agglomerated settlements existed in the Leven Valley in 1824, Bonhill on the

east bank and Renton and Alexandria on the west bank. Apart from their situation on the West bank and their total dependence on the Works nearby, Renton and Alexandria show many similarities in site and plan layout at this stage. Both were situated initially between the Dumbarton/Luss Road and the River and were sited between 2 works each, which drew their labour force from these villages. Renton being bigger than Alexandria had also developed along the Dumbarton/Luss Road which ran closer to the River and Works at Renton than it did further North at Alexandria. The use of the road for building along in Alexandria did not happen until later when some of the land between Road and River had already been developed.

By 1833 the beginnings of Bank Street and Bridge Street (their present day names) were shown by Campbell on his Plan of the area, which when taken with Baird's Plan of 1824, Thomson's Plan of 1841, and the Ordnance Survey Maps of 1864 and 1899, provides an interesting insight into the evolution of the centre of Alexandria. (Figure 5:4A) shows the situation in 1824 with the roads beginning as small tracks which focus on the landing point of the Bonhill Ferry and fan out and disappear not far from the River bank. By 1833 Bank Street was in existence (and called "the Road Between Alexandria and Bonhill Ferry", by Campbell) but was no more than a country lane running between open fields and Bridge Street was the street which Campbell intended to construct from his Plan. By 1841 both streets were well established with some buildings along them particularly close to the River and adjoining the Toll Bridge which had replaced the Ferry by this time. Some housing developments had taken place between these streets and Main Street, with a smaller street running parallel to Bank Street and linking up with another street joining Bank Street to Main Street as shown in fig. 5:4C.

Some improvements to the Works had taken place between 1824 and 1841 as Table 5:6 indicates. Most Works were entering the Steam Power era and generally becoming more automated. The Main point brought out in Table 5:6 is that the Works associated with Alexandria and Bonhill had grown quite dramatically in size since 1824, whilst the situation around the Renton Works (Dalquhurn and Cordale) had remained fairly static. Due to advances such as the introduction of chemical bleaching (See Chapter I) most Works

were employing a permanent labour force. The change in nomenclature over this period, as shown in the Table, reflects the changing nature of the Works. By 1841 there was no Work which was exclusively a Bleachfield, all the Alexandria and Bonhill Works were "Printfields" whilst the Renton Works were "Cordel Printfield" and "Dalquhurn Dye Works". The only works which had not been in existence in 1824 but was shown on the 1841 Plan was the Millburn Chemical & Dye Works. This was a significant addition as it produced many of the chemicals which were being introduced into the Industry at this time and is a pointer to the increasingly sophisticated and mechanised state of the Industry as it introduced chemical dye stuffs which were quicker to process and more colourfast than the traditional vegetable dyes.

The development of the townscapes in the 1824-1841 period were not as dramatic as the growth of the Works (the increasing use of machinery meant that the Works grew much larger physically whilst the labour force became more permanent, if not drastically bigger). Renton had experienced some infilling of plots, and a parallel street (Back Street) had developed behind i.e. on the western side of Main Street (something which yet again was constructed in Alexandria at a later date). Alexandria had a further street added parallel to its original two streets as well as the infilling described on the previous page and shown on Fig. 5:5. A toll bridge had been built across the Leven in 1834, which linked it with Bonhill and facilitated easy access between the settlements and Works on either Bank as well as stimulating building growth along Bank Street. The long terraced rows of housing in Bonhill had marginally increased in length, although the site of James-town, a little to the north, was still undeveloped.

THE FIRST EDITION OF THE ORDNANCE SURVEY OF THE VALE OF LEVEN.1864 (Fig. 5:7)

In 1864[11] the 1st Edition of the Ordnance Survey 25" to 1 (1:2500) Mile Maps were produced for the Vale of Leven area. The disparity in scale between this and earlier maps makes comparison difficult. However, even a summary glance at the 1841 and 1864 maps will reveal that a considerable amount of

change, in the urban structure, and in particular in communications, had taken place in the interim period. The 1864 map does allow direct comparisons to be made between it and the 2nd Edition of the Ordnance Survey for the area published in 1899, and in its own right it provides a wealth of information on the man-made morphology of the Leven Valley.

Industry

As was the case with previous maps which were considered earlier in the Chapter, the publication of this map finds both the names and the structure of the Works have been altered since the publication of the preceeding map. The use of the word "Works" to describe the industrial premises, instead of 'field' which appeared on earlier maps is another indication of the increasingly mechanised and factory based nature of the industry. Most works showed piecemeal additions since 1841 in terms of their external fabric, but it is likely that greater changes had taken place inside the buildings in terms of the use of machinery and chemicals[12].

Levenbank Print Works now not only drew water from the Leven itself but from a reservoir (Jamestown Dam) situated 475 Metres to its north west. Levenbank's owners had taken over Napierston Printfield by this date and it was known as Low Levenbank Yarn Works. As the name suggests, the former printworks had become a yarn dyeing works as part of the increasing trend towards specialisation, whilst the parent factory concentrated on the printing of cloth, as before. Levenfield Bleach and Print Works had not radically altered in appearance and there had been some minor additions to the Croftengea Works (in 1841 it was known as the Croftangeioch Printfield). Likewise the Ferryfield and Dalmonach Works had been added to, but the basic morphology remained the same as in 1841. An additional small Works had been set up in Bonhill by 1864, known as the Kirkland Works. It stood appropriately enough, just south of the Bonhill Church. The buildings identified as Millburn Chemical Works in 1841 still stood but this Works is not named on the1864 map[13].

Dillichip and Cordale Works followed the same trends as the others, that of small scale additions. The only exception to this rule was the Dalquhurn Dye Works which had around 14

buildings added to its central core. The dimensions of these buildings ranged from 67.5m x 37.5m to 12.5m x 6.25m.

Settlement

Even accounting for the vastly different scales of the 1841 Map and the 1st Edition of the Ordnance Survey of 1864, the growth of Alexandria within that 20 year period can be seen to have been considerable. There had been development along Main Street, Bank Street, Bridge Street and infilling along the three parallel streets which constituted the original site of Alexandria associated with the Works (now identified from north to south as North Street, Alexander Street and Susannah Street) as well as the infilling of the streets which lay inside the boundaries imposed by Bank Street, Bridge Street and Main Street (now identified as Random Street and Mitchell Street) and the creation of a new street (Kirk Street) to the north of Bridge Street and lying parallel to it.

Varying degrees of infilling had taken place along North Street, Alexander Street and Susannah Street. In North Street, which had intermittent building coverage in 1841, all 17 plots on the north side of the street were built on, though not all buildings fronted the street or occupied the complete width of the plot on which they stood. Lateral infilling, that is infilling of the plot widths, close to the street front was more common than longitudinal infilling of the plots back from the street (as it was in all cases in the Vale of Leven at this time). On the south side of the street there were 16 plots, 2 of which were unoccupied. One may have been a small field belonging to a large cottage near the River but the ownership or function of the other is impossible to ascertain from map evidence alone. Apart from houses, this street also contained the Gasworks. Alexander Street had the majority of its buildings fronting the Street (23 out of 27) where there was only a total of 18 buildings in all along the street according to the admittedly small scale map of 1841. Changes are most dramatic along Susannah Street which had no independent building coverage[14] in 1841, and appeared in 1864 with a double ribbon of housing packed close together and fronting the street. 10 buildings, some of which may have been terraced blocks, existed on the north side and 11 on the south side, but the largest single building in the

street was the Iron Foundry. Another building larger than all the others, with the above exception, was the "Subscription School" which stood back from the street, probably as the playground occupied the area between the street and the school building. Other than this only 55m out of a total of 457.5m of available frontage was not utilized (i.e. 12%).

There is a sharp contrast between Main Street as it existed in 1841 and its state in 1864. In 1841 the main building coverage and centre of the village was around the North, Alexander and Susannah Street area. By 1864 there had been a shift of emphasis towards Main Street, as the name implies, mirrored in the intensity of the building coverage along its length from 26.5m north of North Street to Bridge Street on the south. Along its 517m length on the east side, only 117.5m were not covered by buildings fronting the street. 63.5m of this belonged to the Church and its grounds (not included in these figures are the spaces caused by the 5 streets which run off of the east side of Main Street). The west side was also heavily covered, but less intensely than the east side, with 258.5m of occupied frontage out of a total available frontage of 527m. Of the empty spaces 109.5m had buildings off the street front, these included Southend Cottage, a School and a Church. The aforementioned buildings along with the Free Church Female School, were all situated at the South end of the village contrasting with the Iron Foundry and Gas Works which along with smaller, more regimented rows of houses, stood at the north end of the village. This suggests that there may have been, even at this stage, a separation of Industrial functions (remembering too that the 2 Printworks in Alexandria were also situated at the north end of the village) and their associated workers houses, from the Churches, Schools and larger cottages. Another contrast within Main Street itself was in the plot lengths on either side of the street. On the west side the plots were longer than on the east side. The majority on the west side were as long as 55m, whereas the east side plots were truncated mainly due to the fact that the west side plots backed onto open country, whereas the east side plots in most cases backed onto land which had been developed along other streets such as Bridge Street. Bank Street

was developed mainly on its south west side, with most buildings fronting the street, and their greatest concentrations at the easterly end of the street close to the Bridge and the junction with Mitchell Street. In contrast the other side of the street which lay to the north west, lacked development due to the existence of "Oakbank"[15] a small estate consisting of 2 main residences and 2 outbuildings, which bordered Bank Street for 188m from Main Street to the embankment which carried the railway (and may in fact have extended beyond the embankment). This estate was probably associated with Ferryfield Printworks which owned the remainder of the land fronting Bank Street at its south end. This link is suggested by the existence of 2 lanes which ran from Oakbank through the Railway Embankment to the Works.

Mitchell Street and Random Street, which first appear on the 1841 Map (see fig.5:5), are well developed with double ribbons of short terraced buildings along their lengths. These streets formed a working class residential area in direct contrast to the group of 6 buildings which included Middletonbank Cottage, Ferryfield House and Middletonbank (a building which from map evidence appeared to have been a row of 3 terraced houses). This latter group were set down with their small ornamental gardens running down to the Leven tow path. Kirk Street, an addition since 1841, ran from Main Street eastwards towards the Railway and had substantial lengths of its frontages taken up by the grounds, and graveyards, of two Churches. It also had 6 plots on either side, all occupied by detached houses. Bridge Street had also been developed particularly along the south side near the River where there were rows of terraced housing (Bridge Street, Random Street, Kirk Street and Bank Street were all linked by John Street running alongside the railway embankment). Housing and Printworks apart, Alexandria had some other industries and amenities, which suggests a slight movement away from the purely functional factory town towards a more diverse, balanced and mature townscape.

Apart from Croftangea and Ferryfield Printworks there was an Iron Foundry, a Timber Yard and a Quarry. The amenities which the Map shows were:-

3 Schools
4 Churches
1 Police Office
1 Post Office
1 Gas Works
1 Railway Station

. Renton's street plan had not altered since 1841. Some infilling had taken place but developments in the 20 years spanning the publication of the 1st Edition of the Ordnance Survey and the 1841 Map were not nearly as dramatic as those in Alexandria. However the large scale map does reveal information about the growth of the village. The 3 streets running perpendicular to Main Street down to the Leven are identified as (from north to south) Stirling Street, Thimble Street and Burn Street, the last named street running through Main Street to Back street and on to the Railway which at this time marked the eastern boundary of the village. The larger scale map allows an insight into why the north side of Stirling Street remained undeveloped whilst developments were taking place on its south side and along both sides of the other streets, Thimble Street and Burn Street which made up this first plan unit of the village. The lack of development was due to the fact that this side of the street bordered the Cordale Estate. This estate housed both the Cordale Printworks, to which access was gained via the three aforementioned streets and the River towpath, and Cordale House to which entry was gained via a sweeping, tree-lined drive which ran from Main Street 78.4m north of Stirling Street and which had a lodge house at its entrance on Main Street. Cordale House was occupied by the Printwork owner.

The plan of Renton shows it to have been more of a complete planned unit than either Alexandria or Bonhill. Alexandria, whilst similar in its plan and subsequent development to Renton was developed in a much more random fashion. It (Alexandria) consisted originally of 3 parallel streets, to which various

housing accretions were added, such as along Bank Street, Bridge Street and the area which they enclosed, the Mitchell Street, Random Street and Kirk Street area. When Renton was added sometime between 1824 and 1841, it was in the form of a complete "Back Street", rigidly parallel to Main Street with streets regularly spaced and at right angles to link the two. Plots in Renton were longer and narrower, on average, than those in Alexandria but the most striking contrast is the regularity of width and shape of the plots in Renton when compared to the Alexandria ones. In Alexandria the most regular plot pattern was found in the three initial planned streets at the north end of the village. Renton, like Alexandria, exhibits dense infilling along the plot frontages, especially on both sides of Main Street between Stirling Street to the north and the unnamed street leading to the Railway Station parallel to Burn Street on its South side. However both villages exhibited very low building coverages on their plots, on average 30% coverage in both cases and in no instance in Renton was there a plot with anything approaching 50% coverage. Additions to Renton since the publication of the 1841 Map tended to be along Main Street to the north and south of the pre-existing buildings rather than infilling of the existing plots, as the building coverage densities suggest. The village was still small, the additions were not too far away from the Works and the centre of the village and building land appears to have been readily available. Additions to the North showed 11 houses facing the Cordale Lodge House across Main Street where only 2 had existed in 1841. Further north on Main Street stood Upper Dalquhurn Cottage, a Free Church and Manse, and Millburn House which had been added to the west of the terraced houses which ran perpendicular to Main Street, on its westerly side, and marked, with the exception of Cordale House, the most northerly extent of building in 1841. At the southerly end of the village there had been less additions in this period, although another Church, the "Mission Church" had been built.

Renton possessed fewer amenities than Alexandria at this time, as identified on the Ordnance Survey Map. Along with the abovementioned churches was the Gaelic Free Church, from Map evidence this was in existence in 1841, which emphasized the

importance of Highland immigration in the area. The only other identified amenities were the Reservoir, the Subscription School and the Railway Station. The only evidence of any other industry in Renton is the appearance of a Quarry at the north of the village which may have provided building stone for any construction work carried out in the village, itself. The contrasting plot and building patterns of Alexandria and Renton suggest that when the site of Renton was built upon initially, there was plenty of land readily available for development, probably because there had only been 1 or 2 landowners, the most prominent among these being the Smolletts who were largely responsible for the building of Renton. The result in any case was a much more 'planned' village. The initial bleachfield-associated developments in Alexandria were the 3 streets constructed at the north end of the village as it was in 1861, i.e. North Street, Alexander Street and Susannah Street. As Alexandria expanded southwards its plan had to adapt to the pre-existing pattern of land ownership and the existing lines of communication exemplified in fig. 5:4. The small cluster of houses shown in Campbell's Plan from which Fig.5:4(B) is taken, pre-dated Alexandria, which later engulfed it. Therefore at its south end Alexandria was subject to 'adaptive development'[16], whereas Renton was developed on a greenfield site.

In 1841 Bonhill appeared as a double row of terraced housing[17] running south from Bonhill Bridge along the road to Dumbarton (Main Street). However, as was mentioned earlier in the Chapter, it could be that some parts of the village are not shown on the Map of the Valley in 1841. Despite this, it seems likely that there had been several additions to the Village in the 1841-1864 period. The Main Street had been much further developed along its length than it had been in 1841 (the east side of Main Street is shown to have been developed for 276m. in 1841, whereas by 1861 704.7m had been developed). Only 17 buildings[18] with the exception of the 3 Printworks, existed on the west side of the Main Street. These included 2 Churches and 2 Manses, along with 3 detached cottages at the south end of the Village. In stark contrast to this, long rows of terraces front the east side of the street for almost all of its length (704.7m) with the main breaks in the building plan merely for

roads which led off at right angles to the Street. The main purpose of these streets, or lanes (one was only 2.5 metres wide) apart from providing space for building development along, was to link Main Street with a back lane which ran parallel to it and in turn joined up with a system of farm tracks and lanes behind (to the east of) the settlement. The most Northerly of these perpendicular streets was Burn Street. Its development appears to have been the result of the burn, which it takes its name from, acting as a physical barrier to southward development on Main Street and as a consequence the line of building was deflected eastwards parallel to the Burn. Later building continued further down Main Street, south of the Burn, and parallel to the Burn on its south side to form the other side of this unusual street, which quite literally had a burn flowing down between the rows of houses on either side of the street[19]. Parallel to this street on the south side stood Campbell Street, where housing development had spread from Main Street in the form of 2 buildings on either side of the street, one on either side appeared to be single dwellings whilst the other buildings were divided into 2 and 3 sections, presumably separate houses, respectively. Both Burn Street and Campbell Street, as well as 2 of the 3 unnamed lanes parallel to them on the south side, led into a back lane which contained Rosebank Cottage and Croft Cottage as well as the entrance to Bonhill Quarry. To the south of the Village lay the access road to the Dillichip Works which lay outside the Village proper on a meander loop of the River Leven, opposite the Millburn Works.

The general trends in development of the residential areas of Bonhill would appear to have been from a nucleus at the Dalmonach Works and the Bridge (or ferry before 1824) southwards spreading along either side of the Burn and along Campbell Street very close to its junction with Main Street, continuing South to the road which led to the Dillichip Works. The main concentration of workers houses were along the East side of Main Street and Burn Street, with a few cottages and the manses to the West of the Main Street near the River, and in the 'Back Lane'. It is likely that some of these cottages predated the rows of workers' terraces which were such a prominent feature of 19th Century Bonhill. Bonhill being an older village which in the initial

stages was not dependent on the Printworks, had less planned elements than Renton or Alexandria. Its growth was more the result of a number of accretions which were grafted on, when necessary, to the basic Main Street unit.

Its amenities in 1864 were:-

3 Churches

1 School

It was the only Vale of Leven settlement without a railway station (though Alexandria Station was close at hand via the Bonhill Bridge). In contrast, its Printworks were all later directly connected to the railway network.

The major change in the settlement pattern of the Valley since 1841 was the building of Jamestown on the east bank of the River, north of Bonhill. It was described by D. McLeod[20] as "a model village which within our memory consisted of one or two insignificant houses only", and was built by Mr. A Orr Ewing to house workers in his close at hand Printworks at Levenbank[21]. The Plan consisted of one row of terraced houses some 130m in length, built along the east side of the Dumbarton to Stirling Road, i.e. the same road along which Bonhill was built, and further north on the same road stood a small double ribbon of terraced housing with an east side frontage of 87.5m, and a west side frontage of 32.5m. This double ribbon stood at the 'Main Road's' junction with a road which ran westwards towards the Mill of Balloch and the large houses named Dalvait, Lennoxbank, which had ornamental gardens laid out in front of it, and Knowhead, from where the road turned northwards to Balloch itself. It would appear that a similar social pattern of housing developments occured in Jamestown as it did in Bonhill. With the more substantial detached cottages on the west side of the road and in the 'Back Lane', to the east of the Main Road[25]. The only exception to this rule is the west side of the double ribbon. The detached cottages were built by Ewing to house his managerial staff and this is a pattern which emerges throughout the settlements in the Valley[22]. Due to the size of the settlements there is no value in attempting any type of Social Area Analysis[23], but residential segregation on a class basis did exist, with detached cottages on the periphery of the

villages, and the larger private houses of Printwork Owners and wealthy farmers even further removed from the centres of the Villages[24]. As a new factory village, Jamestown possessed fewer amenities than the other, larger, settlements but a School and a Railway Station were already in existence by 1864.

Communications

A major change had taken place in the communications network of the Valley since 1841. The railway, and electric telegraph line, had been built from Bowling through Dumbarton, to the Valley as far as Balloch Pier on Loch Lomond. The line known initially as the "Caledonian & Dumbartonshire Junction Railway"[25], crossed the Leven at Dumbarton and ran up the Valley on its West side, where there were stations placed at Renton, Alexandria, Balloch and Balloch Pier. Between Alexandria and Balloch Stations a branch line recrossed the Leven and ran approximately eastwards, through Jamestown Station, in the direction of Stirling. This fast and efficient form of transport was adopted by the Works owners, as they abandoned their carts and boats. It also put paid to any plans for the building of a Canal, which were first put forward in a feasibility study in 1841[26]. However, from Map evidence, it appears as if not all Works utilized the new railway system immediately after its construction, either through lack of foresight or lack of capital. On this Map sidings leading into the Croftengea Works are shown, and there are sidings positioned close to Jamestown Station and thus close to the Levenbank works, (Jamestown was built to house Levenbank workers), but no direct link is shown. It is possible that all the Works did use the Railway by the 1860's but were not directly connected to the system till a later date (see update of 1864 Map (1879) and 2nd Edition of the Ordnance Survey (1899), discussed on the succeeding pages.

Housing

If the growth of the townscapes, particularly in the first half of the 19th Century, were not as dramatic as the growth of the Works, then neither were they as dramatic as the growth of the population. The population of the Vale of Leven rose from around 5,000 in 1824, when Baird's Map was produced, to just over 9,000 in 1841, when Thomson's Map was produced. This was a large increase over 17 years even for such small settlements, and yet no large scale development of housing had taken place within that period. If the pace of housing growth had kept pace with population growth, there would have been significant additions to the townscapes. This did not happen and extensive lodging, overcrowding and sub-divisions of houses must have resulted (For a description and analysis of lodging in the Vale of Leven in the second half of the 19th Century, see Chapters VI, VII and VIII). Overcrowding was not an exclusively late 19th Century phenomenon, as the following quote from the Old Statistical Account (1793) illustrates

> "Since the above period (1782) the village has rapidly increased.... The demand for houses everywhere upon the Leven, has, within these few years past, been very great." 27

Housing may have been provided for, and proved an incentive to, the earliest workers, but supply did not keep pace with demand, and a lapse rate between population and housing supply developed. This must also have been the case in many similar factory villages and industrial settlements in Scotland. A lapse rate of this type has to be acknowledged in the analysis of town plans where the researcher attempts to tie up the physical growth of the town with population growth. That is, in most cases physical growth is a response to preceding population growth and is rarely anticipating or keeping step with it. Similarly, this phenomenon must be considered when an industrial or other settlement goes into decline. Witness to this fact is the 1899 Ordnance Survey Map of the Vale of Leven, discussed later in this Chapter. The Works appear larger and better connected to the Railway system than they were in 1864 (or 1879). On Map evidence alone it would be tempting to suggest that they were more prosperous in 1899 than in 1864. In terms of output they undoubtedly were, but maps give little

Key to figures 5:7 and 5:8

(both derived from Ordnance Survey Maps of the Vale of Leven)

A = Alexandria

B = Bonhill

R = Renton

J = Jamestown

d = dam

—·—·— Railway

Res= Reservoir

Works 1864

1. Levenbank
2. Arthuston Mill
3. Low Levenbank
4. Levenfield
5. Croftengea
6. Ferryfield
7. Dalmonach
8. Kirkland
9. Dillichip
10. Millburn
11. Cordale

Works 1899

1. Levenbank
2. Arthurston
3. Milton
4. Alexandria
5. Ferryfield
6. Dalmonach
7. Dillichip
8. Millburn
9. Cordale

Dalquhurn Works lay just to the South of the Map area.

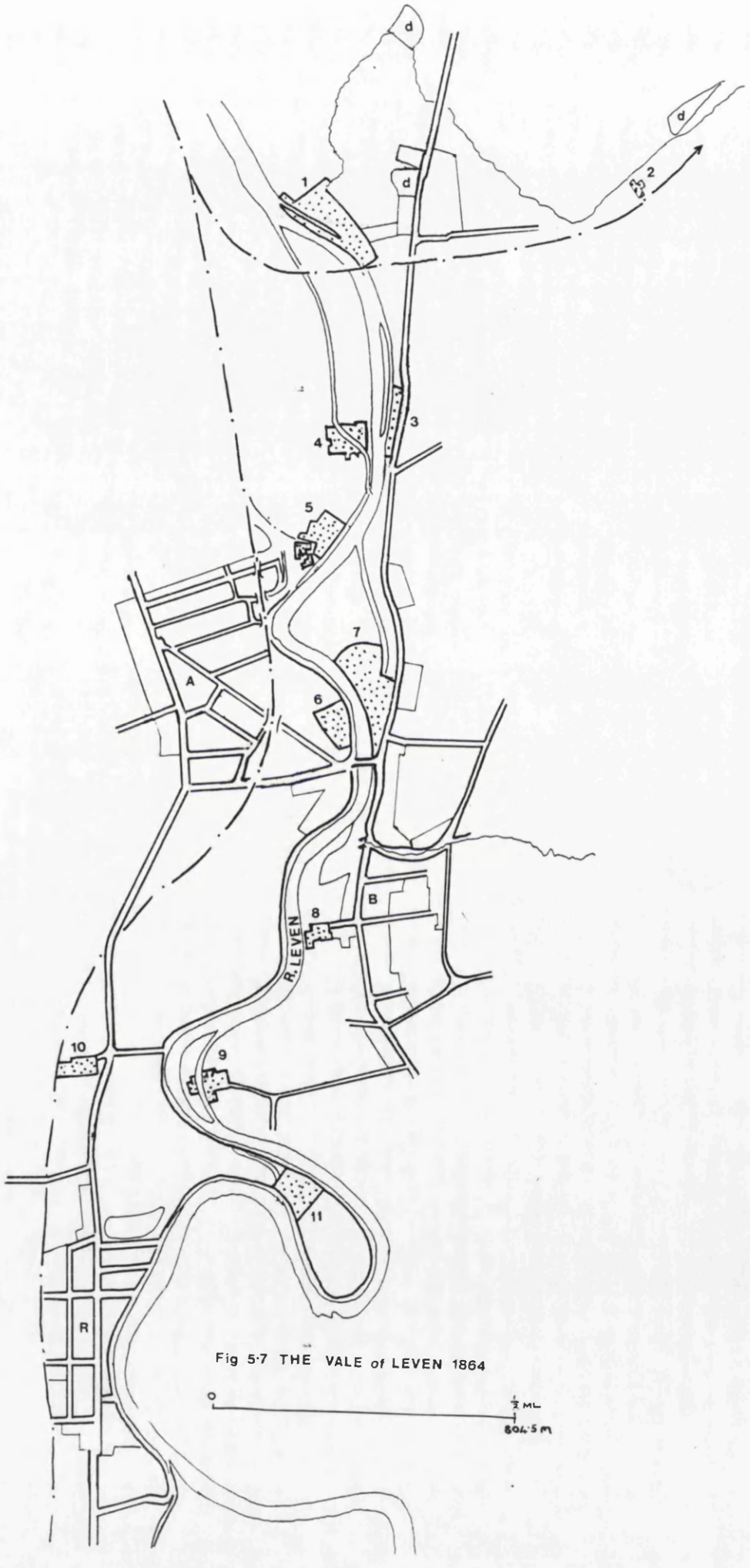



Fig 5·7 THE VALE of LEVEN 1864

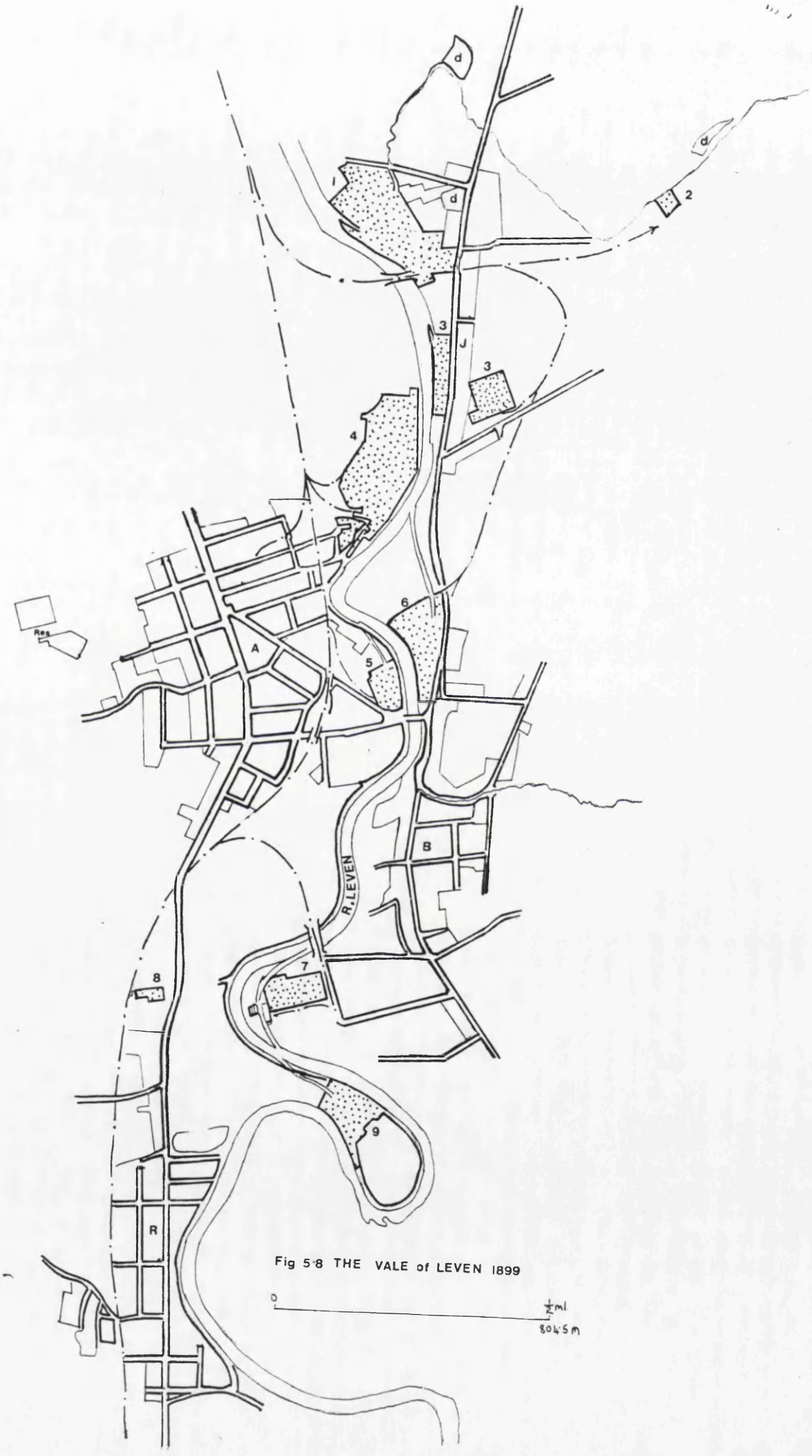



Fig 5·8 THE VALE of LEVEN 1899

indication of industrial or social decline or prosperity. In 1864 the Industry was in an expansion phase, whereas by 1899 it was in a decline, emphasised by the drop in population in the Vale of Leven between 1891 and 1901. The 1899 Map shows many improvements, particularly to amenities and many new houses had replaced earlier structures in the 35 year period between the publication of the 1st and 2nd Edition Ordnance Survey for the area. But what the Map cannot show is the decline which may eventually leave its mark on the townscape, and is not immediately discernable using Map evidence alone.

2ND EDITION ORDNANCE SURVEY MAP OF THE VALE OF LEVEN 1899.

Industry

By 1899, the Industry was in a slow but steady decline from the "peak"[28] it had reached in the 1870's and the 1880's. The Works were in the process of amalgamation into two main groups. The United Turkey Red Company formed in 1897 and comprised of the Dalquhurn, Cordale and Alexandria factories (which in itself encompassed the Levenfield, Croftengea, Charleston Engraving and Millburn Chemical Works), along with the Milton Works in Jamestown and the Dillichip Works in Bonhill which had been amalgamated in 1864. The second group did not have its head-quarters based locally but was the Manchester based Calico Printers Association which Dalmonach joined in 1898 and Ferryfield in 1906. The fact that this latter group was not predominantly a local concern may have resulted in an acceleration of the decline of the Industry in these parts, as the Vale of Leven factories interests became secondary to those closer to the home of the parent company. The decline of the Industry was not due to any precise factors, but foreign competition particularly from the U.S.A., Germany and Japan and the shrinking of the Indian market as they began to print more of their own cloth, as well as the development of the chemical Napthol Red dyes, which were cheaper and superior to the Turkey Red dyes which the Vale of Leven largely specialised in, played important parts. The decline was reflected in the drop in population between 1891 and 1901. The company amalgamations were an obvious (if unsuccessful) attempt to offset this decline.

Despite these facts the areal extent of the Works, as shown

in the 2nd Edition of the Ordnance Survey Map of 1899, was at its greatest within the time span of this study. They subsequently never grew any bigger. Improvements to the factories had been gradual and piecemeal in most cases upto the 1870's when large scale changes were made. Mechanical improvements and the efficiency of the Railways meant that more cloth could be processed and in a quicker turn-round time. Much of this cloth was bound for the Indian market, which itself had been opened up by the growth of the railways.[29] New and larger machinery, the increasing number of operations involved in a quicker and more sophisticated dyeing process and the increase in demand meant that larger buildings were needed.

In the majority of the Works the extensions were in the form of larger outbuildings around the original core of the Works combined with amalgamations and extensions of existing buildings. Again, starting from the north and moving southwards along the Valley, Levenbank (E)[30] which had covered approximately 2.35 ha. in 1864, covered 5.00 ha. by 1899 and had sidings running into it from the Forth and Clyde Line, close to its junction with the North British (Dumbarton to Balloch) line. The long narrow Low Levenbank Yarn Works (E) to the south of Jamestown had been further extended, but it had also been amalgamated with a square shaped factory, which had not been built by 1864, but which had been erected on the eastern side of Main Street, Jamestown by 1899. Together these buildings were known as the Milton Works and they covered around 2.15 ha. of ground, whereas Low Levenbank in 1864 covered about 0.5 ha. The most dramatic change in the Works within the 1864-98 period was at Alexandria, where the Croftengea Printworks (of around .8 ha. in area in 1864) had been joined to the Levenfield Works which lay to its south and had been approximately the same size as Croftengea in 1864. Much of the ground which lay between these formerly separate factories had been built upon and the new Works covered 6.3 ha. of ground. Known as the Alexandria Works, its growth must have promoted growth within the town of Alexandria itself, and its importance can be gauged in the number of small railway sidings which ran throughout the works. Close by was the relatively small Charleston Engraving Works, which had nonetheless

almost doubled in size since 1864. Although originally associated with its old Levenfield neighbour, it was like the latter, regarded as part of the Alexandria Printworks by 1899 (although its area has not been included in the sizes given for either Levenfield or Alexandria Works in 1864 or 1899). In direct contrast to the changes in the Alexandria Works the Ferryfield Works to the south of the town close to the Bonhill Bridge, had changed little since 1864. It had railway sidings, common to all of the Works by the late 19th Century, but it may have lived in the shadow of the growing Alexandria Works throughout the second half of the Century. In the main, the growth of the Ferryfield Works took the form of infilling of open ground between pre-existing buildings along with some replacement of the older fabric. It occupied around .8 ha. of ground in 1864 and about 1.02 ha. by 1899. Its relative lack of growth may have been partly due to it having closed down in 1864 (probably due to the recession caused by the American Civil War). It was reopened in 1871 and according to reports was extensively repaired and upgraded. Directly opposite Ferryfield, on the east bank, stood Dalmonach Works, together these two works were to become part of the Calico Printers Association of Manchester. Another similarity which they had was that Dalmonach too showed little signs of physical growth in the 1864-99 period. This Works was squeezed into the triangle of ground formed between the convergence of the River and Main Road at Bonhill Bridge. There was, however, room for expansion to the north but growth here consisted of a few small outbuildings and the building or adaption of one large shed. Again the Railway proved important to this Works and a branch line ran for 575m from Jamestown to link it to the system. Further south in Bonhill the small Kirkland Works which was shown on the 1st Edition of the Ordnance Survey Map of 1864, had by 1899, completely disappeared. Although the ground on which it had stood had not been built upon, there was nothing on the 2nd Edition map to indicate its former presence. All that is known about the site is that it was bought by a Mr. J. Pender of Manchester in 1868[31], but whatever use he intended to put the ground or Works to, is unknown. Obviously, at some time the Works were demolished, but were never replaced by any new buildings. The small Arthurston Dyewood Mill, which provided dyes for the

Works was another of the Bonhill Works to have closed since 1864. In contrast to these closures, the Dillichip Works lying to the south of Bonhill had grown from 0.55 ha. in 1864 to 2.03 ha. in 1899. This considerable growth was eastwards away from the River. The Works was linked to the railway system between Renton and Alexandria via a bridge over the River just North of the factory. The Renton Works of Dalquhurn and Cordale had also grown considerably since 1864, Cordale from around .95 ha. in 1864 to 1.7 ha. in 1899 and Dalquhurn from 1.85 ha. to 6.4 ha. over the same period. he latter's big increase in size making it, along with the Alexandria Works, the biggest in the Valley. Both Works were linked to the Railway, Cordale was linked to the main line, via Dalquhurn, by a line which ran along the riverside towpath.

Industry - Growth and Decline 1864-99

According to Map evidence the Industries of the Vale of Leven had experienced their greatest period of growth between the above dates. The fact that the Industry was in decline by 1899, is not obvious from looking at the Maps alone. In any case, a final decline, as opposed to a temporary recession can only be recognised in retrospect. It would be wrong to imagine the fortunes of the cloth finishing Industry of the Vale of Leven in terms of a simple growth and decline curve with its apex in the 1970's. For a start, there were dips at important dates such as 1857 when one of the textile industry's main creditors, the Western Bank, went out of business. In the early 1860's at the time of the American Civil War when cotton supplies were naturally affected, another Crisis occurred. Campbell states that these two events which

> "have often been used to explain the end of the (cotton) industry's prosperity were the more public occasions when its private difficulties were revealed," 32

and that the

> "1857 Crisis showed the speculative and unstable nature of much of the recent expansion in the cotton industry".

An Industry's success and failure depends upon many variables, such as labour supply, adaptability to technical change, raw materials, markets, finance and productivity.

As is illustrated by the above quotes, all factors did not gradully become more favourable towards the Industry upto the Seventies and then slowly become less so. The cotton finishing trades of the Vale of Leven always based their operations on a ready supply of cheap labour. In the 1870's the expanding Indian Market was an important outlet for the Vale of Leven's products, raw materials were available from the U.S.A. and productivity was comparatively good. By the 1880's and 1890's, competition from overseas and from Lancashire was putting the squeeze on the Vale of Leven's operations. For example, the U.S.A., being close to the raw materials could obviously produce cotton goods more cheaply than the Scots, now that the plant was available to do so, and India had started to produce for its own market. Much of the Vale of Leven's machinery, while it had been extended and improved, was out-dated in comparison to completely new plants elsewhere, and the massive capital investment, which would have been required if the Vale of Leven's Industry was to have any chance of survival in the fierce and growing heat of competition was not forthcoming.

Settlement

Alexandria, by 1899, is shown to have expanded considerably since the publication of the 1st Edition of the Ordnance Survey in 1864, with the bulk of these changes coming after 1879[33]. Additions were not only in the infilling of plots in the construction of whole new streets. Wilson Street, parallel to North Street on its northerly side, consisted of 2-storey red sandstone terraces and was wider than its older neighbours, being 15m in width compared to the 9m widths of North Street, Alexander Street and Susannah Street. The terraces stretched for 102m on the north side and 60m on the south side. The developed length of Main Street had also increased as the buildings on the east side of the street linked up with and went beyond Wilson Street increasing the length of the Street by some 150m at the north end. However, this was single ribbon development only. Changes in Alexandria's morphology were most dramatic on the westerly side of Main Street with the building of a parallel 'back street' of the type already developed in Renton some 58 years earlier. This street, Middleton Street, ran parallel to Main Street for all of its length from its junction with Wilson

Street, south to its junction with Bridge Street. It differed from Renton's Back Street in the type of buildings which were erected, as Middleton Street contained a sizeable strip of detached and semi-detached houses and gardens. These houses, the first of their kind to be built in any quantity in Alexandria, were not factory village houses but were the houses of the emergent Middle Class and could not have been constructed for ordinary Printworkers. Middleton Street was linked to Main Street by a series of parallel streets running at right angles to the two major streets. Hill Street at the northern end of the street was followed by Gilmour Street and then by Overton Street, which as the name suggests, ran westwards up behind the Town. Here Middleton Street bent round following the line of Main Street, towards a truer north-south direction. Upper Bridge Street, a continuation of Bridge Street proper, marked the end of Middleton Street. These parallel Streets acted almost purely as link streets, with the only independent building coverage being the two 'Gilmour Institutes' in the street of the same name. The mainly semi-detached houses of Middleton Street ran southwards for 265m of frontage on either side of the Street (excluding the 15m gap of the perpendicular link street, Gilmour Street) as far as Overton Street. Beyond Overton Street, to the south, were rows of red sandstone terraces of 2-storeys in height. These terraces, although short, were only 1 or 2 metres apart giving the impression of almost continuous terraced rows between Overton Street and Bridge Street. A similar housing mix to that of Middleton Street had been constructed at the south end of Main Street. On the west side were 6 detached, 2 semi-detached houses and a Church, here building densities were very low, these buildings occupied 103m of frontage. Further west, behind the town, were 9 large plots of ground which housed secluded detached houses and their outbuildings. In contrast, opposite the developments described for Main Street above, the eastern side of the street at its south end had three rows of 2-storey terraces, of 65, 85 and 37.5m lengths respectively. Developments on either side of the street extended the southerly limit of the street by 212m on the west side and 300m on the east side, from its 1864 boundary of the junction with Bridge Street.

Although by 1879 buildings had progressed to a few metres beyond this boundary, most of the developments took place in the 1880's. For example, the three terraced rows are still standing and are dated 1882, 1884 and 1887 with the youngest being the most southerly. Bank Street, Mitchell Street and Random Street show further infilling of the small open frontages which were there in 1864, although Kirk Street (by 1899, renamed Church Street) and the 'Crescent', which comprised of a group of houses lying in a crescent along the winding River towpath, were virtually unchanged. Oakbank and the Ferryfield Works still prevented any housing development of the North east side of Bank Street but two new streets, namely Gray Street and Stevens Street, had been built to the north of Oakbank, again most probably in the 1880's[34], and both had well established building coverage by 1899. While most of the new middle class housing was confined to the south and west of Main Street, so the new working class housing areas tended to be to the east of Main Street, with the addition of 5 new streets in the south east of the town since the publication of the 1st Edition of the Ordnance Survey. These were Albert Street and Arthur Street, basically link roads perpendicular to Main Street joining it to Victoria Street, a third new street of terraced houses lying parallel between Main Street and the Railway. The other two new streets at this time were Leven Street and Thomas Street which both had sparse building coverage. John Street, seen in 1864 running alongside the Railway embankment and linking Bank Street, Random Street and Church (Kirk) Street had been extended to join Albert Street.

A comparison of figures will show Alexandria's overall expansion in the 1864-99 period. However, certain trends in this expansion need to be highlighted. Firstly, the rate of expansion was not constant between these two dates. Most of the building being in the 1880's[35]. Secondly, growth was greatest to the west and south of the town. Further expansion to the west would have been difficult due to the break of slope which occurs just behind, to the west of, Middleton Street, as the Valley side begins to climb more steeply away from the gently sloping terraces. Middleton Street, therefore, marked the western boundary of the Town. To the south, Main Street was lengthened and the ground between it and the Railway was also used for housing. Thirdly, intensification of building

coverage in the areas of the settlement which were in existence in 1864 is also evident. Fourthly, Main Street was, by 1899, well established as the retail hub of the town, with Bank Street becoming an important area of expansion in this respect. Fifthly, clearly defined residential segregation on a class basis was present and generally the following rules applied:-

Working class housing tended to be,

(a) Close to the Works

(b) Close to the Railway

(c) To the east of Main Street

Whereas Middle Class Housing tended to be,

(a) On the edge of town

(b) Away from the works and railway

(c) To the west of Main Street

Alexandria not only showed a physical growth but also an improvement in the quality of the houses constructed in the interim period between the publication of the 1st and 2nd Editions of the Ordnance Survey. The amenities of the town had also improved and Alexandria's were the best of all the 4 settlements in the Valley, reaffirming its status as the most important of the settlements. The amenities which are shown on the 1899 1:2500 Map of the area are listed below with the amenities shown on the 1864 1:2500 Map.

| | 1864 | 1899 |
|---|---|---|
| Schools | 3 | 4 |
| Churches | 4 | 6 |
| Police Stations | 1 | 1 |
| Post Offices | 1 | 1 |
| Gas Works | 1 | 1 |
| Railway Stations | 1 | 1 |
| Hotel | 0 | 1 |
| Public Halls | 0 | 2 |
| Post Boxes | 0 | 2 |
| Banks | 0 | 2 |
| Football Grounds | 0 | 1 |
| Reservoir | 0 | 1 |
| Cemetery | 0 | 1 |
| Public Houses | (see text) | 10 |

The growth of amentities in the Town can be an important indicator of its progress in the light of its expansion away from the factory village status and also in the light of the increasingly tighter controls of the emergent local authorities. Growing concern for better sanitary arrangements is shown in the construction of the Reservoir and Cemetery to the west of the town. Much of the initial concern for adequate drinking water and sewage disposal grew out of the publication of the Public Health (Scotland) Act of 1867 and the following year the Local Authorities began work on the drainage of the town[36]. Increasing leisure time with shorter working hours prompted the building of public halls, just as they promoted Association Football as a spectator sport. Banks are perhaps evidence of increasing affluence as people found they were able to save some of their earnings[37]. The large number of Public Houses shown on the 1899 Map is probably due to the fact that by this time the Local Council was licensing them as they came under their control. Previous to this many of the 'pubs' were no more than small drinking dens which had no permanent homes.

Renton. 1899

The fundamentally linear shape of the village of Renton had been accentuated since 1864, with additions to both its north and south ends. To the north of Red Row, on west Main Street, where plots and houses had presented an intermittent pattern in 1864, there was a continuous row of occupied plots, with a break only for an access road onto Carman Hill. The plots ran as far as the Free Church and contained an assortment of detached, semi-detached and short terraced rows, though the detached houses were to the north close to the Church. The grounds of Cordale House prevented development on the east side of Main Street from Stirling Street to the Millburn Works. In the northern part of Renton which had already been built up, and comprising of northern Main Street, Burn Street (the western part of which was known as King Street), Thimble Street and Stirling Street, further development had taken place. This was in the form of the infilling of the small isolated open plot frontages, as well as in the insertion of buildings into plots, most of which had very low

building coverage. In this process, however, no plot was completely repleted, and the additions tended to be small-scale ones, such as outbuildings, though some rebuilding and replacement had taken place. To the south of the Village the additions had been more striking with the addition of a complete planned unit, see figure 5:8. In 1864 the village had ended abruptly, at its southern end, at the Mission Church on the east side of Main Street. By 1899 there had been the addition of three streets on the gently sloping land between the River and the Railway and Main Street's developed length to the south had increased by 127m (excluding street openings). The extension of Main Street, perhaps because it was a part of this new plan unit, was now known as Lennox Street. Lennox Street began just south of the Mission Church where the road was dissected by a street running at right angles across it. To the west of Main Street/Lennox Street the dissecting street was known as Hall Street, because it contained the Public Hall. To the east of Main Street/Lennox Street it was known as Leven Street. 82m to the south of this junction and lying parallel to Hall and Leven Streets were, respectively, Park Street to the west, and John Street to the east. John Street and Leven Street, as well as being linked by Lennox Street, were linked at their eastern ends by Alexander Street, which lay parallel to Lennox Street, and thus completing a rectangle of streets to the south-east of the Village. The Village now effectively ended at the road to Dalquhurn House and Works. This whole, new planned unit was impressively laid out with wide streets, red sandstone houses, a Church and 4 public buildings and halls. It is perhaps unusual that Back Street did not continue southwards to link up with this new unit, as Main Street did, for in doing so the planners would have preserved the 'Regular Rectilinear'[38] pattern which had emerged around the centre of Renton. This development was probably blocked by buildings which existed on the Carman Road, the most southerly developed street in Renton in 1864. Carman Road was a very old routeway to Carman Hill, where the Royal Burgh of Dumbarton held cattle fairs long before the growth of Renton, and as such was liable to be utilized for cottage building as the Village grew towards it.

Many times in this Chapter, as well as highlighting the differences in development between Renton and Alexandria, parallels have been drawn between these two, most important centres of the Printing and Dyeing Industry in the Leven Valley. Many factors are involved in the growth of an individual town or village and these factors are different for each. They include, the topography of the village site; previous land ownership; previous land use; precedent communications structures; industrial development; commercial development; housing supply and demand. Despite these, and other, factors which make each village morphology unique, there are definite parallels in the development of these two settlements. Apart from the fact that they have the same 'raison d'etre' and similar underlying topographies, they have many plan elements in common. They both had their initial growth areas on ground between the River and the Dumbarton to Luss Road, despite the fact that the most obvious core for the new villages was along this Road. The initial development in eachcase was a plan unit consisting of parallel streets running from main road towards the River and Works. Later, both Main Streets became the commercial focus for each settlement. In each settlement a residential 'back street' to the west of Main Street was built. Middleton Street which became the Alexandrian counterpart of Renton's Back Street, first appears in the 1899 Map, but there are other, less immediately noticeable parallels, which also appear on this Map. The Arthur Street, Victoria Street development in Alexandria, though smaller and more utilitarian than Renton's Leven Street, John Street, Alexander Street unit, shows a similar street pattern to have been constructed to the south and east of the respective Main Streets. To the south and west of each settlement, large detached houses were built. The ones in Alexandria have already been discussed in this Chapter, and in Renton 10 such houses existed, which were the only buildings on the Western side of the embanked Railway which marked the edge of Renton's continuous built-up area in this direction. Combined with the break of slope, important in Alexandria's growth, the Railway Line played a crucial part in the crystallisation of Renton's morphology, in that it was easier to extend the length of Main Street than build and provide an infrastructure for steeply sloping hillside beyond the barrier of the embankment.

The comments made about the growth of amenities in Alexandria in the period between the publications of the 1864 and 1899 Ordnance Survey Maps also hold true for Renton as a comparison of the Village's 1864 and 1899 amenities, below, shows

| | 1864 | 1899 |
|---|---|---|
| Churches | 3 | 5 |
| Schools | 1 | 1 |
| Railway Stations | 1 | 1 |
| Police Stations | 0 | 1 |
| Post Offices | 0 | 1 |
| Gas Works | 0 | 1 |
| Post Boxes | 0 | 1 |
| Public Houses | (See section on Alexandria) | 6 |
| Football Grounds | 0 | 1 |
| Reservoir | 1 | 1 |
| Public Halls | 0 | 2 |
| Bowling Greens | 0 | 1 |

(In addition, both Alexandria and Renton had public parks, as well as Institutes such as the Victoria Institute and the 2 Gilmour Institutes in Alexandria where lectures were given and public meetings held).

Although Renton's amenities had improved considerably since 1864, a comparison with those of Alexandria helps to illustrate that Renton had been overtaken by its northerly west bank neighbour as the most important settlement in the Vale of Leven. This is evident by 1864, but emphasised by 1899. One important difference may have been the location of the Banks in Alexandria, with none in Renton. This suggests that the former had become the commercial centre, however modest, for the Valley as well as emerging as the definite retail centre. Both were still heavily dependent on the Printworks for their survival, although Alexandria had a small Iron foundry. However, Alexandria's growing status as a local service centre was helping to offset this dependence on the Works in some small way, although the underlying prosperity of the whole Valley was still completely tied to the prosperity of the Works. Thus

Alexandria was becoming a more fully developed town with a range of functions, whilst Renton was very much a factory village, although it had a minor dormitory function as men from Renton travelled to work in the growing shipbuilding industry in nearby Dumbarton, see Chapters VII and VIII.

Bonhill 1899

As the oldest settlement in the Valley[39], Bonhill always retained links with its rural surroundings, though it too was swamped by printworkers. It had less planned units to its morphology than the other three settlements. In 1864 it was basically a single street village. It had spread from around the Bridge southwards towards the Dillichip Works, with some building off Main Street, especially to the east. Both of these trends had continued with Main Street extended to the South with the building of Dillichip Terrace, a continuous row of houses 127m long. Bonhill's meandering Main Street was the longest of the four settlements (1,227m), but developments outside of Main Street were few. Nonetheless, the second trend in Bonhill's growth, that of infilling of the land between Main Street and the 'back lane', beyond which the land begins to rise steeply, has continued with the construction of George Street. This street lay between Main Street and 'back lane' and was parallel to both, running from Campbell Street southwards for 195m and forming a cross-roads with Croft Street (which was a narrow lane, present but unnamed on the 1864 Map). George Street had a double ribbon of housing which was developed for 177m along its westerly side and for 94m in the centre of its easterly side. Like Alexandria and Renton, Bonhill also had its small addition of detached houses since 1864. 6 of these were along the Dalmonach Road which was opposite to Works of the same name. In addition another two detached houses lay with their frontages on Hillbank Street, formerly a farm track in 1864, close to where this street met Dalmonach Street, at the north-east of the Village. Apart from the extensions described above, very little building had taken place in Bonhill in the 1864-98 period. There may have been some reaction to the closure of the Kirkland Works but these were small works and they closed in the early 1860's, and as such

could not be a significant factor in this apparent stagnation. If the growth of the Dillichip Works was offset by the growth of George Street and Dillichip Terrace, it is possible that, with the abolition of tolls on Bonhill Bridge, commuting from Alexandria to the Bonhill Works close to the Bridge bacame more popular. This would have decreased the demand for housing in the Village by Printworkers.

Bonhill's amenities remained inferior to those in Renton and Alexandria as shown below.

| | 1864 | 1899 |
|---|---|---|
| Churches | 3 | 3 |
| Schools | 2 | 1[40] |
| Post Boxes | 0 | 1 |
| Post Office | 0 | 1 |
| Banks | 0 | 1 |
| Public Halls | 0 | 1 |

Jamestown 1899

Jamestown's growth since 1864 was largely in a southerly direction and was a response to the growth of the former Low Levenbank Works which had been extended from its cramped site squeezed between the main road and the nearby River to a second factory building on the east side of Main Street. By 1899 these combined works were known as the Milton Works. To the north of where the Railway line cuts through the village, developments had been piecemeal. There had been the addition of four houses, a Church and Church Hall since 1864, as well as some extensions to existing property, most notably the School. The larger, more southerly growth consisted mainly of the erection of further long terraced rows of 2 and 3 storey housing. The original row, which appeared on the 1864 Map, and was 130m in length, had been added to on the south side. A few metres to the south and lying along the same 'Main Street' was Levenbank Terrace, a row of 212m in length, and then Milton Terrace which was 195m long. These two rows were separated by a pre-existing lane. Another well established pre-existing road, the Auchencarroch Road, not only separated Milton Terrace from a further small terrace of 45m in

length but itself was the base for a 5th terrace, Napierston Terrace. The Auchencarroch Road left Main Street in a north-easterly direction, and the 165m long Napierston Terrace lay on its more southerly side close to the junction with Main Street. In doing so, the terrace lay very close to the small terraced row to the south of Auchencarroch Road on Main Street. The map shows that although these two terraces were separate buildings, their plots or gardens to the rear were joined, as was their long continuous row of small outbuildings, suggesting that although their main buildings were physically separated at the junction of the two roads, both terraces were built at the same time. Thus, both were regarded as constituting Napierston Terrace.

Jamestown gives the impression of being a very basic functional factory settlement, tied to the Levenbank and Milton Works. There was a contrast between the north and south ends of the Village. To the south of the Railway Line, lay the long terraced rows of workers houses, close to both works. To the north lay the detached and semi-detached houses along with the Church, Church Hall, School and Pub. Other amenities were scarce especially towards the extreme south of the settlement. The Post Office, the only other amenity to appear on the map other than the ones listed above lay just to the south of the Railway Station. The settlement, then, had few amenities, long rows of workers houses and a purely factory function. It therefore had very little chance of developing into a multi-functional village, without growth, and more importantly, diversification of its industry. In the 1864-98 period, the Works and subsequently the Village, had grown, but the strong dependence of the latter on the former, gave little hope for a balanced growth. The village was very much an Orr-Ewing possession. They built it and owned the Works which it depended upon. Their interest in it was purely as a dormitory for their labour force and as such its prospects were limited.

The Townscapes - 1864-99. The Main Themes.

Between the Census years 1861 and 1891 the population of the settlements of the Vale of Leven had risen from around 11,500 to almost double that amount. The urban growth, to meet the demands of the growing population was at its greatest in Alexandria. This was the only settlement, by 1899, which could have been termed a town. It had the only sizeable Middle Class residential area in the Valley, had more amenities than the other settlements and acted as a service and retail centre. Apart from the Works, which were the most important determinants of growth, Alexandria held several advantages. It had a central position with regards to the other settlements in the Valley. Renton was probably too near the growing Burgh of Dumbarton, to ever evolve as an important service centre. Alexandria, on the other hand, was in an ideal situation to draw consumers from Bonhill, Jamestown and Renton as well as from Balloch to the North. The site which Alexandria commanded was also most favourable to growth. It occupied a broad gently sloping area of ground close to a bridging point on the River and was on the main routeway from Dumbarton to Luss. The other settlements were situated on much narrower terraces between the River and hills. To illustrate this point, the hills show a steep rise beyond the 100ft (30.5m) contour on either side of the Valley. Alexandria was situated on ground which stretched for 740m (at its widest) as the crow flies, between the River and this contour. Renton occupied 370m, Bonhill occupied 475m and Jamestown occupied 530m. This forced ~~the~~ Renton and Bonhill into a linear growth pattern, whereas Alexandria grew round the Bank Street/Main Street junction. This nucleus acted as a focus for retailing, thus favouring this area as a retail centre. Alexandria then maintained and strengthened its premier position as the main centre of trading and industry for the Valley in this era. In the other settlements small scale urban growth had taken place. Although Jamestown's development was the most noticeable of the three when the 1864 Map is compared to the 1899 Map, it is accentuated by its small size initially. Being a very basic factory settlement, Jamestown's growth is an important indicator of the growth of the Works in this period, although its relatively late development within the growth years of the Textile Finishing Industry of the Vale of Leven meant

that it was never to develop into a real service centre. Another noticeable trend was the development of what can only be termed 'Middle Class' housing in the valley. This was most prevalent in Alexandria but also occurred on a small scale in the other settlements. The location of these are significantly similar in each settlement. They tend to be situated 'behind' the Villages, that is, further away from the River and Main Road, in the more secluded parts of the townscapes. In Renton and Alexandria, the west bank settlements, these tracts were to the west and south of the urban areas. In Bonhill and Jamestown, the east bank villages, they were found in the east and north. In contrast, these two east bank settlements had long rows of Workers' houses lying to the south. These rows had been constructed in the 1864-90 period.

In conclusion, Alexandria emerged as the most important industrial, retail and residential centre in the Valley. It had an important Middle Class element which helped it to maintain the position of dominance it had held since at least 1864. Renton and Bonhill, the next largest settlements, were still important centres of the Printing and Dyeing Industry, but had not grown as important retail centres: roles held by Alexandria,and Dumbarton, to the South. There is also evidence to suggest that they were, in a small way, already acting as dormitory settlements, that is, providing residences for people who worked elsewhere. In this case some of the Bonhill and Renton residents worked in the growing shipbuilding and ancillary engineering industries of Dumbarton. Jamestown was the smallest and the least balanced of the settlements. It was a very basic factory village with few retail outlets, with most of the people involved in Printworking. All four settlements had grown with the growth of the Printworks; and all four were to suffer when the Industry went into decline. Although it is not obvious from the Ordnance Survey Maps, the decline was well under way by 1899 and is reflected in the drop in population of the Valley between 1891 and 1901 (from around 19000 to around 18000). Another trend worth note, which is not evident from a map analysis is that people were by 1891 moving out of older parts of the settlements (e.g. North Street in Alexandria and Burn Street in Bonhill) into newer areas (e.g. The southerly end

of Main Street and Wilson Street in Alexandria, Dillichip Terrace in Bonhill). This modern phenomenon of movement to the periphery of towns was highlighted in 1891 by a Lennox Herald journalist in his rudimentary analysis of district census returns where he makes mention of people "spreading out" and of districts where property is old where "there is considerable decrease in the resident population"."[41]

AN UPDATE OF THE 1ST EDITION OF THE ORDNANCE SURVEY; 1879, SCALE 1:126,720

This Map which appeared in Joseph Iriving's Book of Dumbartonshire, was a revision of the 1st Edition of the Ordnance Survey Map of 1864, described earlier in this Chapter. At a scale of 1:126,720 (2 incles to 1 mile), it is not nearly of a large enough scale for anything other than a very general analysis of the urban morphology of the Vale of Leven. It is, however, a useful tool when used in conjunction with the larger scaled 1st and 2nd Editions of the Ordnance Survey. The urban changes which had taken place between the publications of these two maps of the Vale of Leven had been extensive, and the 1879 map is a useful indicator to when many of the larger plan units had been added, that is, before or after 1879. It cannot stand on its own as an analytical tool and therefore has been included in this section after the discussion of the Ordnance Survey Maps.

The factories in general appear on this Map to have been larger than in 1864 but smaller than they were in 1899, suggesting a steady growth over this period. The direct use of the Railway, in the form of sidings leading into the Works, which only Croftengea (by 1879 part of the Alexandria Works) had on 1864, was extended to all the Works with the exception of Low Levenbank, Ferryfield and Cordale. These three had joined the network by 1899, by which time Low Levenbank was part of the Milton Works.

Alexandria, in 1879, was still without Middleton Street, Wilson Street and the additions to the South end of the town which are in evidence by 1898, although building had extended slightly beyond the 1864 southerly limit of Main Street, which was its junction with Bridge Street. Renton had hardle any noticeable growth since 1864, and therefore any additions catalogued in the 1898 description came after 1879. In Bonhill, George Street had

been built, but had very little building coverage (none on its east side). However, Dillichip Terrace, the most extensive addition to Bonhill's morphology in the 1864 to 1899 period, had not yet been built. In Jamestown, Levenbank Terrace had been added to the one terrace standing in 1864, but the other four additional terraces which appear in the 1899 Map are missing.

Thus, this Map, although of a smaller scale, shows that most of the developments between 1864 and 1899 occurred mainly after 1879. Due to the decline in the Industry, the drop in population between 1891 and 1901 and the dates which were carved on many of these still existing buildings, it can be concluded that most of the developments came in the 1880's. One exception to this general rule was the extension of the Railway network which occurred within the 1864 to 1879 period.

Chapter V - Footnotes

1. This list of Maps is not a complete catalogue of all pre-20th Century Maps of the Vale of Leven. There are others such as Roy's Map which show the valley in its pre-industrial state, but the Ross' Map of 1777 was considered to be the best example of a Map showing the area on the eve of industrialization.

2. These would have been no more than tracks with, at best, gravel or crushed rocks as a base (See Chapter I).

3. However Ure D (1794) Agriculture in the County of Dumbarton, P.19 states that upto "30 or 40 years ago none of the county was inclosed. Since that time inclosing of land has been daily on the increase".

4. Whyte, A & Macfarlan, D 1811. Op. cit. See also Ure, D., 1794. ibid.

5. Thomson, C.M., 1972 The Vale of Leven, Bleaching, Printing and Dyeing Industry. Notes and Sketchmaps, P.6

6. See P.36, Map (4).

7. Ferguson, J., (1927) The Old Vale and its Memories,Pp.9-10.

8. Thomson produced a pamphlet outlining his proposals; a copy exists in Murray, D., Collections for a History of Dumbartonshire (housed in Dumbarton Public Library).

9. Conzen, M.R.G. (1969) Alnwick Op.cit. P.123.

10. According to Valuation Rolls for 1841 (kept in Strathclyde Regional Archives) Dillichip is shown to be valued highest. Cordale and Dalquhurn are valued 3rd and 5th highest of the 10 Works in existence (with values of £450 and £420 (Scots) respectively).

11. This was the publication date of the Map. The surveying was done upto 5 years before this.

12. See Bremner, D. Op.cit.

13. This Works is, however, named in the 1899 2nd Edition of the Ordnance Survey.

14. Independent building coverage, i.e. where buildings have frontages on only one street. In this case Susannah Street's buildings were not independent as they also fronted Main Street.

15. A large house owned by a wealthy farmer according to the 1851 Census Sample.

16. Conzen, M.R.G., (1969) Op. cit. P.123.

17. This row appeared to be longer on the east side in 1824 than in 1841, adding weight to the possibility that only part of Bonhill was shown in 1841. It is the length of this row as it appears on the 1841 Map which is given in the text as 276m, whereas the 1824 Map shows it to be 442m long. There is, nonetheless, a considerable contrast between this length and its 704.7m length in 1864.

18. Some buildings contained several houses.

19. See the front cover of Agnew's book. Op. cit.

20. McLeod, D. Op. cit. P.129.

21. Both Levenbank and Low Levenbank belonged to Ewing. They were amalgamated to form the Milton Works.

22. In both Renton and Alexandria managerial houses were built close to the works.

23. See Sherky, E & Bell, W (1955) Social Area Analysis.

24. Evidence for this comes from an analysis of the Ordnance Survey Maps and the C.E.B. samples.

25. According to Map evidence 1864, it was known to belong to the North British Railway Company.

26. See figure 5:5.

27. O.S.A. 1793 - Reprint Vol.IX (1978) P.28.

28. For a qualification of this statement see the next section of this Chapter "Industry - Growth and Decline 1864-99".

29. Thomson, C.M., Op.cit. P.8.

30. (E) is used to denote an East Bank location.
(W) " " " " a West " "

31. L.H., May 9th, 1868.

32. Campbell, R.H., (1980) The Rise and Fall of Scottish Industry, P.58 (both quotes).

33. See Discussion of 1879 Map at the end of this Chapter.

34. This development does not appear on the 1879 Map.

35. As in footnote 38, many of the developments present in 1899 do not appear on the 1879 Map. Further evidence was also gleaned from existing buildings which have dates emblazoned on the superstructure. The drop in population between 1891 and 1901 also suggests that an extensive building programme would have been unlikely in this decade.

36. L.H., 20th March, 1869.

37. The Banks in the Vale were of 2 types (a) "Penny Banks" or savings banks, the function of which was to accomodate the small savings which people made, and (b) Commercial Banks, notably the British Linen Bank which provided support for the textile industry.

38. Whitehand, J.W.R. & Alanddin, K., Op. cit. P.118-120 .

39. Agnew, J. Op. cit. P.20.

40. Only one school in Bonhill appears on the 1864 Map, but a school in the Dalmonach Works, not shown, was closed down in 1870 (See Lennox Herald, June 25th, 1870). The other school , probably Public one, had been moved and extended by 1899, in a trend towards National & Public Schools given impetus (in all the villages) by the 1872 Education Act.

41. L.H. May 16th, 1891.

Prelude to Chapters VI, VII and VIII.

The next Chapter deals with the Vale of Leven in 1851 and the following two with the area in 1871 and 1891. In all three Chapters the main focus is the population; its age and sex structure, its occupations and its origins are examined in particular. The information for this comes from the 10% samples of the Household Schedules for the urban area of the Valley in each of these three census years, and when percentages and numbers of people involved in various occupations or for people with different places of origin, for example, are mentioned in the text, it must be borne in mind that these figures refer to the 10% Samples collected from the original enumeration books kept in Register House, Edinburgh. To complement this data, details of the industrial and social life of the Valley are added to help explain some of the observed patterns which come to light in the examination of the Census Data.

1851

By this date the Vale of Leven had already experienced a considerable flow of migrants, particularly in the 1831-41 period, as the population graph, fig 9:1 shows in the steep rise in population between these two dates. The Minister of Cardross Parish, which included Renton, wrote in the New Statistical Account around 1840, of "the influx of strangers to the Works on the Leven"[1] These strangers had come to work in the Printworks and the villages of the Vale were colonies, built to house these workers, and similar in type to settlements studied by Marshall in North West England as the following quote illustrates

> "As is well known, water powered manufacturing industries often demanded a compact, specialised labour force on or near the site of the manufacture concerned. The dispersal of such sites on streams or in river valleys sometimes forced the employer to build up a community away from any previously existing source of labour supply"[2]

Only Bonhill could have been said to have been a village before the growth of the Works, but it too was swamped by migrant workers and its character and structure were radically altered. Joseph Irving, writing in 1859, said that the size of Bonhill village had trebled in the last forty years[3]. A small hamlet known as 'the Grocery' because it was the site of a small grocery shop, may have existed at Alexandria previous to the growth of the Works and the building of the first workers' rows of houses, but it was hardly a significant factor in the development of the village.

Meanwhile, the Industry was in both a transition and expansion phase. In the New Statistical Account for Bonhill, the Rev. William McGregor made the following points concerning the Industry; firstly, that the number of Works had greatly increased since the publication of the previous Statistical Account in 1791, secondly, that printing, bleaching and dyeing were all carried out within the "same establishments", whereas beforehand the processes were performed in separate factories, and thirdly, the information he imparts on manpower, machinery and output of the Works shows that water as a direct source of power was still being used alongside small steam driven engines.

Ferryfield and Dalmonach Works both had printing machines, presumably of the cylinder type invented by Bell in 1785, though the block printing method, which was a slower and more often manually operated system, (whereby one engraved slab covered in dye was pushed into contact with cloth which was sandwiched between this moving block powered either by hand or in some cases by a water or steam powered engine, and another static block) was still in widespread use[4].

In 1850, one year before the Census, two important events had taken place; firstly, J Orr Ewing had amalgamated the Levenfield, Croftengea and Charleston Works[5] on the west bank of the River to form the Alexandria Works (see Fig. 5:8). By this time he already owned the Millburn Chemical Works which supplied chemical dyes to the Printworks. The Charleston Works, unlike Levenfield and Croftengea, was not directly involved in the bleaching, printing and dyeing of cloth but was an engraving works where patterns were engraved onto printing blocks or copper rollers which were used in the "manual" and mechanical printing of cloth respectively. As a result of the amalgamation, J Orr Ewing had works producing dyes and 'machinery' for the Printing and Dyeing Industry as well as owning Levenfield, the first bona fide printworks on the Leven, and Croftengea which had started life as a yarn dyeing establishment but had been converted to cloth printing in 1845. This rationalisation of the west bank's Works around Alexandria was a measure of the increasing efficiency of the Works whose output and workforce were also rising[6].

The second important event which took place in 1850 was the building of the railway from Bowling to Balloch by the North British Railway Company. This afforded access to Glasgow by steamer and to the Forth and Clyde Canal which meets the Clyde at Bowling. By 1856 a branch line extended eastwards from the Vale of Leven to Stirling via the then new community of Jamestown, and was built by the Forth and Clyde Railway Company. However, it was not until 1858 that the Balloch/Bowling line was extended to Glasgow[7] and thus provided a straight run to that city for goods entering or leaving the Leven Valley without a break of bulk point at Bowling. Just how soon it was after the introduction of the railway that all the companies on the Leven

took advantage of this fast and efficient form of transport is not known, though the topic is discussed fully in Chapter V. Agnew, in his Story of the Vale of Leven[8], says that from 1861 onwards sidings from the Forth and Clyde Railway went into Levenbank, Milton Yarn Works and Dalmonach Works, but there is little evidence for the existence of sidings in that year itself, according to the 1864 Ordnance Survey Map (see Chapter V) which only shows definite links with Croftengea from the North British Line. There can be little doubt though that the Railway was built first and foremost to serve the Bleach, Print and Dye Works of the Vale of Leven, as there was nowhere else in the vicinity which had any industries of comparable size, and passenger demand would not have been high enough to warrant the building of either line. The Railway in turn obviously provided a boost to the Industry[9].

Population. Age and Sex Structure

The preceeding paragraphs in this Chapter show that by 1851 the Industries of the Vale of Leven were well established as printworks and the transition from manual to mechanical printing had already begun, though full dependence upon steam power was, for most works, still 20 years away, despite its earlier introduction into the spinning mills.[10] The process of rationalization and amalgamation which is to be expected when an agglomeration of small, similar works begin to expand, was also under way with the smaller of the Works being taken over and combined into larger and more profitable units. The Industry was thus well into the climb which would take it to its zenith some twenty to thirty years on[11].

An expanding Industry, despite increasing mechanization, needed an expanding workforce, but by 1851, a great influx of migrants to the Vale of Leven had already taken place as the New Statistical Account states and the population figures show. This point is further emphasized by the Population Pyramid based on a 10% sample of the households of the villages (fig. 6:1). The Pyramid has a wide base and a narrow top, fairly typical of most of Great Britain at this time and perhaps typical of many towns and villages in developing countries to-day[12]. It shows a youthful population, with just over 35% aged 14 years and under. Infant mortality was high and life expectancy was

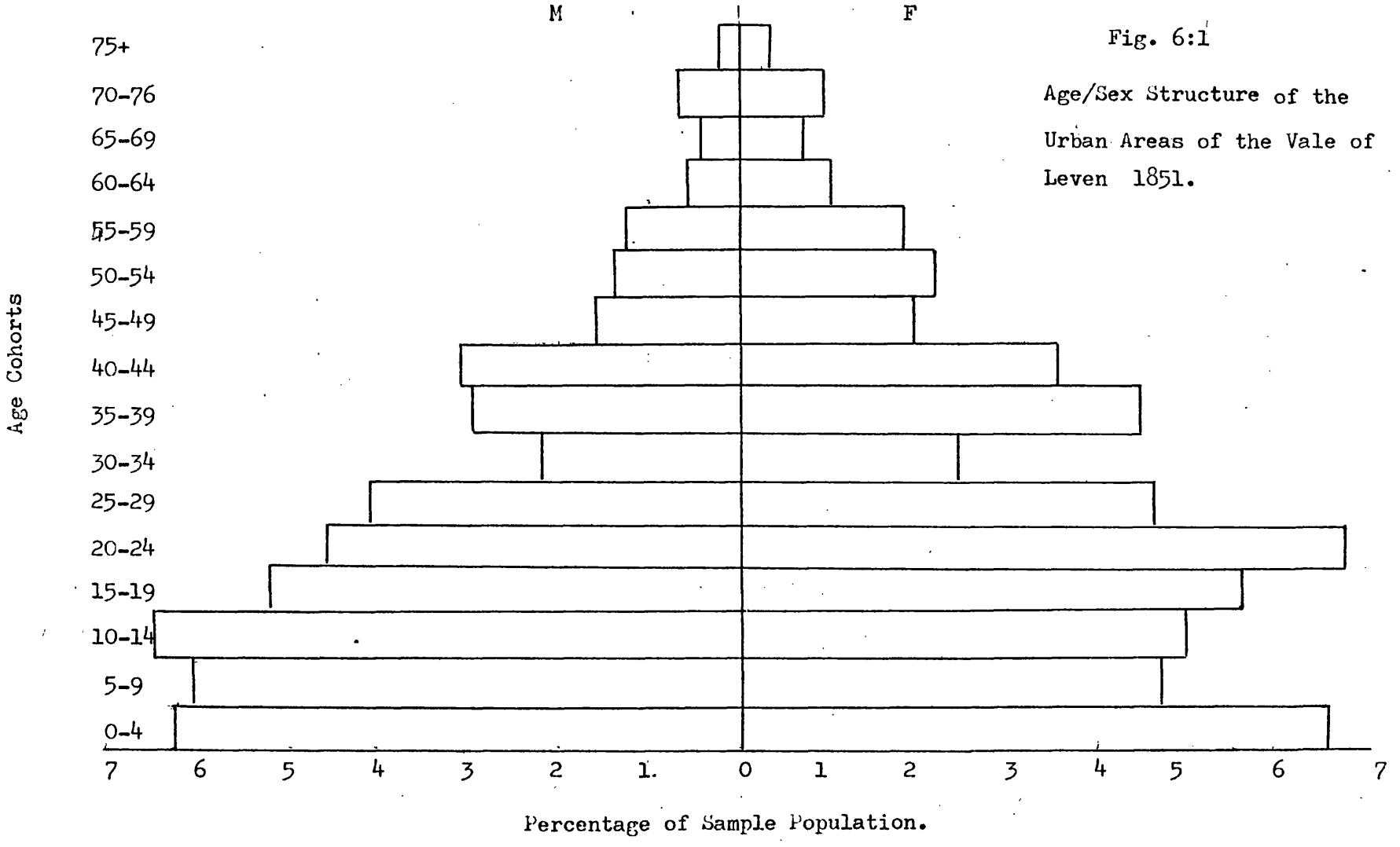



Fig. 6:1

Age/Sex Structure of the Urban Areas of the Vale of Leven 1851.

low by 20th Century standards, evidenced by the rapidly tapering Pyramid and the fact that under 5% of the population were 60 or above. A bulge in the Pyramid among both Males and Females in the 35-39 and 40-44 age cohorts, together with perhaps a more severe narrowing than normal in the 30-34 cohort, distorts the otherwise classic picture of the population structure of the mid-19th Century British Town. The explanation for this distortion is found in the migrations of the 1831-41 period when many people, especially young adults, were attracted to to the Vale of Leven to work in the emergent industries of Bleaching, Printing and Dyeing. Therefore, those people in the 35-44 age group in 1851 would have been in their late teens and early twenties at the time of the migration, that is, the most mobile age group, the age group most susceptible to migration. There is little or no imbalance in the sexes of those in this age bracket. In many cases migration is regarded as the prerogative of the young male, but there are cases in the sample where both partners in a marriage have their origins outside the Vale of Leven, 27% of all sample households were those where both, or where a solitary parent bringing up a family on his or her own, had their origins outside of the Vale of Leven. There are also the predictable cases of males from outside the area marrying indigenous females. Two explanations are offered for the balance of the sexes in the 35-44 age group. Firstly, by 1851 many of the young males who had immigrated 10 to 20 years earlier would have sent for their wives had they left them behind in their place of origin whilst they sought work in the Vale of Leven. Secondly, and more importantly, unlike, for example, mining towns of that era such as Kilbirnie, there were many jobs available to females in the Printworks and although there may have been some resistance to working (outside of the house) among women in 1851[13], many young single women came into the Vale of Leven to work in the Print-works, especially from the surrounding parishes. By the time these women were in the 35-44 age group, many would probably have given up work to rear a family, as the average age of female Printworkers in the sample is 20 (the oldest being 40, the youngest 7). The narrowing of the pyramid in the 30-34 cohort probably represents an ebb in the number of immigrants, the people in this group being too young, and their parents too old,

to have participated in the large influx of 10-20 years before. The large number of youths and children of ages 19 and under is difficult to explain. Some of the explanation may lie in the Victorian habit of having large families, but to couple this with an increase in the level of public health and hygiene by way of explanation would be foolhardy, as improvements here were not significant till later on in the 19th Century. As Slaven states

> "the root causes of population growth therefore seem to lie in expanding employment opportunities, though the interlinkage between the demographic and economic factors is not clear, and is much more complex than contemporaries imagined." 14

Here then was an area of employment opportunity where the birth rate was high, remembering that many of these children were of immigrant parents but were born in the Vale of Leven. It was a young thriving community in contrast with the areas of out-migration in the upland parishes in Central Scotland and the Highlands.

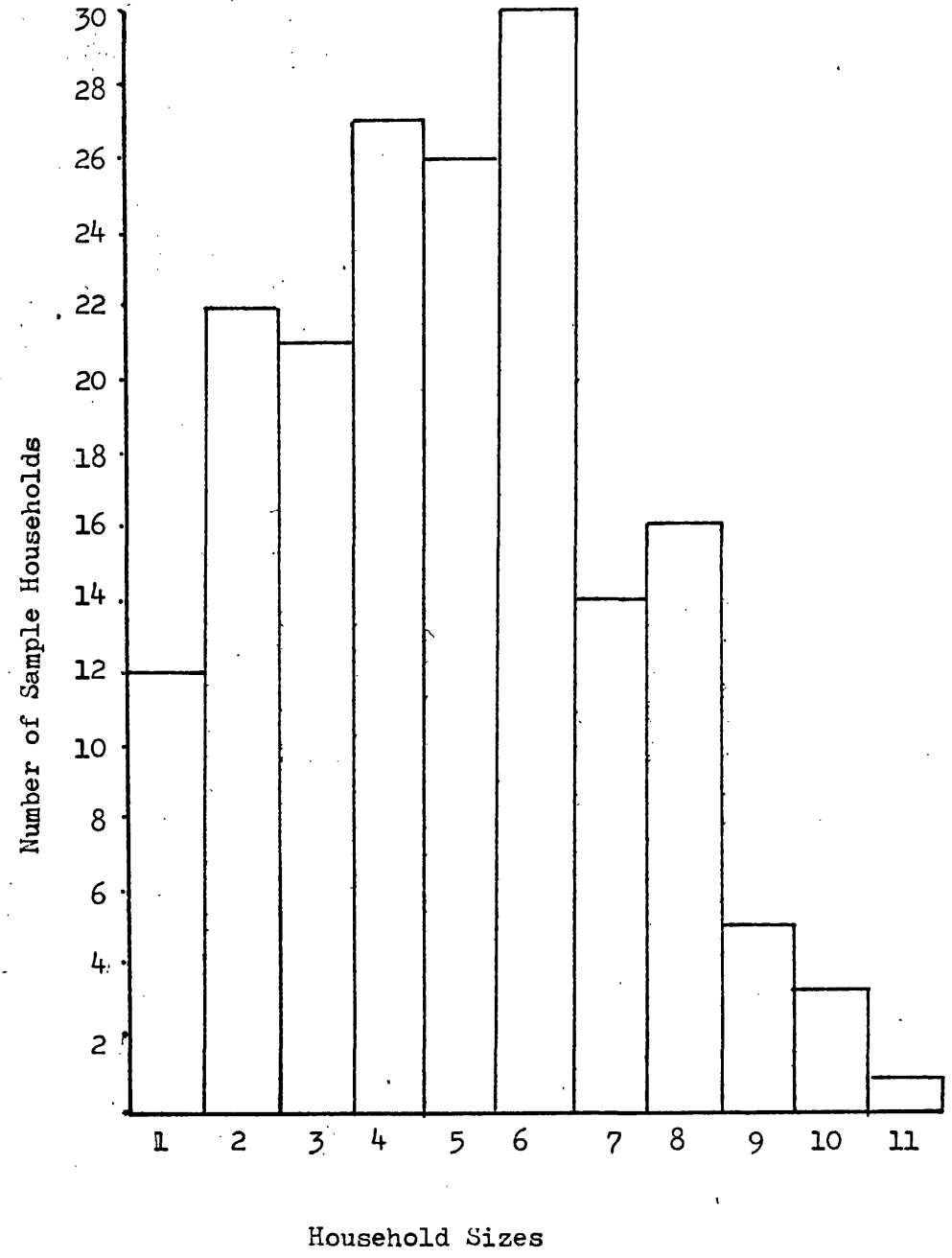
Household Size

Within the 10% Sample of Household Schedules for the urban part of the Vale of Leven there were 867 people residing on the day of the Census in 1851; excluding those designated as 'Visitors' (see Chapter III) there were 855 people in the 178 households, representing averages of 4.88 and 4.80 people per household respectively. Excluding visitors, the Mode is 6 per household and the Standard Deviation, using the formula

$$SD = \sqrt{\frac{\Sigma(x - \bar{x}^2)}{n}} \left( = \sqrt{\frac{914.68}{177}} = \sqrt{5.16} = 2.27 \right)$$

is 2.27, which being a small number means that the values are clustered around the Mean. When taken against the large proportion of children in the Sample, most of whom would have been expected to have lived with their parents, and the economically necessary Victorian practice of taking in lodgers which was widespread in the Vale of Leven, the average number of persons per household, that is the Mean, was surprisingly low for an industrial area. However, these 'Households' may only have consisted of one or two rooms within a larger dwelling house. (The use of the word Household is a controversial one, and is discussed in Chapter III). Nonetheless, housing

Fig. 6:2 Household Sizes 1851



conditions in the Vale of Leven may have been a lot better than in other industrial areas, particularly than the worst parts of Glasgow, as it was a small urban area transposed into a rural setting where there was plenty of room for housing developments to take place. Though housing was rarely, if ever, provided in anticipation of a flood of immigrants, rather, as the Old Statistical Account for the Cardross Parish suggests[15], jobs became available, people immigrated and lived in cramped conditions till eventually the situation eased as houses were provided. This is amply demonstrated in the previous Chapter where only minor changes have taken place within the urban fabric between 1824 and 1841 (see figs. 5:3 and 5:5) and yet the population between 1821 and 1841 rose from around 3,000 to about 9,000. The Histogram, fig 6:2, shows the Mode, that is the value which occurred most often, to be 6 people per household. The highest values by far are those with 4, 5 and 6 per household and the reason that the Mean is 4.80 is that the number of 1, 2 and 3 member households greatly exceeded those of 7 and above. Therefore, the Mean could be regarded as somewhat misleading when taken on its own as a representative figure of numbers per household, as 6 member households were the most common occurrence within the Sample.

Lodgers, Visitors and Relatives

As was stated in the previous Section, lodging was an economic necessity for both the lodgers and those who took them in. Lodging in the Vale of Leven cannot simply be explained away as a result of cramped conditions where people were living with others while they waited for accommodation of their own. Most lodgers were young single people who could not have afforded, nor perhaps wanted, their own accommodation. In the sample, 18% of households had lodgers according to the Census Enumerators Books, and yet the real number of households with lodgers, that is, those paying for their accommodation who are not part of the immediate family group as sons and daughters of the head of the household, must have been greater than 18% if other relatives and visitors are taken into account. 21% of the sample households had visitors and/or relatives other than the immediate ones outlined above. Many of the relatives would not have been lodgers in the complete sense, but would have contributed to the

household in some way. Some of course were too young to contribute, being young nieces, nephews and grandchildren of the heads of households. The grandchildren fall into 3 categories; (1) those whose parents do not reside in the household; (2) those with one parent residing in the household (in this category were children of widowed parents, as well as a number who were probably illegitimate, being the sons and daughters of unmarried daughters living with their parents) (3) those with both parents living with a set of grandparents.

It is also worth noting that 42% of that section of the households in the community which did have relatives and visitors residing with them (8.8% of the total household Sample) also took in lodgers. This underlines the importance of the economic contribution which lodgers made to the households of the Vale of Leven in 1851, as well as perhaps indicating the contributions which were also made by working relatives and those in the dubious 'visitor' category. In contrast to this only 4.5% of the sample households had servants. Employing servants was a common Victorian habit among the Upper and Middle Classes, but the number employed in this capacity in the Vale of Leven is low, as would be expected of a small 'industrial colony'[16]. Among the occupations of the Heads of Households who employed servants were, Farmers, a Minister, a partner in one of the Printworks, a Vintner and a Flesher and Spirit Retailer.

Male Occupations

In an area where the existence of the villages was a direct consequence of the Works it is perhaps stating the obvious to say that the bulk of Male workers were involved in the Bleaching, Printing and Dyeing Industry, but within that large group were several important sub-divisions which are given further explanation in this Section. Bleach, Print and Dye Workers represented only one major group of workers, the other groups in the male section of the work force were put into one of the following categories:- General Labourers, including Gardeners and Woodcutters; Agricultural Labourers; Building and Construction Workers, including Joiners, Slaters, Stone Masons and their Labourers; Retail Trades; Professional and Managerial; Clothing Trades; and Transport Workers.

The Histogram , fig 6:3(i) shows that 56.7% of the working males in the sample were employed in the Works. The figure breaks down to 50% fully fledged tradesmen or labourers and 6.7% apprentices. Of the 160 men who constituted the 56.7% Bleach, Print and Dyeworkers of the sample, the main sub-divisions were as follws:-

27 classed themselves, or were classed as 'Labourers at the Printfield'

35 classed themselves, or were classed as "Workers in the Printfield'

5 classed themselves, or were classed, as 'Labourers at the Dyeworks'

4 classed themselves, or were classed, as 'Dyeworkers'

5 " " " " " " 'Turkey Red Dyers'

9 " " " " " " 'Tearers'

One important contrast which emerges in the figures for the Printworks is that between those who were involved in Mechanical Printing and those who were involved in 'Manual' Printing. There were 3 Machine Printers, 1 Cylinder Printer, 1 Press Printer and 1 Machine Engraver on the mechanical side, and 18 Block Printers and 16 Block Engravers on the manual side. There were certainly more people involved in the manual than the mechanical processes at this time, but both the numbers and the terms used above need further discussion and explanation. In 1851, Block Printing was still the main way of printing cloth. A block which had been engraved with the required pattern by the engraver in the engraving works was prepared with a dye paste by the 'Tearer', usually a young boy or girl. The cloth was then placed under the block which was then pressed down on it by the block printer. Block printing was gradually superceded by Cylinder Printing, though some specialised work was still carried out by block printing long after it had gone out of every day use. Cylinder Printing was invented by W. Bell in 1785 and involved an engraver who engraved the desired pattern on to the cylinder, which was prepared with dye and the cloth was fed into contact with the revolving cylinder, rather like clothes in a domestic wringer. The situation in the Vale of Leven Works at this time indicates that in terms of numbers employed at least, block printing was of greater importance than Cylinder Printing and it

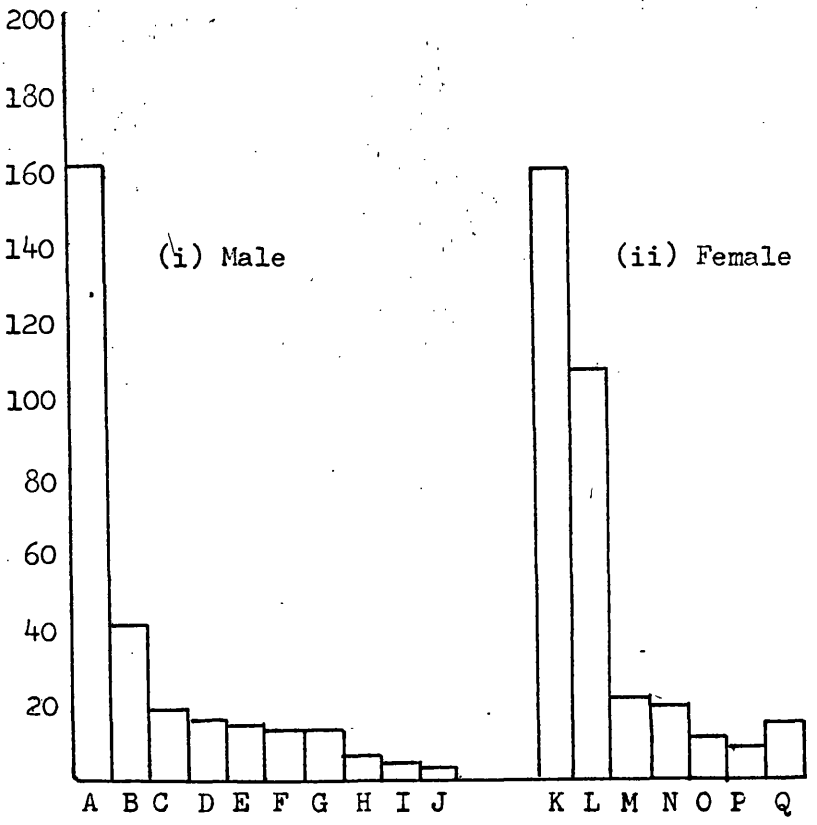
was probably more important in terms of output too, even bearing in mind that fewer operatives were needed in the mechanical process. The number of engravers is the critical factor here, as all engraving had to be done manually. The figures show that in the sample there were 16 'Block Engravers' to only 1 'Machine Engraver', indicating the greater demand for blocks than cylinders in 1851 even taking into account that more blocks would be needed to print a length of cloth than cylinders printing a piece of corresponding length. However, the growing trend towards mechanical printing was throwing the block printers out of work and some of them went to Paisley to find work according to the Dumbarton Herald of October 2nd, 1851.

The second largest group of Male Workers were involved in the building trades. They were obviously necessary in any growing community, and the amount of building which was carried on in the Valley around this time can be evidenced by comparing Maps and Plans of the area around this period; see for example Chapter V.

With 6% of the sample workforce were the Professional and Managerial group which, in this case, covered many diverse occupations including Doctor, Dye Work Owner, Minister and Banker. The small percentage, 5.3%, involved in the Retail Trades suggests that there were a very limited number of retail outlets available to the villagers. Factory shops[17] were known to operate in the Vale of Leven and this may have discouraged prospective retailers, though the entire population of the Vale of Leven in 1851 numbered only 10,000 and the villages were essentially factory communities, emergent colonies with a poorly developed service sector. In the sample only 4.6% of the working males were 'Agricultural Workers', but this figure is understandable when it is considered that only the village schedules were analysed in this study and the 'landward' schedules, that is, those outside of the villages in the rural areas of the Parishes, were omitted, though it is possibly a measure of the amount of urbanization which had already taken place in the Valley when it is considered that there were only 2 from 11 landward Enumeration Books in Bonhill

Fig. 6:3

Occupations 1851 - from 10% sample




Key

A Bleach, Print and Dye Workers
B Building Trades
C Professional & Managerial
D Retail
E Agricultural Workers
F Clothing
G Transport
H Retired
I Watchmen
J Paupers
K Housewives
L Bleach, Print & Dye Workers
M Servants
N Clothing
O Professional &Managerial
P Paupers & Annuitants
Q Others

Parish, and that Renton accounted for 4 of the 8 books in Cardross Parish. Another factor which operated against the settlement of Agricultural workers in the Villages was that the houses were essentially built at the instigation of the Printworks Owners for the Printworkers, and were not there to accommodate Farm Workers who were more commonly provided for on the surrounding farms. However, two of the Farm Owners were in the Sample and therefore lived in the urban area of the Vale of Leven, possibly because they preferred the greater amenities offered in the Villages, which, though few, were better than those to be found in the surrounding countryside. Though it seems more likely that their large homes were slowly surrounded by houses as they sold off land for development, as was the case of Mr. Whylie, a wealthy farmer and Bank Agent who lived in the large house called 'Oakbank', which is discussed at length in Chapter V . Naturally, the farmsteads occupied the prime sites on the lower valley slopes, till they were either replaced or incorporated in the growing villages.

If all workers in the Male Sample Group who were involved in Transport are taken together, then they account for 4.5% of the total. 2.1% of the Sample Workforce were involved in Carting or Boating, and the other 2.4% were Railway Workers. Both groups were providing a service essentially for the Works. The Railway had only reached the Vale of Leven one year before the Census of 1851, and it is not surprising that all of those employed by the Railway in the Sample were not natives of the Vale of Leven. The 4 Railway Labourers in the Sample were all Irish, underlining the already recognised role which these immigrant workers played in the development of the Railway not only in the Vale of Leven but in Scotland as a whole.[18]

Female Occupations

Despite the obvious need within many families to supplement the basic income normally earned by the father by taking in lodgers or by sending children out to work, the largest group within the Female Occupations are those who have been classified or who have classified themselves as being 'Housewives', or as having 'No Employment' or as being 'Housekeepers'. This last sub-grouping is an ambiguous one, as it could mean either

housekeeping without payment within the family home, or housekeeping with payment outwith the family home. Therefore women in this group could be classified as either housewives or servants. The large number of wives of the Heads of Households, with young children to look after who came into this category leads to the conclusion that most of these women were housewives within their own homes, rather than part of a large group who earned money in other people's houses, and were thus classified as such. Where lodgers or servants were classified in the Enumeration Books as 'Housekeepers' then it is assumed that they were paid for their work, either in hard cash, or in part cash, part board and lodgings and thus fall into the Servants category. In addition to the large 'Housewives' group was another group of younger females whose ages ranged from 8-17 and who were not directly employed nor at school, being classified in the Enumerators Books as being 'At Home' . The Histogram, fig. 6:3(ii), shows therefore that the Housewives group, as defined above, accounts for 49.5% of the female employed in the Sample (housewives for the purposes of this study are considered to be in employment), despite the measures which had to be taken to increase the family income as described earlier in the paragraph. This high percentage could have several explanations. It is unlikely that the reason was lack of employment opportunities. Very few people in the Enumeration Books for the Vale of Leven in 1851 were classified as unemployed and women and children were a good source of cheap labour.[19]. Alongside this is the fact that the next biggest sector in fig.6:3(ii) consists of those employed at the Works. A reluctance or a tradition among women against working is also an unlikely explanation, for in the Scotland of 1851, as in earlier times, women and children were expected to contribute to the economic life of the family as well as men. Part of the explanation may lie in the size and structure of the family. Young women had young families to look after, many of the families were large and would have required a lot of work in tending to them, and children as young as 7 and 8 years of age were employed in the Works, thus supplementing the income. Older women often had grown up sons and daughters employed in the Works, many women and their daughters may have done some part-

time work of the type discussed below in the Clothing Industry sector shown in fig (ii). Taking in lodgers may also have been seen as a suitable alternative to work for the women with families to look after.

However, a sizeable proportion of the females of employment age did work in the Printworks, (32%, see fig. 6:3(ii). Very few, if any, had skilled or semi-skilled jobs that are found in the Male Sector such as Engraver or Pattern Designer, and there were no apprentices among the women. There is a big drop in numbers employed to the next group which were the Servants (6.3%). 5.3% were employed in the Clothing Industry, mainly as 'Dressmakers' where much of the work may have been done at home either independently or on a contract basis where cloth was supplied by a contractor to the women and they were paid for each garment they made. 1.5% of the women workers were classified in Professional and Managerial jobs. These were all Teachers, with one exception a 'Landowner' who most probably did not receive a professional or managerial salary. The remaining 2.5% includes annuitants and paupers as well as the small numbers who were employed in diverse occupations such as farm work, shopkeeping, and letter carrying.

Male and Female Occupation differences

There are several obvious differences in the Male and Female Occupation structures within the Sample Population, see figs 6:3(i) and 6:3(ii),which require discussion. The reasons behind the large percentage of housewives has already been discussed in the previous section, but there were other differences in the structures which are important, for example, the percentage of women doing unskilled jobs in the Printworks, which was far greater than the percentage of men in unskilled positions in the Works at this time, a fact not brought out in the Histograms, figs.6:3(i) and6:3(ii). Then as now the Building Trades were an entirely male preserve, but less predictably 5.3% of males employed were in the Retail Trades, whereas only one woman could have been classified as such, though wives and daughters of shopkeepers no doubt helped out in the shops, none here in this Sample for 1851 were classified as Shop Assistants. Another indicator of the male domination in the society are the numbers who were in the Professional

and Managerial Groups for the respective sexes, 6% of the males against 1.5% of the females, there were no female Bankers, Doctors or Works Managers, only women Teachers. For both sexes though, a dangerous dependence on the Printworks for employment is recorded with very few other industrial jobs available. Even sectors such as Transport relied heavily on the Works for business and the remainder of jobs in the service sector of employment were scant. Many females in particular had to rely on work such as 'dressmaking' on a casual at home basis to earn money.

School, At Home and Unemployed.

Not included in the figures for employment structure for either males or females, were the numbers of young people between the ages of 5-19 who were classified in the Enumeration Books as being 'At School' or 'At Home'. 60 boys out of a sample total in this age range of 157, and 43 girls from 134 in this range, come into this category. The other 97 and 91 respectively were employed. Of the 60 boys, 52 (33%) were at school, whilst 8 were at home, in fact no-one in the at home group of boys was above 13 years of age, which suggests that there were plenty of job opportunities available to teenage boys at this time. 13 of the 43 girls were at home and 30 or 22% of those in this age range were at school. There were two adult males unemployed. 3 males had 'retired'. The low numbers in both cases indicates that employment, though subject to fluctuations, was available to most males at least, but that very few could afford to retire, though some may have been forced to do so due to old age or illness[20].

Place of Origin

The number of mass and individual migrations and the mobility of the population in 19th Century Scotland were naturally very important factors in the peopling of the Vale of Leven where the villages were grafted onto a previously rural environment with a low population, but the picture is a complex one as Slaven points out when dealing with Dunbartonshire's situation in 1841

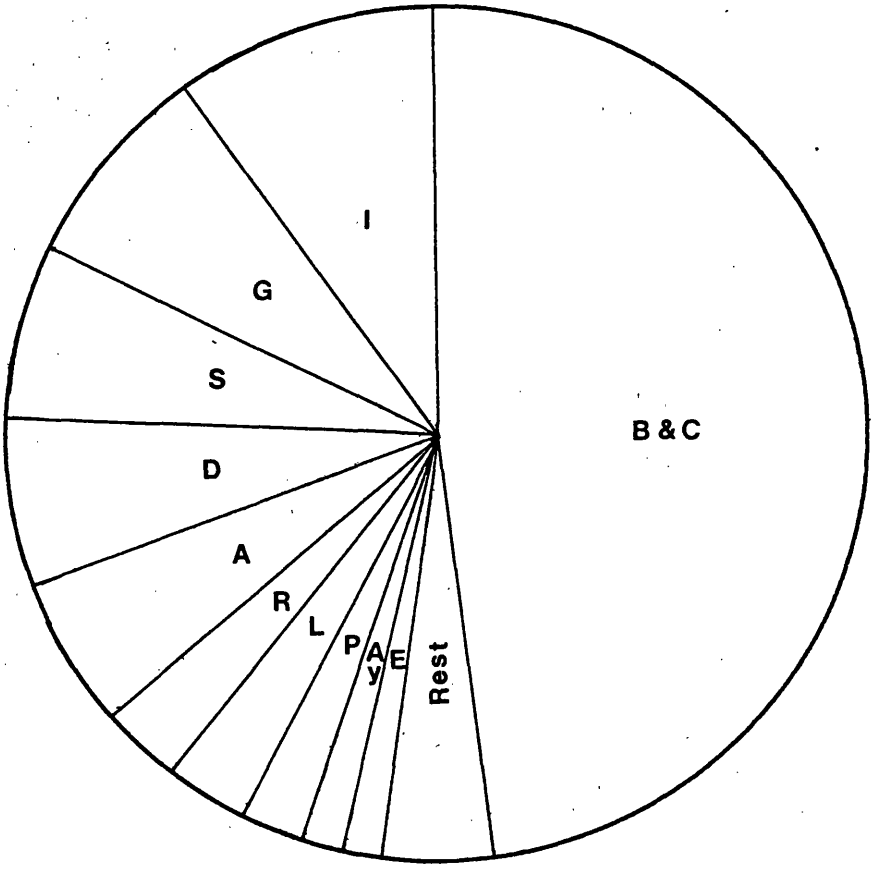
> "There appears to have been a very high turnover of people the incomers just exceeding the departures. Thus while only 19% of Ayrshire's population were incomers in 1841, the proportion was 50% for Dunbartonshire, this compared with 29% for Renfrewshire and 40% for Lanarkshire including Glasgow. The great mobility of the people was linked to

> the expanding employment opportunities and this may have been heightened in Dumbartonshire since it was a transit zone between the Highlands and the Islands on one side and the expanding industries of Clydeside on the other" 21.

It is impossible to deal with departures in any depth when presenting a static view of the Vale of Leven's population structure around Census time in 1851. However, from the data gleaned from the Sample presented in figure 6:4, a percentage of 48.4 of the Vale's population was native born, native in this context meaning belonging to the parishes of either Bonhill or Cardross, a further 6.4% belonged to the rest of Dumbartonshire, whilst the remaining 45.2% were born outwith the 'shire. As such the figures are not at great variance with Slaven's figure for the whole of Dunbartonshire,quoted above, for 10 years earlier. Bearing these figures in mind, it would not have been unreasonable to expect that the thriving industries of the Vale of Leven would have attracted higher numbers of immigrants than the average for the whole of Dumbartonshire in 1841. The population graph, fig 9:1, shows a sharp rise in the 1831-41 period, and, as has been suggested earlier in the Chapter, this rise was due largely to immigration, a fact reflected in the 1851 population pyramid, fig. 6:1, which shows a bulge in the 35-39 and 40-44 age cohorts, that is, those most likely to have been of migrating age 10-20 years earlier. Therefore, by 1851 a large migration to the Vale of Leven had already taken place. The overall percentage figure for those native born of 48.4% was largely the result of the birth of a large number of children. Those of 14 years of age and younger, by 1851 comprised - 35% of the total population of the Vale of Leven, and 3 out of every 4 of these children (that is approximately 27% of the whole population) were native born. In contrast, the 15 and over age groups comprising 65% of the population, had only around one in every three persons native born, that is 21.4% of the total population were native born and aged 15 or over. Taking those of 30 years of age and over the difference is even more marked, just over 1 in 4 of these people were native born. In the 2 age cohorts (35-39 and 40-44) which displayed a bulge in the Age/Sex Pyramid, a bulge attributed to immigration, just under 1 in every 4 persons was native born. The effects of an immigration of the type to which the Vale of Leven was subjected in the the 19th Century

Fig. 6:4

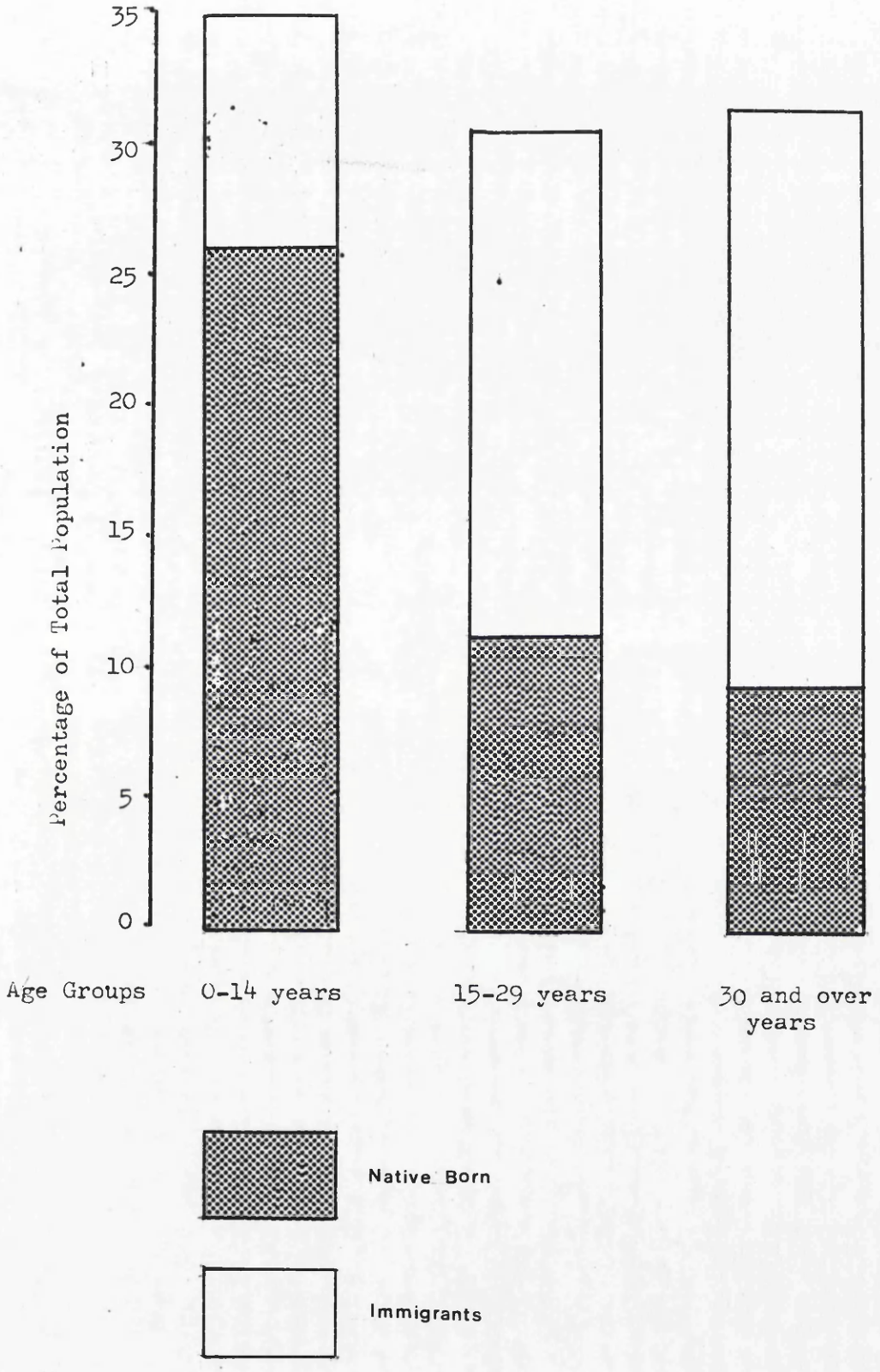
Places of origin of the Urban Population of the Vale of Leven 1851 (taken from 10% Sample)




Key

| | |
|---|---|
| B & C | Bonhill & Cardross |
| I | Ireland |
| G | Glasgow |
| S | Stirling |
| D | Rest of Dumbartonshire |
| A | Argyllshire |
| R | Renfrewshire |
| L | Lanarkshire |
| P | Perthshire |
| Ay | Ayrshire |
| E | England |
| Rest | Rest of Scotland |

Fig. 6:5 Age Groups and Origins 1851



can never be fully measured in social or cultural terms. Neither do the percentage figures of migrants at any one census tell the whole story and in fact may tend to underplay the role of migration. It is impossible, for example, due to the lack of adequate social data, to calculate just how many of the population were of migrant descent at any given time. In the Vale of Leven the vast majority must have been so. Handley suggests that as many as 1 in 3 of Glasgow's population was of Irish descent.[22]. Parallels with the Vale of Leven are obvious, whereas the Irish in the Vale of Leven represented only 10% of the population in 1851, their descendants, even by this date, probably accounted for a far greater percentage, and the same would be true of the other migrant groups, the Highland and Lowland Scots.

The native born Irish in the Vale of Leven in 1851 constituted 10% of the population. Handley's estimate for the whole of the 'shire in 1841 was 11%[23] and his comments on Glasgow, mentioned above, may to some extent apply here. The 10% from Ireland was bigger than any contribution from a single Scottish county out-with Dumbartonshire[24]. Unfortunately no information on the county of origin within Ireland was required in the Census,but nonetheless large numbers are known to have come from Donegal[25], and in some cases "Ireland/Donegal" was the information which appeared in the 'Origin' column of the Enumeration Books despite the fact that the county of origin was not required from the Irish immigrant. The jobs which the Irish did in the Vale of Leven are typical of the low status jobs which they did elsewhere in the West of Scotland. The bulk were employed in the Printworks though none had jobs which were above labouring status there. They also provided labourers for agriculture, the railways and the building trades.

The next biggest group, 7.5%, came from Glasgow, which would appear to be a divergence from the Country to Town migrations which characterised the population movements within Scotland in the 19th Century. There can be no way of explaining the movement of these people as a group, in the way the mass migrations of the Highlands and Irish can be explained. The migration must have consisted of a number of individual and quite separate decisions to move to the Vale of Leven. Their motives

as such may have been very different, though the promise of work must have been the major factor in the decision to move in the vast majority of cases. The move may also have been an attractive one as it wasaway from the overcrowded City towards employment opportunities in the not too distant rural environment.

The concentration of people from the other Scottish counties in the Vale of Leven had a high correlation with two main factors (a) their proximity and (b) their rurality. Thus those counties closest to the Vale of Leven which had sizeable rural areas in them provided the most migrants. The greatest concentrations were from nearby Stirling and Argyll. But within Stirling the rural parishes provided more of the migrants rather than, for example, the town of Stirling itself. Again within this county proximity plays an important part in the concentrations of migrants with the closest, rural parishes of Drymen and Buchanan providing 4 in every 10 Stirlingshire migrants. Counties such as Lanark and Renfrew which, although close at hand, were experiencing their own rapid industrial growth accounted for 2.9% and 3.1% respectively of the places of origin of the Vale of Leven's population in 1851, compared with the more rural counties of Stirling and Argyll which accounted for 6.6% and 5.4% respectively. As such the surrounding counties of Stirling, Argyll, Lanark, Renfrew and including the rest of Dumbartonshire, and Glasgow contributed 31.9% of the population. There are no other significant groupings in the Sample, though an interesting point of note which cannot be made with any strength due to the small numbers involved, is that the combined Sutherland and Inverness figure of 1.2% was made up totally, with one exception, of people residing in Renton, which perhaps helps to explain the presence of the Gaelic Free Church in that village (which is shown in the Ordnance Survey Maps of 1864 and 1899.)

Summary 1851

By 1851 the Bleach, Print and Dye Industry of the Vale of Leven was well established; most works did not concentrate on just one branch of the industry, but were involved in all three processes. The changeover from manual to mechanical printing had begun, resulting in some loss of jobs by the block printers, but the transition was by no means complete, and most works were

still reliant to some extent on water as a direct source of power. Transportation had drastically improved with the coming of the Railway in 1850. Though few of the works appeared to take advantage of it immediately, see Chapter V , it speeded up the movement of goods to and from the works, though the lack of mechanisation in the works meant that the cloth could not be forced through the processes quick enough to meet demand[26]. The Industry was nonetheless in an expansion phase which would last until the 1870's and 1880's.

The bulk of Male Workers, 56.7%, were directly involved in the Bleach, Print and Dye Industries. Other significant groupings included the Building Trades, doubtless involved in the many improvements[27] and additions to the townscapes which were taking place at this time. The numbers in the Professional and Managerial, and the Retail sectors were 6% and 5.3% respectively, amongst males, and almost insignificant amongst females, where large numbers were housewives (49.5% of those employed). The next biggest grouping were those employed at the Works. These represented 32% of the female workforce if housewives are included in the total and 62% of the female workforce if housewives are excluded. In the cases of both males and females the community relied heavily upon the Printworks to provide a livelihood, however the inherent dangers of such a dependence were, in 1851, not too apparent as the Industry had entered a period of expansion.

The population of the Vale of Leven was youthful with 35% of the people aged 14 years or younger, most of whom had been born locally. Their parents included many migrants as 73.1% of the 30 years and over age group were born outwith the Vale of Leven. The birth rate was high, 3% (30/1000) in this area where employment was breeding its own population[28].

Chapter VI - Footnotes

1. N.S.A. (1839), Vol. VIII, P.82.
2. Marshall, J.D., Op. Cit., P.215.
3. Irving, J., (2nd Ed.1859) The History of Dumbartonshire P.331.
4. N.S.A. (1840) Vol. VIII, Pp.224-225
5. Irving, J., Op. Cit., Chap.1, P.363, Vol.1.
6. Ibid. Pp.356-359.
7. Ibid. P.396.
8. Agnew, J., Op. Cit., Chap. 1, P.30.
9. Neill, J., (1912) Records and Reminicences of Bonhill Parish P.42.
10. Slaven, A., Op. Cit. Chap. 1, P.95
11. See however, Chapter V - Industry.
12. Clarke, J. I., (1972 2nd Ed.) Population Geography Pp.69-70.
13. See this Chapter's section on 'Employment'.
14. Slaven, A., Op. Cit. P.139.
15. O.S.A. (1793) Vol. IX, P.28 (in 1978 reprint)
16. Marshall, J.D., Op. Cit. P.216.
17. Stirling, T.B. (1915) History of the Vale of Leven Co-operative Society, P.22.
18. Handley, J.E., (1964 Ed.) The Irish in Scotland Pp.31-41.
19. Hobsbawm, E.J., (1969) Industry and Empire, Pp. 59 & 154.
20. Retired people in the Sample were all above 50 years of age.
21. Slaven, A., Op. Cit. P.141.
22. Ibid. P.144
23. Handley, J.E., Op. Cit. P.65.
24. If Glasgow is not considered as part of Lanarkshire.
25. Dumbarton with access to the Vale of Leven was one of the first stopping off points for the boats from Northern Ireland as they entered the Clyde, others were at Port Glasgow and Greenock, where as Handley (1964), P.51 points out, large numbers of Donegal Irish settled, and which had strong links with Dumbartonshire last Century.
26. Dumbarton Herald, October 2nd, 1851.
27. Ferguson, J. & Temple, J.G., (1927) The Old Vale and its Memories, Pp.53-54.
28. Slaven, A., Op. Cit. P.139.

## 1871

In 1871 the Industry in the Vale of Leven was again entering a prosperous and steady period after encountering difficulties in the 1850's and 1860's. The population was still expanding to meet the needs of the Industry, but it was a mobile population with continual arrivals and departures commonplace events. In turn the villages had grown in response to the growth in population. Overcrowding was still a problem and conditions were far from ideal, suggesting that housing growth had not kept pace with the increase in population.

The local papers of the day gave the impression that trade was good in general, although behind the cautious optimism there appeared to be some indication of the fundamental instability of the industry. The Lennox Herald[1] reported on May 21st, 1870, that 'trade had improved but that in some departments a great depression still exists'. By July 2nd in that year, they reported that trade was still good and that 'even in Block Printing rather more activity prevails', indicating that this branch of printing had been one of the depressed departments. By September 10th it was reported that trade was good, overtime was necessary at Dalmonach, but 'Block Printing remains dull'. In 1871 (January 21st) the Lennox Herald reported that trade was 'good for the time of year' and 'less injuriously influenced by the Franco-Prussian War than was first anticipated'. Again in May and in September of that year the Paper reported 'steady trade' and 'that there was work for all that were able and willing'. Thus the overall picture is given by these reports that the Industry was prospering, though not spectacularly and the unsteadiness of the Industry was reflected in the report of 21st January 1871, quoted above. The Franco-Prussian War may have reduced supplies of flax from the Low Countries from which much of Scotland's linen was then made. The slight effects reported in the press are understandable as cotton (calico and muslin) printing was more important than linen printing by this time, see Chapter I. The cautionary tone of the reports was probably due to the fact that by 1871 the Industry had come through two big crises in the 50's and 60's. Firstly, the failure of the Western Bank in 1857.

This Bank had offered substantial support to the Cotton Industrialists of West Central Scotland and its collapse had grave consequences for this sector of industry. Secondly, the American Civil War of 1861-1865 obviously affected cotton supplies; 172,055 cwts. were imported into Scotland in 1861 but only 7,216 cwts. were imported in 1864[2]. The picture given of the Scottish textile industry of this period is often a confusing one. As far as the Bleach, Print and Dye Works of the Vale of Leven is concerned it is no less so. It may be true, as Slaven[3] states, that in the 1830 to 1870 period there is an 'end to growth'[4] in the cotton industry, but within that period slumps of the type precipitated by the events described above must be contrasted with periods of relative prosperity. It is also true to state that the Industry had by the 1870's been overtaken by the heavy metal industries[5], but this was hardly important in the textile centred Vale of Leven although some people did drift towards the heavy industries of Dumbarton for employment. Fortunately, a contemporary account of the Industry of the Vale of Leven, written by David Bremner in 1868, and appearing in a reprint of his book 'The Industries of Scotland; Their Rise Progress and Present Condition'[6], provides a wealth of information on the history, techniques, output and workforce of Messrs Stirling & Company's Works at Cordale and Dalquhurn. Bremner's methodical mind produced a 'classic study'[7]. Below are some of the points which he brought out in this work.

(a) That the Dalquhurn Works dyed the cloth (Turkey) red and then it was taken to Cordale to be "figured with other colours by certain chemical processes"[8]

(b) He fixes the date of the beginning of the Turkey Red dyeing in the area at 1828.

(c) He states that the (Dalquhurn) Works had around 70 acres (28.3 ha) of which 10 are covered in buildings.

(d) The cloth and yarn dyed and printed were made chiefly in Glasgow and Manchester.

(e) That after acid bleaching the cloth would still be laid outside on the grass as was the practice in the early days of bleaching.

(f) He describes many mechanical aids which were used at the works, e.g. machines for washing "liquoring" and wringing the yarn have been devised and constructed at the Works[9].

(g) All the yarn and more than half the cloth dyed at Dalquhurn were exported in plain red state, the remainder were taken to the Cordale Printworks to be printed.

(h) He mentions the demise of block printing and the fact that it has been "superceded by the cylinder except in special cases",[10] thus giving weight to the statements in the local press around this time mentioning the "slackness" in block printing.

Finally, from his article it is possible to compare Dalquhurn and Cordale with each other, and with other works in some cases, in terms of machinery, workforce and output.

Dalquhurn - Area 70 acres (28.3ha) 10 of them covered in buildings (4.04ha)
Power 26 steam engines with an aggregate force of 180 horse power nominal. 14 Boilers.
Raw Materials 25,000-30,000 tons of coal per year. 18,450,000 yards (600,000 pieces) of cloth. 600,000-800,000 lbs. of yarn per annum.

Bremner also adds that "when the extensions at present in progress are completed the quantity will be much increased". £40,000 in wages per annum went to 900-1000 employees, about ⅔ of whom were women ("a considerable proportion of these are Irish")[12]

Cordale - Area 5 acres of ground (2.02ha)
Power 2 water wheels and an engine of 50h.p.

This works printed just under half the cloth processed at Dalquhurn. It employed around 500 persons, men, women and children. Wages ranged from 40s per week to 4s for children.

Thus, Stirlings (owners of both Works) employed around 1,500 people, whereas in 1811 they are quoted as employing 600 out of a total 1,700 involved in bleaching, printing and dyeing on the Leven, at a time when they ran the most extensive Works in the Valley[13].

Further evidence of the rapid growth of the Industry can be gleaned from the following figures, which appeared in Joseph Irving's Book of Dumbartonshire published in 1879.

"Trade of the last 40 yrs. of Todd & Co., Stirlings and J. Orr Ewing

| | 1835 | 1875 |
|---|---|---|
| Parcels of cloth | 4,400 | 130,000 |
| Pieces of cloth | 80,000 | 750,000 |
| Wages | £8,000 | £150.000 |
| Employed | 350[14] | 5/6,000 |
| Coal used | 4,250 tons | 100,000 tons " |

Despite the obvious improvement, such figures, as those produced by Irving must be treated with caution, for example, the numbers employed in 1835 show only 350 among the three companies, whereas the 1811 figure for Stirlings was 600 alone, either one or other of these figures is wrong or it could be that Irving's figures for 1835 were those employed in a known recession[15]. Nonetheless, the figures do tend to show than an impressive growth had taken place between 1835 and 1875 despite recessions in the 1830's, 1850's and 1860's. Much of the improvement was piecemeal (a factor which led to the ultimate decline of the Works later in the Century) and the Works were a strange amalgam of old and new. New boilers and machinery stood side by side with water wheels; cylinder printing and block printing were both carried out; chemical bleaching was combined with some open air bleaching; chemicals were used to print and dye but so was bulls' blood. There were other indicators of prosperity, for example, the Ferryfield Works closed since 1864, probably due to the recession caused by the American Civil War, had been bought over and by June 1871, repairs and alterations were being made[16]. New boilers being delivered to Dillichip Works in Bonhill were reported to have disrupted traffic as they were hauled by road to the Works[17]. All indications were of technical improvement, ready employment and increased output. The resulting profit was not, however, passed on to the workforce. Wages were still low, housing conditions were cramped and there is some evidence to suggest that workers were persuaded to use factory shops and that Works owners such as A. Orr Ewing, who were powerful men in the community, had a big say in many of the social developments which occurred in the area. The parliamentary election of 1868 had Mr. G. Campbell, a Liberal, supported by local Loch Lomond laird Sir James Colquhoun fighting for the local seat, against Mr. A. Orr Ewing, owner of the Dillichip Works, Levenbank Works

and builder of Jamestown. Out of this confrontation grew allegation and counter allegation of forcing votes from workers, whether on rural estate or factory village, to vote for their respective employer or his delegate ,with denials from both sets of workers. The allegations shed some light upon the degree of control which men like Ewing exercised over their workforce. There was the factory shop, which according to one writer to the Lennox Herald, sold meat which was dearer than that brought from Dumbarton each day by van[18], and that food money was taken from their pay without quantity or price specified[19]. Others, of course, replied that the factory shop was not compulsory. A. Orr Ewing was also against the building of a pub near his Jamestown Works, but did not object to selling liquor in his own store[20]. Despite this type of doubtful paternalism, the grip of the factory owners was weakening, if only slightly, with the growth of a stronger and better organized local government. Factory owners did supply the employment, they hired and fired the workforce and many were responsible for even building the houses in the area, and in the end it was they who reaped the profits.

The conditions of the ordinary man did improve in terms of sanitation, at least. After the publication of the Public Health Act of 1867, the councils and committees of the Vale of Leven instigated enquiries into water provision and sanitation. Much of the water was taken from, and returned to, the River Leven[21] which was also polluted by chemicals from the Works. Subsequently, pipes were laid for sewage and water, and later work on reservoirs was begun, although this Act did not have the same effects throughout Scotland[22].

Such improvements on the eve of the Census could have had little immediate effect on life expectancy or death rates, and indeed as is shown later in this Chapter, conditions were not radically different from those of 1851. The Census itself was reported complete for the Vale of Leven on the 22nd of April 1871[23]. The totals for the villages of Bonhill, Alexandria, Jamestown and Renton came to 11,420[24]. Thomson's figure for the whole parish of Bonhill and the village of Renton came to around 13,000[25] and an estimate based on the 10% Sample taken from the Census Enumerators Books for the urban part of the Vale of Leven,

excluding Balloch, for this study is 11,730. The reporter in the Lennox Herald commented that the population increase since 1861 had not been as big as expected.

Age/Sex Structure

The population of the four villages had grown by some 3,000 since 1851. Neither this growth nor the recently instituted public health measures had greatly affected the Age/Sex Structure[26]. There was a slight imbalance in the sexes in favour of females with 52.8% of the population being of that sex. The population was as youthful as in 1851 with 35.1% of the total population 14 years old or under. At the other end of the age range 8% of the population were 60 or over, compared to 5% in 1851. It would be wrong to state that this growth of people of 60 years old and over was a result of increasing life expectancy although the death rate did drop slightly between 1859 and 1871[27] from 20/1000 to 17/1000. The increase is possibly best explained by the lack of net migration to the area in the period leading upto the 1871 census which meant that the mobile age groups over 14 years and under 60 years of age did not contribute to such a big percentage of the populations as they did in 1851. This point is dealt with in greater detail in the "Origins" section in this Chapter.

The 1871 pyramid (figure 7:1) like its 1851 predecessor (figure 6:1) was distinctly bottom heavy and unlike the typical bell-shaped[28] pyramid of a developed nation in the present century. There is no appreciable bulge in the 55-59 and 60-64 cohorts to reflect the immigration influx observable in the 35-39 and 40-44 age cohorts of 20 years before, both out migration, and more importantly mortality[29] taking their toll. The wide base and gradually tapering top suggest that infant mortality was still high although the death rate was slowly, if unsteadily[30] beginning to drop. Precise reasons for these changes, other than the correlation between a lowering death rate, improved sanitation, hygiene and food supply, have proved difficult to isolate[31].

Household Size

The 10% Sample of Household Schedules for urban Vale of Leven in 1871 yielded 238 households containing 1,173 people (7 of whom were "visitors"). The dubiety of the visitor category[32], combined with their small numbers allowed them to be included in

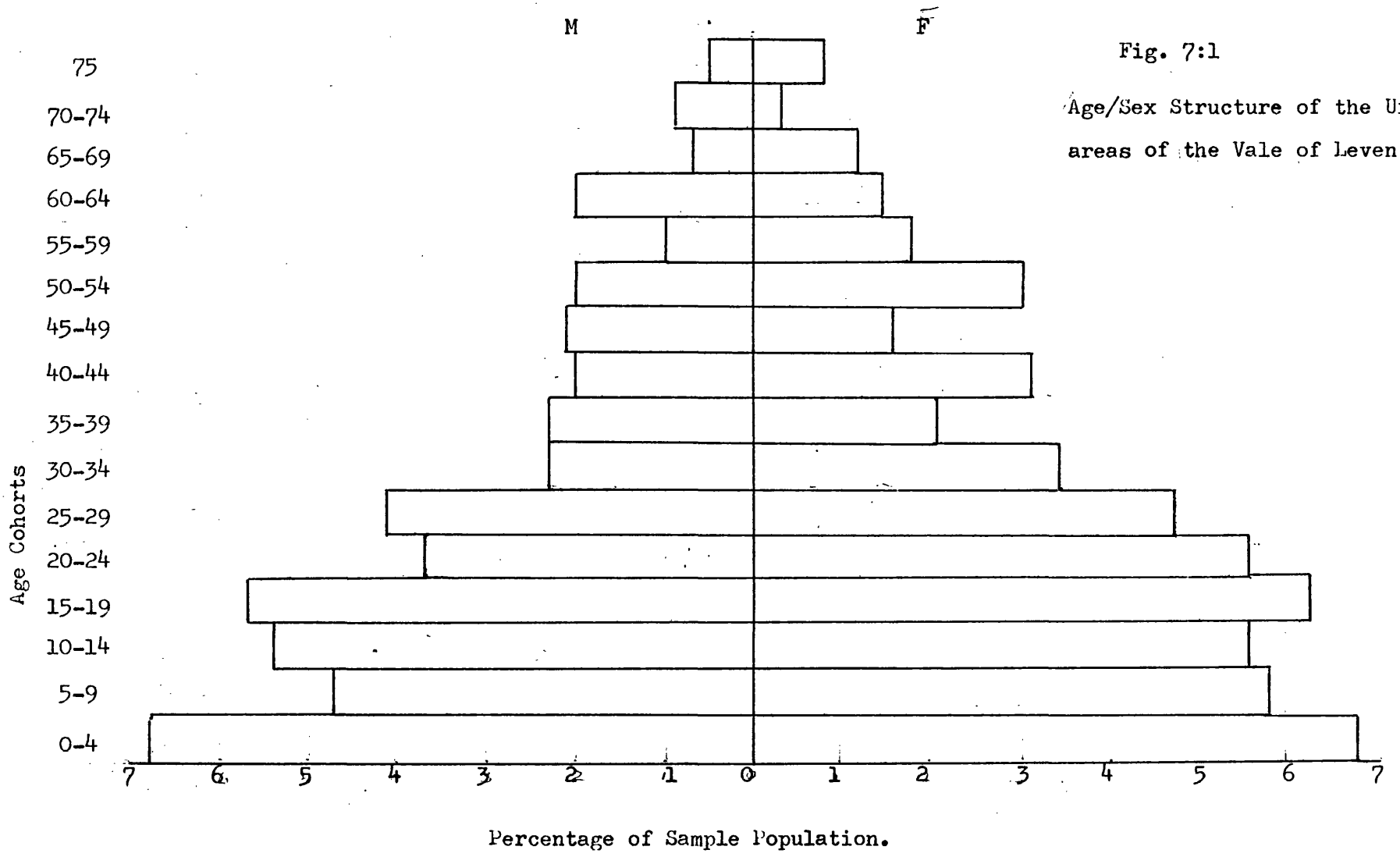



Fig. 7:1

Age/Sex Structure of the Urban areas of the Vale of Leven 1871

the household size analysis. The average number of people per household was 4.9, with a mode of 5. The standard deviation[33] was 2.4 - which means that 60% of households were to be found 2.4 ± either side of the mean. Comparing these figures to the 1851 ones (Mean 4.9, Mode 6, Standard deviation 2.27), shows that there were no significant improvements over the period, although the lowering of the mode from 6 to 5 may be seen as being an indication of a slight improvement in conditions. The 1851 and 1871 figures compare with the average household size in England in 1851 which was 4.8[34]. Anderson[35] found in his studies that Preston, an emergent industrial town, and English rural areas, had both had higher averages than this (5.4 and 5.5, respectively). So whilst the household size in the Vale of Leven was high, it was by no means exceptional by English mid 19th Century standards and would probably have been lower than the most crowded areas of Glasgow. Economic necessity and the lack of housing encouraged the taking in of lodgers and extended families so common in the second half of the 19th Century. The rate of house building in the Vale of Leven between 1851 and 1871 managed to keep pace with the growth of population in maintaining the same household size. Houses were small, perhaps the majority with only 1, 2 or 3 rooms, and conditions were overcrowded. It would be wrong to conclude that the demand for housing had necessarily risen since 1851. It is likely that there was always a demand, but no new housing would have been built in anticipation of finding a tenant. Rather private building societies (who built most of the houses) only built when a ready market was available, and many households could not have afforded to break down into smaller units.

Lodgers, Visitors and Relatives.

Lodging and the taking in of relatives still persisted in 1871, although there had been a slight drop in both the percentage of households with lodgers and the percentage with relatives and visitors since 1851 as table 7:2 below shows.

Table 7:2 % Households with Lodgers

| | Lodgers | Relatives & Visitors |
|---|---|---|
| 1851 | 18 | 21 |
| 1871 | 15 | 18 |

Thus, although there was a commensurate 3% drop in both categories the trend persisted, with the boarding of relatives (and visitors) still more popular than taking in of lodgers. The weakening of the trends could have been due to the slackening of population growth due to a decline in net migration over the interim period rather than to any change in attitude or prosperity.

There was also a decline in the percentage of households with servants, from 4.5% in 1851 to 2.1% in 1871. This does not suggests that conditions in the Valley grew any more austere over the period but that more people found relatively better paid industrial work and subsequently the numbers being recruited into service declined[36].

Male Occupations

Of all the changes between 1851 and 1871 which are mirrored in the household schedule samples, those involving occupation structure may have been the most significant. Although not spectacular, they represent a broadening of the male occupation structure, and as a result several categories have had to be added to the groups used in 1851. The major groups in 1851 were Bleach, Print and Dye Workers; Building and Construction Workers; Agricultural Labourers; General Labourers; Retail Workers; Professional and Managerial Workers; Clothing Workers and Transport Workers (see fig. 7:3(i)). To these groups in 1871 Metal and Engineering Workers; Shipyard Workers; Clerical Workers and the Unemployed were added.

The significance of the Bleach, Print and Dye Workers as a percentage among males of working age had not greatly diminished since 1851. In 1851 they had represented 56.7% of the workforce, and whilst their numbers had increased by around 200 this represented only 51% of the male workforce in 1871. Within this group the continued growth in mechanical printing is underlined by the new categories of Printworker such as Engine Fitter and Mechanic[37], although manual printing still persisted for certain types of specialized work[38]. The growth in mechanization and the use of new and quicker printing and dyeing techniques meant a growth in output. This growth in output had to be met with more sophisticated and organized handling of the product, which led to more jobs in packing, warehousing, storing and book-keeping.

Thus, among the jobs which appear in 1871 (which were not represented in 1851) were packing box maker, warehouse clerk, cashier and warehouseman.

The second largest category among male workers in 1851 was the building trades group which had approximately 14% of the male workforce. This group was still in second place in 1871 but their percentage had dropped to 7.5% of the workforce. Builders were still necessary, but examination of the 1864 and 1879 maps of the Vale of Leven, discussed in Chapter V , shows that domestic building appeared to be in a lull around that time. The root causes of this lull could lie with a slowing down in population growth in this period.

Retail Workers were the next biggest group in 1871 with 6.7% of the male workforce compared to 5.3% in 1851. Even such a slight growth suggests a slowly expanding retail sector, as transport and the food supply improved and as factory shops became less popular[39]. To illustrate the growth of the retail trades, the example of the Vale of Leven Co-operative Society is very apt. It was founded in 1862 with a shop in Bank Street, Alexandria, a Bonhill branch was opened in 1865, and in 1871 the Bank Street branch was extended, a grocery department was opened in Bonhill and a bread van began its rounds. After 1871, the Co-operative continued to expand with branches opening in Jamestown and Renton in 1872 and a drapery, boot shop and butchers being added in Bank Street[40].

Unspecified "General Labourers" accounted for 6.1% of the Workforce. It is possible that many were employed in the Printworks though often they may have been casual or temporary workers who were unemployed from time to time.

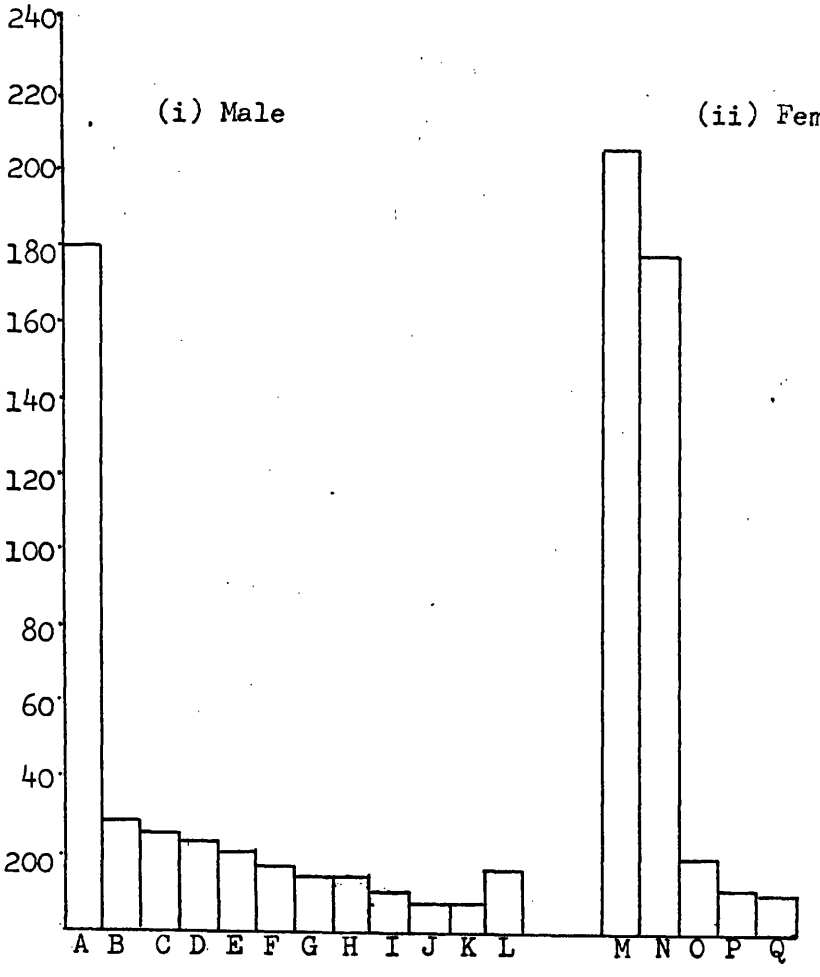
Transport Workers accounted for 5.6% of the male workforce in 1871 and consisted mainly of Carters, Boatmen and Railway Workers. This slightly higher figure than 1851 (4.5%) may have been due to the consolidation of the Railway which had only been built one year before the 1851 Census. Another contributory factor was possibly the growth of trade and population which required not only more cloth, but more provisions to be taken into the Valley.

Metal and Engineering Workers, a group not represented in 1851, now made up 4.7% of the male workforce and included occupations such as Blacksmiths, Tinsmiths, Iron Moulders and Boilermakers and Labourers in Iron and Engine Works. Engineering and Metal Working were never to challenge the supremacy of textile in the 19th Century Vale of Leven, but the fact that this group did constitute a small but significant percentage in such a textile orientated area underlines the growing importance of this branch of Industry at this time. In Western Scotland as a whole the experience was much different from that of the Vale of Leven with heavy industry eclipsing textiles as the motive force behind industrialisation.

Similarly, the Shipyard Workers, along with Metal & Engineering workers were another group to emerge since 1851, with 3.9% of the workforce. The nearest shipyards to the Vale of Leven were further south at Dumbarton, and a small group of workers must have commuted daily, particularly from Bonhill and Renton, to yards such as Denny's and McMillan's. The rise of shipbuilding in Dumbarton, close to the Leven's confluence with the Clyde, had overtaken textiles as the most important industry on the River. Textile bleaching, printing and dyeing could not have been carried out further south than Dalquhurn, due to the mixing of salt water from the Clyde with the fresh water from Loch Lomond and so Dumbarton had no tradition in printing cloth. But its shipbuilding industry prospered and it is no surprise that men from the textile villages of the upper Leven travelled a few kilometers each day to work in such a vigorous and expanding industry. It is also likely that many of the metal and engineering workers of the Vale of Leven were employed in Dumbarton, for although Alexandria had a Foundry and possibly an Engine Works, there were larger and more numerous examples to be found in Dumbarton. Forges such as Dennystown Forge on the Renton Road from Dumbarton, must have drawn workers from the textile villages. In contrast, shipbuilding and its ancillary industries were not well enough established by 1851, to draw a sizeable workforce from outside of Dumbarton itself. The daily exodus of workers from the Vale of Leven which had been established by 1871 was not all one way. Workers, especially women, walked to Renton each day from Dumbarton to work in the Print and Dye Works throughout the second half of the 19th Century.

Fig. 7:3

Occupations 1871- from 10% Sample




Key

A Bleach, Print & Dye Workers
B Building Trades
C Retail
D General Labourers
E Transport
F Metal & Engineering
G Shipyard
H Clothing
I Agricultural Workers
J Professional & Managerial
K Clerical
L Retired & unemployed

M Housewives
N Bleach, Print & Dye Workers
O Servants
P Clothing
Q Others

Those involved in the clothing trade, tailors, shoemakers and cobblers represented 3.9% of the male workforce compared to 4.5% in 1851. The small drop in percentage is probably due to the growth of other groups such as those mentioned above, which were not represented in 1851. Thus while the actual numbers involved had not fallen, the percentage had. Lack of growth in this sector may have been as a result of importation of goods from other clothing centres in Britain as better communications improved inter-regional trade and communities became less self-contained. As business in general organized itself, the number of clerical workers rose, in 1851 their numbers were too insignificant to merit a separate category, whereas by 1871 they comprised 2.8% of the male workforce (This did not include 3 clerks who worked at the Printworks and came under the category of Bleach, Print and Dye Workers.)

Agricultural Workers in the urban areas of the Valley now only constituted 2.5% of the workforce as opposed to 4.6% in 1851. The growth of the Works and towns, meant an increase in the numbers of manufacturing jobs available, as well as a growing number of tertiary sector jobs. Such jobs often paid better wages than agricultural work and besides, most farm labourers tended to live out of the towns on the farms.

Other groups included Professional and Managerial workers whose percentage of the workforce dropped from 6% in 1851 to 1.9% in 1871, probably as the population grew more Printworkers and Builders were employed, but few extra Bank Managers or Printwork Managers would have been needed and consequently their percentage declined.

Female Occupations

The female occupation structure was narrower and subsequently more straightforward than the male structure. The narrowness of the employment base for women was even more severe than in 1851, for at that date 81.5% of women of working age were either housewives or printworkers, whereas by 1871 the percentage had risen to over 90%, 50.4% of these women were housewives (49.5% in 1851). There had therefore been a significant rise in the percentage of women working in the printworks over this period

from 32% in 1851 to 40% in 1871. It must also be borne in mind that this was not a percentage rise on a static population but on one which had grown by some 3,000 (35%) in 20 years. In real numbers then there were around 1020 female printworkers in 1851 and 1770 in 1871. The availability of employment for females may have led to an increase in the number of females in the Vale of Leven, that is, due to immigration, and this possibilty is discussed more fully in the next Chapter. Bremner[41] has commented on the large numbers of women in the Dalquhurn and Cordale Works. Their value as a cheap labour source was enhanced by the increasingly mechanised nature of the industry, as well as by the fact that there were few opportunities in heavy industry for women. In contrast strenuous block printing, an all-male preserve, was on the wane, encouraging emigration among the workers involved in this branch of the industry[42].

The lack of other types of work for women, meant that no new categories had to be grafted on to those used in 1851. With the rise in the percentage of printworkers, there were subsequent falls, as the table (7:4) below shows.

Table 7:4

Percentage of Females of Working Age

| | 1851 | 1871 |
|---|---|---|
| Servants | 6.3 | 4.3 |
| Clothing | 5.3 | 2.7 |

Demand for female labour in the Works with its comparatively good wage, meant that, as Anderson pointed out[43], private householders were unable to compete with Industry. Similarly the "Clothing Industry" with its rather indefinite, and possibly home based, nature (discussed in the previous chapter) could not have hoped to compete with the steadier employment which the Works offered.

Male and Female Occupations, 1851-1871.

Many of the differences between Male and Female occupations structures in 1851, which were discussed in the preceding Chapter, were also to be found in 1871. For example, the large number of women at home, the lack of skilled work for women, the perhaps surprising dominance of males in the retail trades, and above all, the unchallenged primacy of the printworks in providing employment. Slight differences did occur. Women were even more dependent on

the printworks in 1871, although most still remained housewives. In contrast, the male occupation structure widened slightly with the introduction of two other categories of employment groups, that of Shipbuilding Workers and Metal and Engineering Workers, accounting for 8.6% of the total male workforce. Unfortunately for the Vale of Leven, much of this work was not to be found within the narrow confines of the textile finishing trades, nor in their resultant townscapes, but in the growing shipbuilding centre of Dumbarton, nearby.

School, At Home and Unemployed.

In the case of males and females between the ages of 5 and 19, the proportion of those at school had risen since 1851 (from 33% to 36% of all males in that group and 22% to 31% of all females in that group). Many at the upper end of this age range would of course be at work but some continued with schooling, possibly as pupil/teachers, upto 19. Apart from those at school or at work within these age ranges there were 6 girls and 5 boys with no entry against their "occupation" in the Enumerators Books. The figures suggest that job opportunities for the young were still plentiful, but that the opportunities for, and availability of, schooling had improved.

Un-employment among adult males had risen slightly to about 2.8% of the male workforce, from virtually full employment in 1851. This was hardly a significant rise, and the local press seemed to suggest that jobs were there for those who wanted them. Something not shown in the static picture produced by the Enumeration Books are the numbers unemployed in a period of recession of which there were many in this Industry. Both seasonal and longer, more prolonged, recessions did occur[44], but no serious recession is reflected in either of the three Census Years under study. Emigration is also not immediately apparent from a study of the Enumeration Books, and often the only answer to unemployment was migration to another area. So although unemployment was virtually negligible on both census occasions it was probably a more significant factor than the figures suggest. During the busier periods the unemployed slack was taken up by the Works and immigration encouraged. During quieter periods, unemployment and emigration were common.

As before, retiring was not a possibility which many able-bodied people could contemplate. Failure to earn a living meant either being supported by relatives, applying to Parish Funds as a Pauper, or entering the local "Poorhouse".

Place of Origin

As time passed the Industry and settlements of the Vale of Leven grew and consolidated themselves. The towns were, by this point, breeding their own population and labour force. As a percentage of the total population, there were less immigrants than ever before in the urban population of the Valley, although their actual numbers had risen since 1851, as table (7:5) shows.

Table 7:5

Percentage Immigrants in Urban Population 1851 & 1871

| Year | Urban Population | % immigrants | Number of immigrants |
|---|---|---|---|
| 1851 | 8,550 | 51.6 | 4,412 |
| 1871 | 11,730 | 42,7 | 5,009 |

The figures suggest that while immigration was still an important factor in the peopling of the Vale of Leven, it had slowed down since the big influx identified before 1851. The picture is, however, complicated by the fact that emigration was also taking place against a background of fluctuating birth and death rates. The following paragraphs examine immigration and emigration in the light of changing percentages of migrants within the Vale of Leven as revealed by the 1851 and 1871 Censuses.

It is to be expected that the numbers of immigrants would be least among the under 15 age group, that is, more of these people were liable to have been born in the Vale of Leven than any other age group. In both Censuses 35% of the population were under 15. In 1851 3 out of every 4 (27% of the total population) and in 1871, 4 out of 5 (29% of the total population) were native born and under 15. A 2% rise in the numbers of native born over the 2 censuses in this age group represents a 2% drop in the immigrants in this group. But the biggest drop in the number of migrants took place in the over 15 group which at both censuses had 65% of the population, but in 1851 this group had 43.6% of the population who were also immigrants compared to

36.7% in 1871. Furthermore, in mobile age groups such as the 15-29 year olds the apparent lack of immigrants in 1871 compared to 1851 is even more marked. However, as the table below shows, the real number of actual immigrants in this group in 1871 was only slightly down on the numbers for 1851 in this age group.

Table 7:6

15-29 year olds

| | % of total population | % of total population and immigrant | Estimated Numbers of 15-29 year old immigrants |
|---|---|---|---|
| 1851 | 31.5 | 18.9 | 1,616 |
| 1871 | 30.0 | 12.9 | 1,513 |

What caused the percentage of immigrants to drop was either a decrease in net migration to the Vale of Leven or a rise in the numbers of natives or a combination of both. One method which helps to clarify the situation is to take an age group at the 1851 census and follow it through to the 1871 Census, noting the changes which have occurred. As an example, the 10-24 years age group in 1851 were the 30-44 years age group in 1871. Over the two censuses this group were not liable to have suffered as many deaths as younger groups, in the first instance, and were still young enough in 1871 to be within the probable life expectancy of the area in 1871. In other words, they were the most stable group to compare over the two censuses in terms of numbers lost through death but were probably the most mobile in terms of immigration and emigration. Table 7:7 below highlights the role of immigration and emigration.

Table 7:7

10-24 years age group 1851 / 30-44 years age group 1871

| | Natives (Approx. Numbers)[45] | Migrants (Approx. Numbers) |
|---|---|---|
| 1851 | 1,330 | 1,520 |
| 1871 | 580 | 1,200 |
| Shortfall | 750 | 320 |
| % Shortfall | 56.4 | 21 |

The shortfalls are radically different, as the change in the number of natives over the 20 years can be taken as the result of

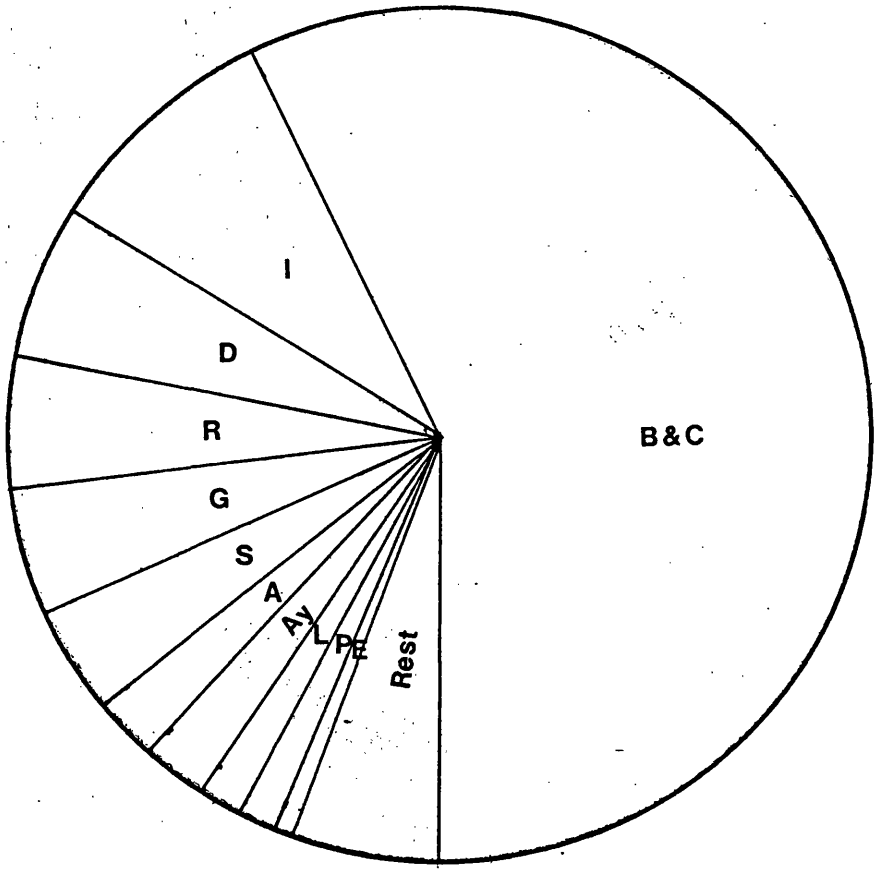
death and emigration[46], whereas the change in the number of immigrants over the 20 year period can be taken as the result of death and the balance between immigration and emigration (net migration). A shortfall of 56.4% in the native group suggests that, despite a high death rate, many native born people must have left the area to go elsewhere. Despite the fact that many natives were the children of immigrants, the scale of the decrease is surprising as natives might have been expected to be more rooted to their home area. If a death rate of 20/1000 in this group over the 20 years is assumed, then the shortfall would have been around 430.7 (32.3%). Thus, even assuming this abnormally high death rate[47] there would have been a 23.8% drop in this group due to emigration alone. Assuming the same percentage drop amongst immigrants[48] the total number surviving would have been 1029, 71 less than were probably present in the group in 1871. Taking into account that these immigrants were not all the same people as were present in 1851 (due to emigration) at a 20/1000 death rate a small positive net migration to the Vale of Leven is assumed, if the immigrant group is considered on its own. If, as was likely, the death rate was less than this then there had been a net migration from the Vale of Leven in this period from the migrant group. Thus immigration was not replacing those who had died or emigrated even among the immigrant groups. Both groups taken together lost around 1,070 people, whereas if the death rate were as high as 20/1000 for this group then the loss would have been 920 people due to death in the twenty year period. Thus the assumed death rate, which was deliberately pessimistic, accounted for 920 people but the actual shortfall was 1070, therefore at this rate there was an overall out migration of 150 people in this group over the 20 year period. With the death rate among this age group probably much lower than this then a larger net migration from the Vale of Leven took place than is shown here. The reason that the population grew between the 2 censuses was due largely to the continuing high birth rate, not to immigration which was exceeded by emigration amongst the most mobile groups. It is also important to realise that emigration was not confined to migrant groups but that natives too were leaving in large numbers.

A rise in the percentage of native born between 1851 and 1871 meant a subsequent drop in most other categories of origin. The Irish, with 9% (10% in 1851) were still the biggest single contributors over each individual Scottish county and the City of Glasgow. Bremner stated that a considerable proportion of the female printworkers were Irish[49]. The 1% drop since 1851 was slight in comparison to the nearby Scottish counties, Stirling, Argyll, Lanark, Renfrew, the rest of Dumbartonshire and the City of Glasgow which together accounted for 31.9% of the population in 1851 and only 23.6% in 1871. The biggest drops occurred in the Argyll and Glasgow percentages, possibly due to the strong pull of heavy industries in the Central Belt of the Country. The drift towards Glasgow by the Argyll born had, by now, passed through or perhaps by, the Vale of Leven. (Often migration from rural area to big city is made in a number of steps rather than in one sweeping move.)[50] Dumbartonshire being in a transition zone received many Highland immigrants. Some made permanent homes there, while others continued deeper into the Industrial heartland. By 1871, Glasgow,and Lanarkshire as a whole, had become a dominant centre of heavy industry, and heavy industry had largely overtaken textiles as the dominant industry by that date. Therefore, heavy industrial areas of the Central Belt including Dumbarton Burgh had a bigger pull, a greater attractiveness, for migrants than the Vale of Leven. Similarly, Glasgow required a workforce and its natives and immigrant population were able to find ready employment close at hand. There was no need for migration to an area like the Vale of Leven, the fortunes of which had waned since 1851 and which did not need as many immigrants as in the past. Not only were the textile works recovering slowly from the problems but the longer the villages were established, the bigger the indigenous population became, and more jobs in the Works would be occupied by them as opposed to the needs for immigrant labour.

Only Renfrew and Ayrshire's percentages of the population had risen since 1851, Ayrshire's by a small .7%, and Renfrew's by 2%, many of these being from Paisley and Neilston, both textile towns. Substantial population movements between textile towns has been a recognisable feature of the Census Samples taken for this study, and it continued even when the unstable textile

Fig 7:8

Places of Origin of the Urban Population of the Vale of Leven 1871 (taken from 10% Sample)




Key

| | |
|---|---|
| B & C | Bonhill & Cardross |
| I | Ireland |
| G | Glasgow |
| S | Stirling |
| D | Rest of Dumbartonshire |
| A | Argyllshire |
| R | Renfrewshire |
| L | Lanarkshire |
| P | Perthshire |
| Ay | Ayrshire |
| E | England |
| Rest | Rest of Scotland |

industry had been overshadowed by the strength of the heavy industries.

Within the 1851-1871 period, emigration exceeded immigration, and the biggest drop in the percentage of migrants in the Vale of Leven's population was due to a decline in the percentage from the nearby Scottish counties, rather than from Ireland whose percentage only dropped by 1% over the 20 year period.

Summary 1871

The period between 1851 and 1871 had been a difficult one for the Textile Industry, but by 1871 it was climbing its way out of a recession and towards its zenith in terms of manpower, productivity and profit. The Industry, which had been an important force in the early industrial period had been overshadowed in Western Scotland by heavy industry. Even in the textile stronghold of the Vale of Leven workers were being drawn towards shipbuilding and heavy engineering which had been steadily growing, especially in nearby Dumbarton. Nonetheless, most male and female workers were still employed in the Bleach, Print and Dye Works, though the biggest group of adult females continued to be housewives.

The population was still as youthful as 20 years beforehand. Sanitary conditions, which had limiting effects on life expectancy had improved little in that time although evidence suggests that positive steps had been taken in the 4 years leading up to the Census to rectify this. The population was still very mobile, and although around 1871 the situation may have been beginning to change, the twenty year period previous to this was one where emigration was slightly more dominant than immigration. The area was producing more of its own population than ever before and hence supplying more of its own workforce than at any time in the past. Within the 1851-1871 period the population of the urban areas had grown by around 3,000 (35%). This also meant a growth of some 600 households in twenty years. This must have led to considerable overcrowding for although the town's fabric most probably grew quite rapidly[51] there was little hope of improving conditions with such an increase in population. However, this growth was not as fast as earlier growth (1831-1841 period) nor later growth (1871-1891 period)

and thus lodging was still persisting but not at the same levels as in 1851. The common Victorian habit of compartmentalising, or'making down', houses must have been one way of solving the housing problem, along with the construction of small one and two room apartments. The population of the urban areas between 1851 and 1871 rose from around 8,500 to around 11,500. The whole of Bonhill Parish including landward areas and Renton village probably accounted for around 10,000 people in 1851 and 13,000 in 1871[52]. A 3,000 rise in both cases shows that the rural area of Bonhill Parish did not increase its population at all and that most of the growth was in the urban areas.

Footnotes - Chapter VII

1. Lennox Herald - a local newspaper 19th Century back numbers are housed in Dumbarton Public Library
2. See Bremner, D. Op. Cit. P.228
3. Slaven, A. Op. Cit.
4. Ibid P.103
5. Hamilton, H., Op. Cit. P.149.
6. Bremner, D., Op. Cit.
7. Ibid (Butt, J & Donnachie I in introduction to 1969 reprint).
8. Ibid P.298.
9. Ibid P.300.
1). Ibid P.302.
11. Ibid P.301.
12. Ibid P.301.
13. Whyte A. & Macfarlan, D., Op. Cit. P.273.
14. Irving, J., Op. Cit.
15. Workers were laid off very quickly in a period of recession. It could be that Irving used one such period to provide a contrast to 1875, so the number of workers employed was certainly greater than the figure quoted for these works before 1835.
16. Lennox Herald, June 24, 1871.
17. Ibid Oct 21, 1871.
18. Ibid Sept 5, 1868.
19. Ibid Sept. 5, 1868.
20. Ibid April 30, 1870.
21. Ibid Feb. 8, 1868.
22. Adams,IH (1978) The Making of Urban Scotland, P.140.
23. Lennox Herald, April 22, 1871.
24. The Census of Scotland, 1871.
25. Thomson, C.M., Op. Cit. See also fig. 9:1.
26. Adams,I.H., Op. Cit. P.140.
27. Return of Births, Marriages & Deaths in Scotland 1859/60 and 1871 Published by Registrar General.
28. Clarke, J.I., Op. Cit. P.69.
29. By the time people were over the age of 35 they were past the main migrating age groups.
30. Death rate was unsteady due to epidemics and outbreaks of infectious diseases.
31. Clarke, J.I., Op. Cit. Chapter VIII.
32. See Previous Chapter.
33. See Previous Chapter for formula used.

34. Anderson, M. (1972) in Household and Family in Past Time (Eds. Laslett, P. & Wall, R., Chapter 7, P.234.

35. Ibid, P.234.

36. Ibid, P.221

37. These workers had specifically stated that they worked at the Printworks. Other fitters and mechanics were included in the "Metal and Engineering Workers" group.

38. Bremner, D. Op. Cit., P.302.

39. Lennox Herald, Sept. 5, 1868.

40. Stirling, T.B., Op. Cit. Pp, 2, 36-46.

41. Bremner, Op. Cit., P.301.

42. Dumbarton Herald, Oct. 15, 1851.

43. Anderson, M. (1972) Op. cit. P.221.

44. For example during the American Civil War.

45. Numbers derived from the 10% Sample.

46. Not considering the small numbers of natives who may not have been in the area in 1851, only to return before 1871.

47. Death rate quoted earlier in the Chapter for the whole population in 1871 was about 17/1000 and liable to be much less in this group who were neither prone to infant mortality or old age.

48. Mortality rate among immigrants may have been slightly higher (see Chapter VIII).

49. Bremner, D. Op. Cit. P.301.

50. Clarke,J.I., Op. Cit. P.137.

51. Closest Maps available for this period were those drawn up in 1841, 1864 and 1879. See Chapter V.

52. Thomson, C.M., Op. Cit., see Fig. 9:1.

## 1891

In the period between 1871 and 1891 the Works enjoyed a relatively stable existence after earlier difficulties. Expanding employment opportunities in that period, especially for women who by 1891 represented 50% of the total printworks labour force, led to a new rise in immigration. Paradoxically, emigration had also risen since 1871, the people probably being lost to areas of heavy industry. Nonetheless, the population grew by around 6,000[1], from 1871 to 1891, not only as a result of immigration but due to a bigger natural increase in the population than had been experienced at any other of the earlier periods in this study. Despite the fact that no real indication of any problems besetting the Works appeared in articles in the local press, one writer to the Lennox Herald[2] appeared to be very aware of the problem/over reliance on the Textile Works. He appealed for new industry to set up in the Vale of Leven and he talked about the dyeworks' fluctuating production and the "uncertainty" surrounding the Works. It was not till 6 or 7 years after his letter, that his worst fears were to be realised.

It was around 1891 that the Vale of Leven experienced a substantial building boom, in line with the national experience[3]. Tenements were built, for example, on the Main Street/Bridge Street corner and consisted of room and kitchen and two room and kitchen accommodation[4]. Although small by to-day's standard, and built to house a higher number of people per household than to-day, they represented desirable properties to which people from the old cramped cottages in the original village cores and other small and insanitary houses were eager to move. It was of course mainly the erection of large public buildings which made the news[5], but throughout the decade leading up to 1891 many additions to the townscapes were built. Middleton Street and Wilson Street in Alexandria and other, working class, housing developments at the southern end of all four villages were added in the 1880's[6]. All were built to try and cope with the increasing population, which was also moving from old central housing areas to the periphery. Communications had also been improved and eventually in 1891 the Ferryfield Works was linked to the Railway system[7]. The era of improvement was further highlighted by the modernisation of the sanitary

facilities in the Valley, as pipes were laid, and new reservoirs constructed. Although the death rate may have risen slightly since 1871, to around 18 or 19 per 1000 in the 1890's, sanitary improvements did serve to lower the rates towards the end of the Century. However, towns were still prone to outbreaks of infectious disease, such as Typhus which occurred in Renton in 1891[9], and such epidemics kept the infant mortality rate, in particular, high.

It was against this seemingly industrious background and improving townscapes that the Census Enumerators began their work on Monday 30th March, 1891[10].

Age/Sex Structure

By 1891 the population of the urban areas of the Valley had risen to between 18,880 and 19,635[11]. The structure of this population, since 1871, had considerably altered especially with respect to an imbalance in the sexes, but also with respect to juvenility. The continuing trend of imbalance in favour of females as a percentage of the population which was present in 1851, and had grown slightly by 1871, was reinforced when in 1891 55.5% of the population were female. Three factors explain the imbalance.

(a) More female than male children were being born or more accurately were surviving. Native born females in the 0-14 age group represented 15.3% of the total population whereas native born males only represented 14.4% of the population.

(b) Females tended to live longer. Females of 60 years and over represented 3.9% of the population whereas males of the same age group represented 2.3% of the population.[12] Both of these differences were small and therefore sample error could account for some small inaccuracies of data, but the third point (c) is more conclusive.

(c) Crucially, female immigrants represented 28.5% of the population, whereas male immigrants represented only 20.3%. This difference was well marked in the mobile age groups in the late teens to the thirties where in the 15-39 age group female immigrants accounted for 14.8% of the total population whereas male immigrants in this age group represented only 9.9% of the total population.

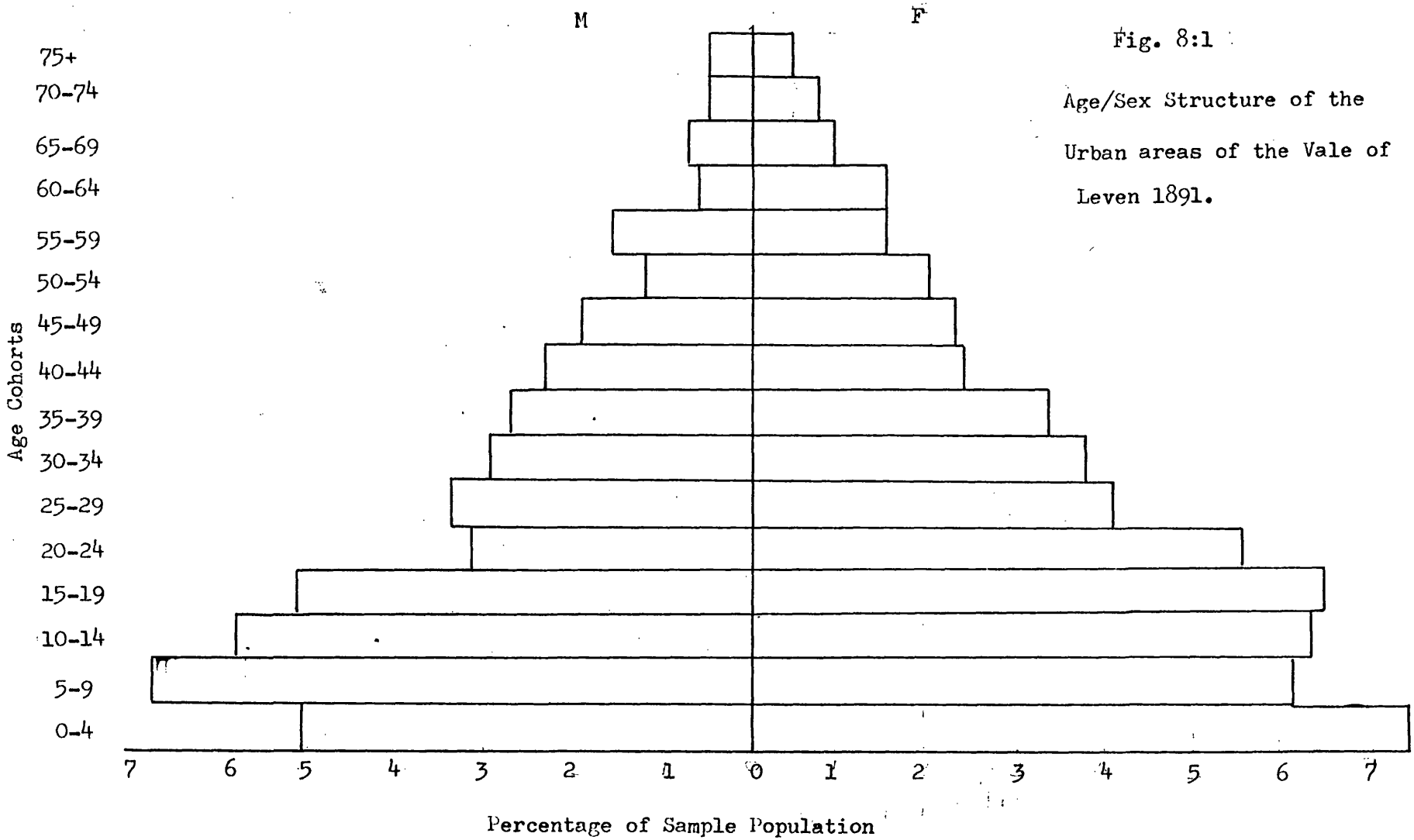



Fig. 8:1

Age/Sex Structure of the Urban areas of the Vale of Leven 1891.

This migratory imbalance in favour of females is a departure from the normal pattern where young males are the most mobile group. However, the number of job opportunities for females was at least equal to that of males, and with perhaps less competition from those females already in the Vale of Leven as part of family groups, (see section on employment 1891) the decision to migrate was made more attractive. On the other hand, many young males may have emigrated from the Vale of Leven to areas where better paid heavy industry was dominant.

Children of 14 years of age and under now represented 37.6% of the population compared with 35.1% in 1871. This small increase may have been due to sanitary improvements particularly in water supply and sewage disposal which caused death rates to decline, although infant mortality remained high. Another factor operating in favour of a large percentage of children was immigration of many young women of child bearing age in the 1871-1891 period.

The percentage of those of 60 years of age and over was 6.2% which represented a drop of 1.8% on the 1871 figures. It may be worthwhile to note here that death rates in 1871 were slightly lower than in 1891 - and so a correlation between the percentage of those over 40 and death rates can be established. It is, however, a tenuous connection and no causal links can be expounded with confidence here. This example illustrates well the difficulties involved in interpreting such figures. They do not necessarily mean that there had been a sustained rise in the death rates within this period, although such a rise in the second half of the 19th Century did occur in Glasgow[13]. The figures show that, in the Vale of Leven, the death rate was 2/1000 higher in 1891 than it was in 1871, but these figures only considered two years in isolation with no knowledge of possible fluctuations, due to epidemics for example, in the interim period. Even accurate annual death rate figures can be misleading. The United Kingdom death rate at the present day is around 12/1000[15], a significant improvement on the 16-20/1000 death rate of Victorian Vale of Leven. This U.K. death rate has remained steady for 50 years "but this figure takes no account of the ageing population,

and at every age there had been a considerable decline in mortality"[16]. The local evidence for the 1871-1891 period suggests sanitary and general public health improvements, which according to Clarke[17] started the decline in death rates. But there had been a drop in the percentage of people over 60 years of age between the 2 censuses. This was, however, a small percentage drop and actually represented a rise in real numbers of those of 60 years of age and over. Thus a comparison of percentages in each age group cannot yield any information about one group without reference to the others. Therefore, the drop in the percentage of those of 60 years of age and over many not have been due to an increase in mortality but merely due to an increase in the percentage of those under 60 in the population due to natural increase and immigration. This latter theory seems most likely in the light of information on migration which is discussed later in this Chapter. To add weight to this, it is worth noting that in the 10% sample for 1891 there were 19 males and 24 females aged 70 or over.

Household Size

In the 1891 Sample there were 376 households and 1,888 people, yielding a mean of 5.02 with a mode of 5 and a standard deviation of 2.43. With a similar standard deviation and the same mode as 1871, the only small change of note occurred in the mean itself which had risen by 0.11 on 1871's figure. The mean, according to the Lennox Herald, of May 16th 1891, for "Number per Family" (which is assumed to include lodgers and visitors and can therefore be more accurately described as "household size"[18]) was 5.05 for the Parish of Bonhill, i.e. Alexandria, Jamestown, Bonhill Village and rural Bonhill. This compares to 5.01 for 1871. Thus, both the 10% Sample and the Lennox Herald figures, taken from the whole Census, show a small rise in mean household size over the two censuses. The slightly higher figure given by the Lennox Herald could be due to a small sample error, but could also be due to the inclusion of rural areas where large farmhouses, estates and country houses may have had labourers and servants living-in, thus boosting the average household size for the Parish. However, the overall pattern was that housing provision was not improving with the growth in population, but struggling to keep pace with it at standards (in terms of numbers per household) which were no better

than those of 40 years earlier, though sanitary provision had probably improved over that time.

New houses were being built and were looked upon as desirable properties although only consisting of a room or two and a kitchen. 1891 was in a building boom era, and, as well as the tenements and middle-class housing discussed in the introduction to this Chapter, public buildings such as Church Halls and Banks[19] were being erected and amenities improved in general. The growth in population between 1871 and 1891 was rapid, and building, being carried out by small, private building societies, and not by Councils as in the twentieth Century experience, was piecemeal with little forward planning involved. Despite the apparent overcrowding, the movement away from the older, more central parts of the villages, which may have been regarded as a modern phemomenon, was already under way. A reporter commenting on the figures for population and households quoted above, stated that there is "a considerable decrease in the resident population in districts where property is old, that is the population is spreading out"[20] (perhaps preferring the risk of overcrowding to the risk of insanitary conditions).

Lodgers, Visitors and Relatives

Throughout the three Censuses studied, the trends exhibited by the figures for the taking in of visitors and relatives and those exhibited by the figures for the taking in of lodgers were remarkably consistent with each other as the table below shows.

TABLE 8:2

| | 1851 | 1871 | 1891 |
|---|---|---|---|
| % Households with lodgers | 18 | 15 | 19.2 |
| " " " Visitors and Relatives | 21 | 18 | 22.4 |
| " " " Both | 8.8 | 3.4 | 4.8 |

As the percentage of households with lodgers and those with visitors/relatives each dropped by 3% from 1851 to 1871, so they also rose by 4% between 1871 and 1891. The rise between 1871 and 1891 can only be explained by the persistence and increasing severity of housing shortage due to the renewed increase in immigration between 1871 and 1891. Similarly, the drop from 1851 to 1871 was due to an easing of the housing problem caused by a lull in immigration, and perhaps even a net migration from

the Vale of Leven in this period. The percentage of houses, taking in both lodgers and visitors/relatives remained low, despite the rise in the individual categories between 1871 and 1891. Possibly there was less economic need for taking in both, or perhaps there was so little room available that very few households could accommodate both lodgers and relatives.

The percentage of households with servants in 1891 was 2.9%, not a significant rise from the 2.1% of 1871. As in 1871, the availability of jobs in the Works, which were preferred to the long hours and low pay which servants endured, ensured that only a few households could afford to pay for servants.

## Occupations

### Male Occupations

A broadening of the employment structure among males to include important categories of shipbuilders, metal and engineering workers was one of the main differences between the 1851 and 1871 samples. However, no such significant differences in employment occur structure/between the 1871 and 1891 censuses. The picture is rather static over the period in terms of percentages and categories, though it must be remembered that more people were involved in the sample, and so where percentages are similar from 1871 to 1891, for example, this actually represents a substantial rise in the real numbers involved in that sector.

The Bleach, Print and Dye Works were still the biggest employer with 51.4% of the Male workforce there, compared to 51% in 1871. The small percentage drop from 56.7% of the male workforce employed in this industry in 1851 had therefore levelled out and of course in real numbers there was actually an increase. In the sample itself the numbers of male printworkers had risen by 88 (which can be taken as approximately one tenth of the actual rise) between 1871 and 1891. As in 1871 a wide range of jobs are represented in this category including the familiar calico printers, Printworkers and Dye Workers, but other groups included colourmakers, cloth packers, printfield mechanics and firemen[21]. The latter mentioned point to increasing technical sophistication, and yet block cutters and block printers, although few, were still employed, presumably for the specialized jobs indicated by Bremner[22].

The Printworks was still the major employer but it had still to encounter the difficulties which it was to face in the 1890's which caused the amalgamation and eventual decline of the Industry, reflected in the drop in the population of the Valley from 1891-1901.

Building trades no longer maintained their second place as employers of the male workforce but nonetheless they did show a rise on their 1871 percentage of 7.5%. In 1891 they had 8.4% of the male workforce. Within this group, there was a definite increase in modern trades such as joiners and plumbers. The rise in both percentage and real numbers involved in these trades was probably due to the building boom around this time.[23]

Retail trades, the 3rd biggest group in 1871 had overtaken "building trades" and was now the second biggest employer with 9.4% of the male workforce (6.7% in 1871). These included general merchants, grocers, egg merchants, licensed grocers, drapers, fleshers, bakers and their assistants. Alongside this an expansion of the numbers of women involved in retail trades[24], represents a very substantial growth in this sector. In 1871, 24 people (male and female) in the 10% Sample were involved in retailing, in 1891 it was 71 . The retail trade must have grown due to increased demand, and the growing affluence of the population, where the value of wages was very definitely rising, must have contributed to this. The rise in the numbers in retailing may also indicate the demise of the factory shop, just as the demise of the factory school came about with the Education Act of 1872[25]. Both trends in turn weakening the idea of a paternalistic relationship of Printwork owner and worker which had been propagated in the 19th Century. Growing affluence and improved communications led to an increase in the choice and variety of foodstuffs and clothing available. This in turn, along with sanitary improvements, helped to bring down the death rate among adults.

From a group too small to warrant a separate category 40 years earlier, to clearly the 4th largest employer of male labour in 1891, metal and engineering workers represented 6.3% of the male workforce. This had grown from 4.7% in 1871. Reinforcing the trend towards heavy industry in Clydeside as a whole, even in

such a bastion of the older, and at this stage tottering, textile industry, as the Vale of Leven. What the Vale of Leven required at this time was a strong alternative to the printworks, but its tradition in textiles, distance from raw materials, and the shipyards with the availability of better sites elsewhere, meant that metal and engineering industries were not attracted to the area. Within the small, if growing numbers employed in this Industry many, like the shipyard workers (a separate category), may have travelled each day to Dumbarton to work. However, even if the Vale of Leven had generated all of this metal and engineering work itself, the numbers involved were so small in comparison to the numbers employed in textiles that with the eventual decline of the latter there was no alternative employment available. This led to great problems and hardship in the Vale of Leven at the turn of the Century.

General Labourers represented 5.8% of the male workforce, many probably fulfilling the same casual and temporary function as in earlier years[26].

Shipyard workers represented 3.5% of the male workforce, a slight drop on the 3.9% of 1871. The interesting point here is that over three quarters of these lived in Renton, the closest Vale of Leven settlement to the shipyards of Dumbarton, and the one benefiting most from the flourishing yards.

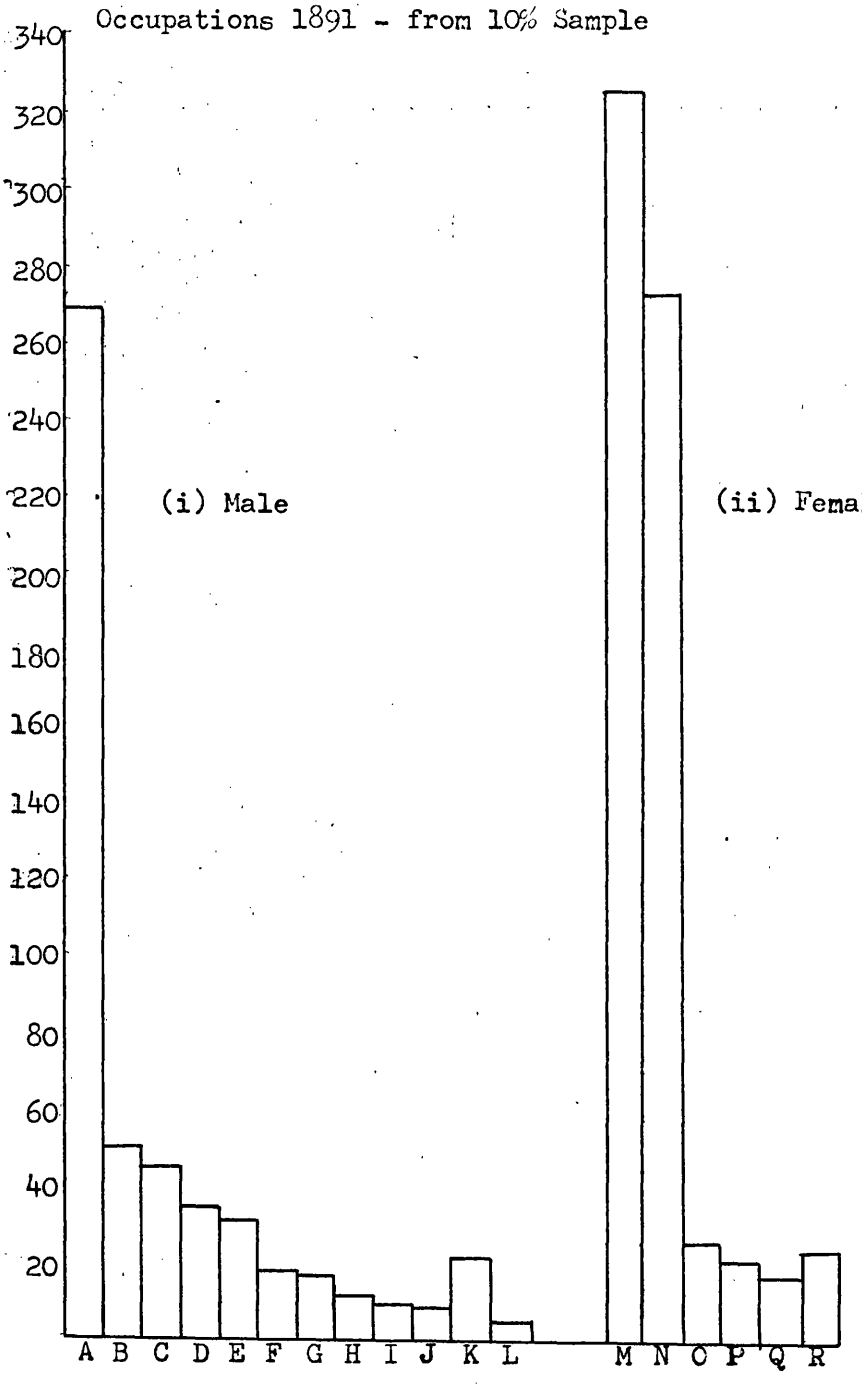
Transport workers now accounted for 3.3% of the male workforce, a drop on the 1871 figure of 5.6%. Within this group were less "Carters" but more railwaymen than in 1871.

2.2% of the male workforce had retired, this was slightly up on the 1.7% of 1871, possibly as a result of increased longevity, though retiral was not enforced at any particular age. Indeed if a man was fit and had employment he retained that employment for as long as possible (though many older men became nightwatchmen) especially if he had no family to support him.

The other small groups represented in the Census sample were (a) the Professional and Managerial group with 2.3% of the male workforce, a slight increase on the 1.9% of 1871.

Fig. 8:3

Occupations 1891 - from 10% Sample




Key

A Bleach, Print & Dye Workers
B Retail
C Building Trades
D Metal & Engineering
E General Labourers
F Shipyard
G Transport
H Professional & Managerial
I Clothing
J Watchmen
K Retired & unemployed
L Others

M Housewives
N Bleach, Print & Dye Workers
O Retail
P Clothing
Q Servants
R Others

(b) Clothing Workers - whose percentage among males had steadily declined over the 3 censuses to stand at 1.5% in 1891, probably due to (i) availability of other work and (ii) importation of clothes from outside of the Valley meant that the self-sufficiency of small semi-rural communities was being eroded.
(c) 1.8% of the males were in miscellaneous trades ranging from gasworker to grain miller.
(d) 1.5% were either registered as unemployed or had no occupation entered against their name.

Female Occupations

As in 1871, a large proportion (87%) of the female workforce was either housewives or printworkers. The percentages in either category had not altered greatly in 20 years, with 47.6% of the female workforce housewives and 39.4% printworkers. However, it must be borne in mind that whilst the percentage figures are little different from 1871, they hide a very real increase in actual numbers in both groups. There were as many women as men in the 1891 sample, employed in the printworks, as was the case in 1871. This was a rise of around 90 jobs in the sample (which if it is taken as being without error indicates that the real increase is something in the order of 900. Over the 20 year period, a commensurate rise in the numbers of males employed also took place. The availability of jobs for women led to an increase in the immigration of women to the Vale of Leven, as outlined earlier in the Chapter and in the section on "Origins" in this Chapter).

As with the male occupations, where an increase in those involved in retailing was evident since 1871, females in retailing had risen to account for 3.2% of the female workforce, from a position of insignificance in 1871. Many, but not all, of these women were wives and daughters of male retailers and assisted them in their shops. The rise in the numbers in retailing overall, illustrates its growing importance in the life of the Valley.

The 2.8% involved in Clothing was not a significant variation on 1871's figure of 2.7%. In contrast, the numbers of servants among females had dropped to 2.3% from 4.3% in 1871. So whilst the percentage of households with servants was not much

changed in the same period, the number of servants which each house had, had obviously declined.

There were no other significant groupings among the women with only 0.7% in the professional sector, mainly teachers, 0.3% clerical, 0.3% agricultural and 1.6% others.

Male and Female Occupations 1871-1891

The situation with respect to the major occupation groupings had changed little since 1871 and only slightly since 1851. Amongst males, shipbuilding and metal and engineering work, had consolidated their positions in the 1871-1891 period, but approximately the same proportion of the male workforce(51%) was employed in the Printworks, over the same period.

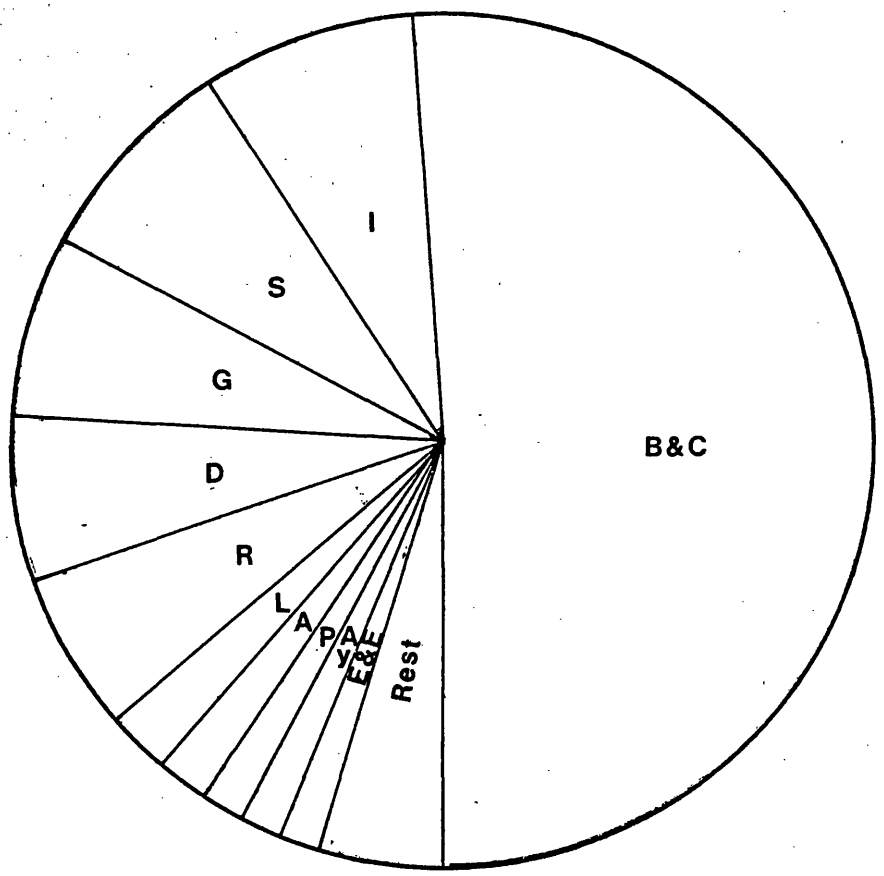
Female occupations similarly remained steady with the large proportion either housewives or printworkers. However, one slight change of note was the development of a retail sector to the female employment structure, along with a growth in the male retailing sector.

School, At Home and Unemployed

The growth in the numbers of both males and females in the 5-19 age group at school, observed between 1851 and 1871, continued with a much steeper rise between 1871 and 1891. 55.8% of males and 54.1% of females in this group were at school in 1891, compared to 36% and 31% respectively in 1871. Public schooling had been extended and organized with the Education Act of 1872[27] which resulted in this large increase. The percentages at school would of course have been greater, particularly among boys, if the 15-19 year olds had been excluded, but to ensure that the entire school population had been accounted for, this age group had to be considered. (Using the same age grouping over the 3 censuses allows a comparison to be made in any case and does not detract from the results.) The percentage of girls still lagged narrowly behind the boys percentage of those at school, emphasized by the fact that only one boy of 14 was "at home", that is not at school or employed, compared to 26 girls in that category. The girls at home often acted as housewives, since mothers and fathers, many of whom were widowed, were at work.

Fig. 8:4

Place of Origin of the Urban Population of the Vale of Leven 1891 (taken from 10% Sample)




Key

| | |
|---|---|
| B & C | Bonhill & Cardross |
| I | Ireland |
| G | Glasgow |
| S | Stirling |
| D | Rest of Dumbartonshire |
| A | Argyllshire |
| R | Renfrewshire |
| L | Lanarkshire |
| P | Perthshire |
| Ay | Ayrshire |
| E & E | England & Elsewhere |
| Rest | Rest of Scotland |

Unemployment was still very low (1.2% of male workforce, and only one female considered herself unemployed). This small percentage hid the dangers of overdependence on the Textile Works which were to come to light only a few years later when the Industry went into its decline.

Place of Origin

In the twenty year period since 1871, the population of the Vale of Leven had risen from around 13,000 to about 19,500[28], whereas the population of the purely urban areas had probably risen from around 11,800 to 18,800[29]. This 50% growth over twenty years was the result of a general lowering of the death rate, increased life expectancy, high fertility, possibly slight improvements in infant mortality and the effects of migration.

A comparison of the 1851 and 1871 figures suggested that immigration had slowed down and that in that period amongst the most mobile groups there had been a net migration from the Vale of Leven. It was also suggested that an important phase of immigration had already taken place before 1851, and had shown itself on the 1851 population pyramid with a bulge at the 35/39 and 40/44 year groups in 1871. 57.3% of the population were native born, but by 1891 the population had risen by around 6,000 (50% of the 1871 figure) and the native born proportion had gone down to 51.2%, an indication of the increasingly important role of immigration in the 1871 to 1891 period. In the 1851 to 1871 period immigration was less important in the peopling of the Vale of Leven, and in fact amongst the younger adults there had been a net migration from the Vale of Leven in that period. Table 8:5 below shows the population of the Vale of Leven in 1871 and 1891 with the approximate numbers in both immigrant and native groups over this time.

Table 8:5

| | Urban Population | % Natives | Numbers of Natives | % immigrants | Number of immigrants |
|---|---|---|---|---|---|
| 1871 | 11,730 | 57.3 | 6,721 | 42.7 | 5,009 |
| 1891 | 18,880 | 51.2 | 9,667 | 48.8 | 9,213 |

The table (8:5) shows that both native and immigrant groups grew over that period, the natives by some 2,946 and immigrants

by around 4,204. This contrasts with the growth in the 1851-1871 period where the number of natives grew from 4138 to 6,721 (mainly as a result of natural increase) whereas the number of immigrants in the same period only rose from about 4,409 to 5,009, a rise of some 600.

The trends in the most mobile groups over the 1871-1891 period reflect an even more complex situation than in the 1851-1871 period, where both natives and immigrants in those groups showed a drop in numbers over the 20 years due to death but more importantly to emigration. There are important contrasts in the experiences of mobile groups in the different periods. As in the previous Chapter, the 10-24 year olds of 1871 who were the 30-44 year olds in 1891, were compared over the 20 year period (see Table 8:6 below).

Table 8:6

| | Natives in Group | Migrants |
|---|---|---|
| 1871 10-24 year olds | 2,520 | 1,250 |
| 1891 30-44 " " | 950 | 2,170 |
| Shortfall or Increase | -1,570 | + 920 |

This represents a 62.3% drop in the number of natives whereas a 73.6% rise in the number of immigrants has taken place. This is a very different from the 1851-1871 period, where a 56.4% shortfall of natives and a 21% shortfall of immigrants took place. If a similar death rate is assumed in each case, then it appears that even more natives left the Vale of Leven in the latter period. The immigrant figures tell a different story. They show that if their death and emigration rates are assumed to be the same as those of the natives then those lost were more than replaced by a large influx of immigrants which boosted the 1871 figures for the 10-24 (30-44 group in 1891) immigrant group. In fact, the influx of immigrants in this age group just failed to compensate for the deaths and emigration of all those lost in both native and immigrant groups. The death rates over the 20 year period are therefore crucial in determining whether, within this mobile group, immigrants were replacing emigrants. If a death rate of 20/1000[30] over 20 years for the whole group is assumed, then out of the 3,770 people in this group in 1871, 2552 would have survived, whereas the actual figure of those in this group in 1891 was 3,120.

That is, if this death rate was true, then immigration was replacing those lost by emigration. But as was stated in the previous Chapter, the death rate of this group was likely to have been much lower and therefore many more survivors were likely. Therefore for this mobile group all that can be determined is (a) if there were more survivors than 3,120 then there was a net migration from the Vale of Leven and (b) if there were in fact less survivors than 3,120 present in this group than there had been a net migration to the Vale of Leven. What can be stated with some certainty is that there was a shortfall in this group of some 17.2% between the 1871 and 1891 period. Whereas the shortfall for the same age groups considered over the 1851-1871 period was 37.5%. Therefore, in both periods for these age groups immigration was not replacing those lost by death and emigration but the situation was less severe in the latter period. However, overall both native born and immigrant numbers increased from 1851 to 1871 and from 1871 to 1891. Native born numbers rose due to natural increase, and immigrant numbers rose due to a net migration to the Vale of Leven. This means that the native numbers were being boosted by the birth of large numbers of children, many of these of course were the sons and daughters of young immigrants. Children are obviously not a particularly mobile group and are therefore less susceptible to emigration than young single adults. Immigrant numbers were growing over the whole age range in the 1871-1891 period, whereas in the 1851-1871 period there was a net loss of migrants in the more mobile age groups. The growth in migrant numbers in the 1871-1891 period was large (in the region of 4,204) whereas in the 1851-71 period the growth was smaller (only 600). Therefore immigrants in 1891 accounted for a bigger percentage of the population than in 1871.

The biggest group of immigrants were still the Irish when compared to the individual Scottish Counties[31], but their importance, in percentage terms, had been slowly diminishing since 1851, and even in a period of large immigrations such as this one (1871-1891) their percentage dropped from 9% to 8.2% over the twenty year period. The nearby Scottish Counties, Lanark and Glasgow, Stirling, the rest of Dumbartonshire, Renfrew and Argyll, had shown the biggest percentage drop in immigrants between 1851 and 1871. In 1851 they had represented 31.9% of the population,

whereas in 1871 they only represented 23.6% of the population. All of these counties showed a drop in this period except the textile orientated county of Renfrew. Between 1871 and 1891 the total percentage of the population coming from these counties was again 31.9%. All these counties' contributions rose except Argyll, whose percentage contribution like that of the Irish had diminished over 1871 and 1891. Renfrew in contrast has steadily increased its contribution since 1851. All the rest showed a decline in percentage from 1851 to 1871 and then had almost risen back to their 1851 percentages forty years later with the exception of Stirling which displayed the same trends as the majority of the nearby counties but surpassed its 1851 percentage contribution. Stirling had contributed 6.6% in 1851, 4% in 1871 and 8.1% in 1891.

To summarize these changes, and to offer some possible explanation:-

(a) The percentage native born population declined since 1871 due to a large influx of immigrants.

(b) Emigration was very common, but particularly in the 1871-1891 period it was completely overshadowed by immigration and natural increase.

(c) Over the 3 census years under consideration, the immigrants from the nearby Scottish counties dictated the overall trend in migration, i.e. in 1871 when the overall percentage of immigrants dropped with respect to 1851's total the pronounced drop occurred among these counties' immigrants, and in 1891 when the overall percentage of immigrants rose with respect to 1871's percentage then most of this rise was due to increased migration from these counties to the Vale of Leven.

(d) The most pronounced follower of that trend was the county of Stirling whose contribution dropped by 2.6% between 1851 and 1871 and increased by 4% (of the total population of the Vale of Leven) between 1871 and 1891. A possible explanation for this pattern is that Stirling was the most accessible county to the Vale of Leven outside of Dumbartonshire itself. It was essentially rural in the areas closest to the Vale of Leven and was perhaps the least hindered, of all the nearby counties, in its relationship to the Leven Valley, by the attractions of heavy industry. In contrast the rest of Dumbartonshire and Lanarkshire may have offered more obvious outlets in heavy industry closer to the homes of prospective

migrants. Stirling's experience with respect to migration to the Vale of Leven, charts most faithfully the changing labour demands of the textile finishing industries of the Valley.
(e) Argyll's diminishing contribution may have been due to the slow drying up of the Highland emigration, to the Vale of Leven at least, which first started after 1745. Many Highlanders were, like other immigrants, only temporary settlers in the Vale of Leven, as they followed the natural routeways provided by Loch Lomond and the River Leven towards the industrial heartland of Scotland.
(f) The percentage of Irish immigrants in 1891 was still higher than those of the Industrial Scottish counties (unless Glasgow is taken as part of Lanarkshire). The slowly diminishing trend which they exhibit, like that of Argyll, would seem to be more related to the conditions in their native land, rather than to an awareness of employment opportunities in the Vale of Leven. In contrast to the Irish, the percentages from the nearby Scottish counties would seem to exhibit a greater sensitivity to the changing employment situation in the Vale of Leven throughout the period of this study, probably coupled with a greater ease of being able to return home if as in the 1850's and 1860's the industry did not need their services.

Summary 1891

The population of the Vale of Leven had risen steeply between 1871 and 1891. This rise can be attributed partly to the falling death rate, a large increase in net migration to the area and a large natural increase, as would be expected of an area where there were many young adult migrants as well as a predominantly young native population. The population was even more youthful than in the previous census years under consideration, with 37% under 15 years of age. Living conditions were still as cramped as in 1851, despite available building land, although in accord with the rest of Clydeside, the Vale of Leven was in a period of physical growth. The percentage of households with lodgers, visitors and relatives was still high, emphasizing the overcrowded conditions which existed. The majority of male workers were still employed at the Printworks, despite the rise of heavy industry in West Central Scotland by which the Valley was largely unaffected. Most women of working age were housewives and the overwhelming majority of the remainder were working in the Printworks. Unemployment was still

very low. Provision of schooling had improved with the percentage of children at school between 5 and 19 years old rising by around 20% on the 1871 percentage. Net migration to the Vale of Leven had increased since the 1851-1871 period, notably from the nearby Scottish counties which accounted for 31.9% of the total population in 1891.

Footnotes - Chapter VIII

1. According to the 10% sample from the Census Enumerators Books and C.M. Thomson, Op. Cit.
2. L.H., Aug 15th, 1891.
3. Slaven, Op. Cit. P.237.
4. L.H., Aug 30/Nov. 8, 1890
5. For example see L.H., July 12, 1890, Jan.24, Jan 31, Oct. 17, 1891.
6. See Chapter V.
7. L.H., Oct 17, 1891.
8. L.H., Jan 11, 1890.
9. L.H. Sept 19, 1891.
10. L.H. April 4, 1891.
11. Taken from 10% sample of C.E.B.s.
12. This is of course not conclusive proof of longer life, this imbalance could have been due to earlier imbalances in fertility or migration for example.
13. Slaven, Op. Cit. P.140.
14. Death Rates calculated from figures in Return of Births, Marriages and Deaths in Scotland published by the Registrar General.
15. Britain 1980 H.M.S.O., P.9.
16. Ibid.
17. Clarke (1972) Op. Cit. P.123.
18. This figure was arrived at by dividing total population by the number of households.
19. See footnotes 4 and 5 above.
20. L.H. May 16, 1891.
21. Drying stores at the Works were very hot and numerous fires broke out, though some may have been deliberately started.
22. Bremner, Op. Cit. P.302.
23. See footnote 3.
24. See next section "female occupations"
25. Neil, J. (1912 Records and Reminiscences of Bonhill Parish, P.84.
26. See Chapter VI and VII.
27. See footnote 25.
28. According to Thomson's (Op. Cit.) estimate.
29. According to 10% sample.
30. This is a deliberately pessimistic estimate higher than the overall death rate for both 1871 and 1891.
31. If Glasgow is excluded from Lanarkshire.

## Trends 1851 to 1891

The following diagrams, tables and text highlight some of the major trends over the 3 censuses considered in this study.

### Population Growth (Fig. 9:1)

This graph shows the growth of population in the 19th Century. It shows several important trends. The steep growth in population between 1831 and 1841, a renewed steepness in the 1871 to 1891 period with a dramatic fall, due to the difficulties of the Works, between 1891 and 1901. Also worth note is the lack of growth in the rural population of Bonhill Parish, highlighted by the comparison of the population estimates for the purely urban area of the Vale of Leven, with the figures for Renton village and the whole of Bonhill parish, urban and rural.

### Age/Sex Structure

The age/sex structure had changed little over the 1851 to 1891 period although a growing imbalance in favour of females over the 3 censuses can be recognised. This was due mainly to their having a higher immigration rate than men, which was given impetus by the comparatively large numbers of jobs for females at the Printworks.

### Household Size

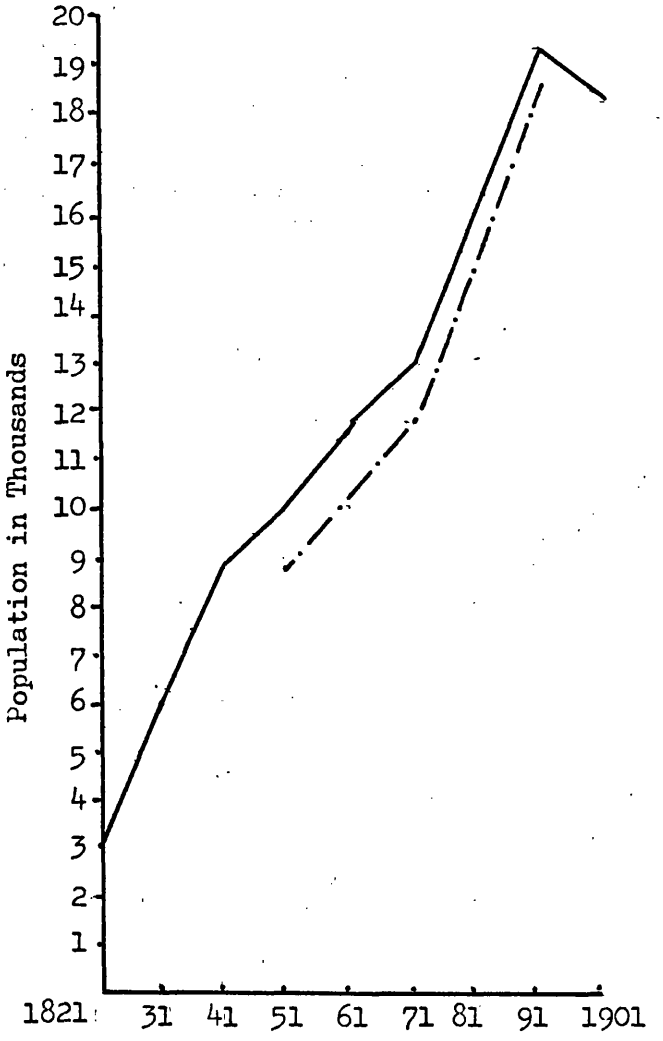
The sizes of households had altered little over the period with the rate of building not fast enough to improve the numbers per household for the vast majority of the population. Although conditions improved marginally around 1871, probably due to the lull in immigration, people were, however, moving out from the older areas of the villages to new and presumably better housing in the peripheries.

### Occupations

Considering the growth of the population over the 40 year period, the state of the major occupation categories had changed little through time in terms of the percentages of the workforce which were included in them. The most important category was, of course, the printworker, and these percentages changed little although in terms of real numbers employed, considerable growth had occurred as Tables 9:2 and 9:3 show.

Fig. 9:1

The Population of the Vale of Leven 1821-1901
(after C. M. Thomson)




Key

——— Combined totals for the Parish of Bonhill (including rural areas) & Renton Village.

·—·— Estimates of the Population of the purely urban areas of the Vale of Leven taken from the 10% Sample.

Table 9:2 Percentage and real numbers[1] of male workforce employed in Bleaching, Printing and Dyeing Works and living in the urban areas of the Vale of Leven.[2]

| | 1851 | 1871 | 1891 |
|---|---|---|---|
| Percentage of Workforce | 56.7 | 51 | 5.14 |
| Real Numbers | 1,600 | 1,800 | 2,680 |

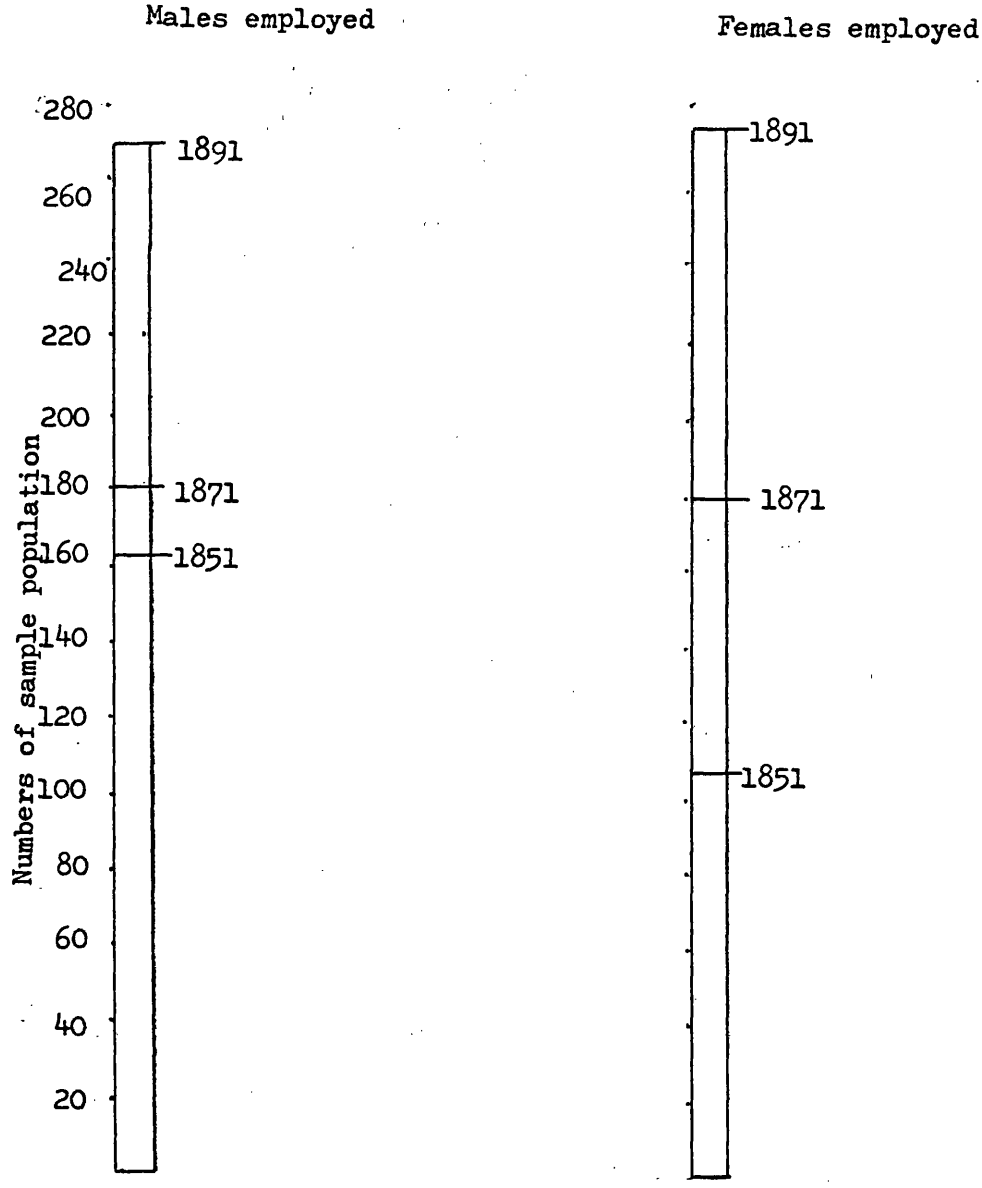
Table 9:3 Percentages and real numbers of female workforce employed in Bleaching, Printing and Dyeing Works and at home, within the urban areas of the Vale of Leven.

| | Printworkers | | |
|---|---|---|---|
| | 1851 | 1871 | 1891 |
| Percentage of Workforce | 32 | 40 | 39.4 |
| Real Numbers | 1,020 | 1,770 | 2,690 |

| | Housewives | | |
|---|---|---|---|
| | 1851 | 1871 | 1891 |
| Percentage of Workforce | 49.5 | 50.4 | 47.6 |
| Real Numbers | 1,570 | 2,230 | 3,250 |

Graph 9:4 Shows the changing employment structure at the Printworks. It illustrates the relatively slow growth, particularly in the Male sector between 1851 and 1871, and the growth of employment opportunities for women which had a positive effect upon their migration rates to the Vale of Leven. Employing women was particularly attractive to the Printwork proprietors. They did not have to compete with heavy industry for their services, they were cheaper to employ than men and their usefulness grew so the Industry became more mechanized and less dependent on hard, manual labour. The slower growth of jobs between 1851 and 1871 was responsible for the slowing down of immigration, in general, in this period. In contrast, the big increase in immigration in the 1871-1891 period can be definitely linked to expanding job opportunities offered by the Printworks, which had shaken off the lack of confidence caused by their earlier problems,

Fig. 9:4 The changing sex ratios of those employed in the printworks 1851-91



Lodgers, Visitors and Relatives (see table 8:2)

The persistence of lodgers, visitors and relatives residing with the family groups was a hallmark of Victorian industrial communities. Relatives (and visitors) were always to be preferred to lodgers, and a 3% gap, throughout the 40 year period, occurred between households with lodgers and those with visitors and relatives. A drop in the percentages of households taking in either lodgers or relatives and visitors occurred between 1851 and 1871, when immigration had been slack, and when the numbers of people per household had dropped slightly. All of these reverberations had come about because the Works had been in difficulty during this period. Consequently, when the situation at the Works improved, immigration increased, household sizes rose and the numbers of lodgers, visitors and relatives residing within households increased.

Origins

The scale of immigration was directly linked to the availability of work. There were less immigrants by percentage, in the Vale of Leven in 1871 than at either of the other two censuses under study, mainly due to the slow expansion of the Works overall in the 1851 to 1871 period. There is evidence to suggest that in this period amongst young adults there was a net migration from the Vale of Leven (see Chapter VII). Table 9:5 shows the relationship between total numbers of immigrants in the Vale of Leven and the total numbers employed at the Works (residing in the villages).

Table 9:5 Numbers of immigrants and textile finishing workers 1851-91 (Based on 10% Samples)

| | Immigrants | Textile Workers (both sexes) |
|---|---|---|
| 1851 | 4,412 | 2,620 |
| 1871 | 5,009 | 3,570 |
| 1891 | 9,213 | 5,370 |

A slow growth in jobs meant a slow growth of immigrants and a large growth in jobs meant an increased immigration rate.

The Irish represented 10% of the population in 1851, 9% in 1871 and 8.2% in 1891. Their percentage contribution was slowly

declining. In contrast, the nearby Scottish counties dictated the migration trends in the Vale of Leven. They were very receptive to the changing fortunes of the Works. Their percentage contribution dropped by 8.3% between 1851 and 1871 when jobs were less plentiful, only to rise again (by the same percentage) when employment was abundant.

The overall migration trends suggest that a big influx of migrants occurred prior to 1851 (probably in the decade between 1831-1841). The growth of population slowed down between 1851 and 1871. Within this period, although the whole population rose by some 3,180 and immigrant numbers rose by around 600, there may have been periods of net migration from the Valley, particularly when cotton supplies were greatly reduced by the American Civil War in the first half of the 1860's. The Works increased in strength in the 1871-1891 period and a new wave of immigration in this period meant that there were approximately 4204 more immigrants in the Vale of Leven than in 1871. It would be wrong to imagine that only immigration took place. In fact, very many natives and migrants alike emigrated probably to areas where heavy industry predominated or to other textile towns. By modern Scottish standards the mobility of the population throughout the second half of the 19th Century (and earlier) was very great and arrivals and departures must almost have been daily events.

Death Rates - a note

Death Rate statistics were not comprehensively produced over the 1851-1891 period. Therefore, whilst only a few rates were available for individual years (which may or may not have been typical) their use in this study was obviously limited. Bearing these limitations in mind, it is possible to make some tentative suggestions as to the reasons behind the variability of the available death rates.

It would be natural to expect that the Death Rates would have declined over the 3 censuses as it was an era of supposed sanitary improvements backed by Public Health Acts, industrial advance and improved food supply. Yet, death rates for 1859 and 1891 were very similar with a small dip around 1871 (see Table 9:6).

Table 9:6 Death Rates - Bonhill Parish[3]

1859 - $^{20}/_{1000}$

1871 - $16.8/_{1000}$

1891 - $18.5/_{1000}$ ($^{19}/_{1000}$ for Renton)

Of course there could have been many variations between these dates as epidemics or outbreaks of disease took their toll. However what seems to emerge is a correlation between higher death rates and a higher percentage of immigrants in the population. It is possible that the dip in the death rate in 1871 was due to sanitary improvements which had recently been carried out under the Public Health Act of Scotland (1867)[4]. This in itself may have had the effect of lowering the death rate, but along with this a decrease in immigration had occurred which may have helped to lower the death rate by easing overcrowding and strain on sanitary provision. Less immigrants may also have resulted in less importation of infectious diseases. The reverse could be true for 1891 where another tide of immigration had taken place, placing a burden on Sanitary provision aggravating overcrowding in the villages and possibly importing disease from outside the Valley, thus raising the death rate.

Footnotes - Chapter IX

1. In both tables 9:2 and 9:3 the "real numbers" are a projection from the 10% sample data.

2. Since only urban areas of the Vale of Leven, i.e. Alexandria, Renton, Bonhill and Jamestown were considered in the sample, the projected "real number" is probably an under-estimation of actual numbers employed by the Industry. Many printworkers come from areas outwith those under study, e.g. Dumbarton, Balloch and Mill of Haldane.

3. Death rates derived from return of Births, Marriages and Deaths published by the Registrar General.

4. See Chapter VII.

Postscript 1891-1897

Although able to provide ready employment, in 1891 the Printworks of the Vale of Leven were already beginning to struggle against foreign competition and technical advances which were being pioneered elsewhere. Low wages[1] were not enough to sustain profitability using machinery which had been improved only in a piecemeal fashion throughout the second half of the 19th Century. Cotton goods were obviously made and processed more cheaply in the U.S.A. where cotton supplies were near at hand[2]. New chemical dyes were found to be more efficient than the turkey red dyes[3] mainly used in the Vale of Leven.

Around the end of the Century, the firms in the Bleaching, Printing and Dyeing Industry in the Vale of Leven amalgamated into two groups. The Manchester-controlled Calico Printers Association took over one group[4] and the United Turkey Red Company formed from the remainder of the companies. The latter group forming on the 23rd October, 1897[5], possibly represented an attempt to resist a take-over by the former group's parent company. Both amalgamations were essentially attempts to offset decline. Neither attempt proved to be successful, and the shares of the Calico Printers Association declined after a few months[6]. The decline in the Works caused great hardship to a population so chronically dependent on them. In contrast to the increased immigration of the 1871-1891 period, the 1891-1901 period was one of emigration, as the population actually declined to under 18,000 and the Works struggled to survive.

The Works were given a small boost by World War One, only to wind down, with greatly reduced workforces, and eventually close one by one up to the 1960's. One company which was not associated with the older works, the British Silk Dyeing Company, a 20th Century concern based at Balloch, nonetheless carried on the tradition of dye working in the Valley up to 1980, when it too closed.

Footnotes - Postscript 1891-1897

1. Wages were lower than in the heavy industries, generally. However, around this time the value of the wages of the Working Classes actually rose.
2. The Indian market was also of prime importance to the Vale of Leven Works and the growth of cotton finishing there severely affected the Vale's Works.
3. See Thomson, C.M. Op. Cit.
4. See Chapter V.
5. Lennox Herald, October 30th, 1897.