INDUSTRIAL ARCHAEOLOGY OF FIFE : 1790-1914

by WALTER M STEPHEN

Thesis submitted for the degree of
Doctor of Philosophy

Department of History
University of Strathclyde

March 1975

PAGE NUMBERING AS ORIGINAL

Summary

This thesis examines industrial change in Fife from 1790 to 1914 and the expression of change in the landscape of the county. Beginning by sketching in the background of the county as an isolated and fragmented peninsula, the first chapter goes on to discuss the distinctive character of Fife. Central to the thesis is the change in population distribution. In 1755 the south-western half of the county, held 48% of the population and now has 82% of the larger whole. The twin pillars of the nineteenth century industrial economy of Fife - coal and textiles - are then examined for their distinctive features. Questions are then posed for answer in later chapters.

Chapter 2 examines some of the early published sources on the county with a view to establishing the main areas in which change occurred between the 1790s, and the 1840s.

The theme of Chapter 3 is agriculture and rural industry. The following specific topics are considered in some detail - drainage and reclamation, the division of commonties, the cessation of flax culture, the nature and distribution of farm power generation and rural processing industries.

Quarrying is dealt with in Chapter 4, particularly the exploitation of the meagre resources of ironstone and the plentiful supplies of limestone. A detailed study is made of the limestone industry, its seasonal nature and the community and ancillary activities which evolved at its biggest centre, the village of Charlestown.

Chapter 5 is concerned with coal-mining and in particular the questions of drainage and its cost, social and working conditions in the first half of the nineteenth century, the great expansion of output at the end of the century and the population influx associated with this. The chapter concludes with a survey of the surface evidence testifying to former mining activity in the county.

Industries firmly based on coal are the subject of the next chapter. These include salt-panning, ceramics, shale processing and the range of engineering activities which grew up, particularly in and around Kirkcaldy.

Textiles, in effect the linen industry, are the subject of Chapter 7. Particular areas examined are the contrast between town and country spinning mills in the nineteenth century, the differences in working conditions in the mills and at the hand-loom, and the contrasting textile activities and associated architecture of Kirkcaldy and Dunfermline.

The last two chapters are concerned with transport. Chapter 8 examines the dual nature of the road network in serving local and national needs and looks at the organisation and archaeology of statute labour and turnpike roads, including a report on excavations conducted on a stretch of eighteenth century road. In the context of rail transport two attempts to break the North British monopoly in Fife are studied in detail.

Chapter 9 studies transport by water; in some detail the ferry ports on Forth and Tay are studied, as well as the nineteenth century development of trading posts and the tracing of the Burnturk Canal.

CONTENTS

Figures

Tables

Plates

Plate	
3 a - c	Horse-mill, Binnend
3 d	Oil-mill, Burntisland
4 a	Charlestown - part of kiln range
4 b	Charlestown - harbour sluice
5 a	Urquhart day-level outfall
5 b	Thornton - engine - house
6 a	Tiel Engineering Works, Kirkcaldy
6 b	Abden Shipyard, Kinghorn
7 a	Former workers' houses, Midmill
7 b	Alexander Place, Gallatown
7 c	Handloom weaving shed, Dunfermline
7 d	Handloom weaving shed, Dunfermline
7 e	Pilmuir Works, Dunfermline
7 f	St Margaret's Works, Dunfermline
7 g	Construction details, Kirkcaldy linoleum works
7 h	National Works, Kirkcaldy
8 a	Old Great North Road - section
8 b	Mill Tail Bridge
8 c	Railway station, Burntisland
8 d	Tram shed, Gallatown, Kirkcaldy
9 a	Signal house, North Queensferry
9 b	Pettycur Inn
9 c	Pettycur - former sluicing basin
9 d	Seafield Harbour

Preface

This thesis represents the drawing together of many threads, some readily accessible, some difficult of access, and some whose existence was not recognised before. It is recognised that the treatment of the Industrial Archaeology of Fife is unequal in depth and that the processes of research have opened up areas where further investigation in depth would be rewarding; nevertheless, it is to be hoped that this compilation will provide a definitive basis from which any interested person can further study of this, or any similar region.

During the years when this thesis was in preparation, information, advice and opportunities to work out ideas were supplied by many people; to whom I should like herewith to make acknowledgement.

My thanks are due to a large number of people - pupils in schools in Kirkcaldy and Edinburgh, adult education and extra-mural students in Kirkcaldy, Aberdour, Dunfermline and Edinburgh, and members of Kirkcaldy Naturalists' Society - who have tolerated enthusiasm and encouraged it. An especial debt is owned to my former colleague at Balwearie High School, Alex Donaldson, and to Kirkcaldy's local historian, James Michie, who first opened my eyes to the riches below the surface of the Fife landscape.

The Rt Hon the Earl of Elgin and Kincardine, Mr Bruce-Jones, Camsie House, Charlestown and Rab Howie of the Grange, Kinghorn have all welcomed me to their homes, and given access to the private papers in their possession.

The custodians of the culture and records of the county - the staffs of the Fife County Library, Kirkcaldy Public Library, Dunfermline Public Library, the museum curators of Kirkcaldy and Dunfermline, the staff of the Dean of Guild Courts of Kirkcaldy and Dunfermline, the County Roads Surveyor - have done everything in their power to facilitate my work and it is with gratitute that this acknowledgement is made.

Outside the county I have been helped by the staffs of the National Coal Board, Edinburgh Public Libraries and those great national institutions, the National Library of Scotland and the Scottish Record Office.

Finally, two persons must be mentioned by name. Dr John Butt of Strathclyde University has been the most tolerant and humane of supervisors. At the same time he has referred me to various valuable sources, notably the Sun Fire Insurance Company policies. To my wife, Margaret, I owe an especial debt since, without her influence, what promised to be the labour of a lifetime would not have been disciplined into its present form.

Walter M Stephen

27 March 1975

CHAPTER 1

Introduction

Few Scottish counties have such a strongly marked individuality as Fife; an individuality often expressed in the term "the Kingdom of Fife". While the historical justification for such a term is obscure, the most cursory examination of a relief map makes it quite clear that here is a small part of eastern Scotland set apart from the main mass of the country by sea and hill barriers. Bounded on the north by the Firth of Tay and on the south by the Firth of Forth, Fife has a coastline of 107 miles, and it is a measure of the efficiency of these Firths as barriers that road bridges across them were only completed in the 1960s, even then, at distances of, respectively, 4 and 30 miles from the estuaries' seaward ends. To the west, Fife and Kinross are almost separated from the bulk of Scotland by the Ochil Hills, with a gap of only 3 miles between the Forth and the southern reach of the hills. North of Tillicoultry and Dollar these hills rise to over 2000 feet above sea level and run towards the north-west, in a mass 7 miles broad, to the Tay, near which the summits are in the range of 750 to 850 feet (Fig. 1.1).

East of the Ochils the small county of Kinross is disposed around Loch Leven and is separated from Fife by the small but definite igneous masses of the Cleish Hills (1243 feet) and Benarty (1167 feet) on the south, and the Bishop Hill (1450 feet) and West Lomond (1713 feet) on the east.

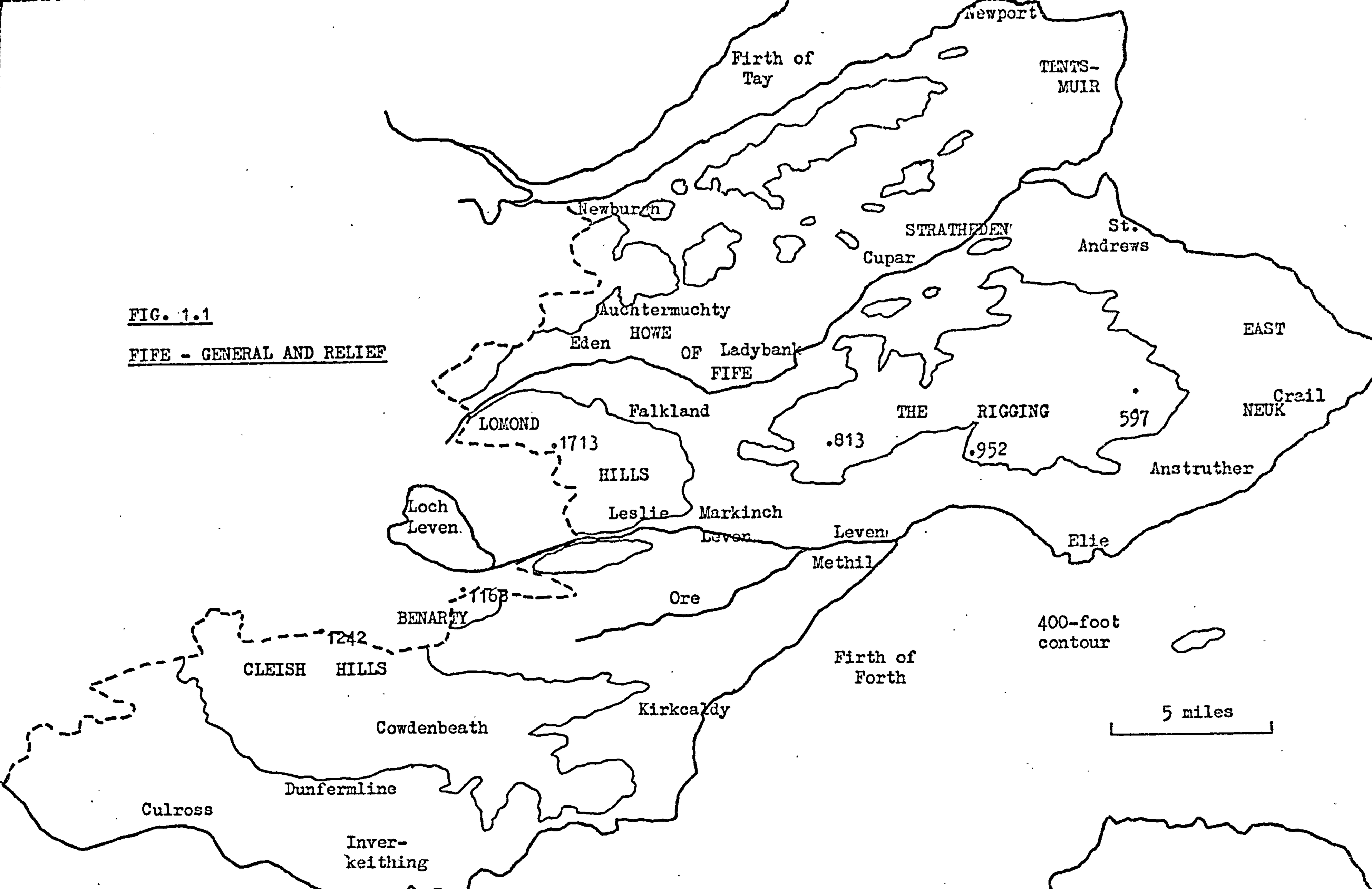
In detail, the topography of Fife is very complex, with dramatic changes often occurring within comparatively short distances but, in general, the picture is of three main west - east lines of upland separated and bordered by lowlands. The backbone of the county is the belt of high ground extending from Bishop Hill and West Lomond eastwards to form the "Rigging" of East Fife south of Cupar, broken only by the Markinch "gate" at just over 300 feet. This high ground is formed by the great sill responsible also for the Abbey Craig and Castle Rock at Stirling and the high ground around Kirk o' Shotts and north of Bathgate (1).

---

(1) J B Sissons, The Evolution of Scotland's Scenery, (Edinburgh 1967), 4 - 5

FIG. 1.1

FIFE - GENERAL AND RELIEF



South of the Firth of Tay, the eastward extension of the Ochils gradually declines from 935 feet at Norman's Law (3020) (1) and 749 feet at 2715 to 300 feet at Scotscraig (4428). Although far from formidable in terms of altitude there is great variation in depth of soil in this area. The hill mass has been cut up by the action of running water and ice to give a very varied topography with many steep slopes where mechanised agriculture may be dangerous, marshy hollows which are often frost pockets and north-facing escarpments casting long shadows which adversely affect the farming potential of the low ground bordering the Tay.

Much of southern Fife, from Benarty and the Cleish Hills eastwards to the coast from Aberdour to Buckhaven, is a complex of ridges running approximately west-east with igneous rock appearing on the ridges and ill-drained hollows between. Again, great contrasts in soil depth and type, and in microclimate, may occur within the space of a few tens of yards, and these have been aggravated in many areas by subsidence and other consequences of mining.

The most northerly lowland area is the Barony of Tayside, a coastal strip of less than a mile wide at an elevation of 25-100 feet, stretching from Newburgh to Balmerino. This is a highly fertile area on light soils, limited only by reduced solar radiation as a result of coastal fog and the hills to the south.

The Howe of Fife and Stratheden occupy the low ground between the Ochils on the north and, to the south, the Lomonds and the Rigging. This area, mainly below 150 feet, is now one of principally light and fertile soils with gentle slopes; although the central part of the Howe is a poor area of fluvo-glacial sands and gravels with some wet patches remaining from the former Rossie Loch (2).

Tentsmuir and Pilmuir Links (4918) form some 8000 acres of poor sandy land where the Howe of Fife - Stratheden lowland approaches the North Sea. These expanses of hungry soil lie at about 25 feet above sea level while eastwards of St Andrews a well-marked band of very fertile raised beaches laps around the lower slopes of the Rigging.

---

(1) Four - and six - figure grid references are used to locate places, explanations of these are to be found at the bottom of all Ordnance Survey One-Inch maps, Seventh Series. In relation to Fife, references with large Northings are in 100-Km square NT, those with small Northings in NO.

(2) Vide infra, Chapters 2 and 3

The third lowland is the valley of the River Leven, with considerable stretches of rather cold and heavy boulder clay, and an eastern area of raised beach deposits similar to that extending from St Andrews to Fife Ness. Again these are large expanses of fairly light, fertile, gently sloping land spreading northwards and gradually giving way to the heavier land of the Rigging.

The most southerly of the lowland areas is found south of a line from Aberdour to Dunfermline and, west of Dunfermline, south of A907. Again, these soils are fairly heavy, but extremely fertile, with raised beach deposits near the upper Firth of Forth.

The southern margin of the Howe of Fife and Stratheden corresponds with a geological division of critical importance. The Howe and the Barony are developed on sediments of Old Red Sandstone age while the Ochils are composed of volcanic ash and lavas of that age and of the succeeding Carboniferous. South of the Howe of Fife all the sedimentary rocks date from the Carboniferous, a statement of more than academic interest since this has ensured generous deposits of coal, sandstone, limestone, fireclay and oil shale, with a consequent crucially important economic development. Within this area of southern Fife the Leven forms an important boundary separating off an eastern area where coal exists and has been mined but where many of the rocks were laid down before the formation of coal and faulting and the intrusion of volcanic rocks and dykes have resulted in considerable fragmentation of the coalfield and a consequent small scale of operations.

South and west of the Leven, although faulting is very common and volcanic activity was also very marked, large deposits of coal exist and have been mined for almost seven centuries. The consequences of this division of the county into the rich coalfield area of the area south and west of the Leven and the area north and east of the Leven - an area without coal or with only meagre coal resources - are fundamental in terms of population growth and movement, of industrial development and of the development of transport links.

Agriculturally, this division between Carboniferous and Old Red Sandstone rocks also has its importance since the boulder clay derived from the

former has a tendency towards heaviness and wetness while the Old Red Sandstone tends to give a lighter, more easily worked, boulder clay which warms up more quickly in spring. Nevertheless, the soil pattern is not clear-cut since boulder clay may be deposited well away from the parent rock and, near the coast, is very often covered with the valuable raised beach deposits. The many igneous masses are also a complicating factor, since they often break down to give good soils which are seldom acid.

No account of the physique of Fife would be complete without mentioning the rivers. None of these is navigable beyond the tidal limit, their importance instead lies in their often having cut narrow, steep-sided valleys or "dens" in which there were many valuable water-power sites but which, at the same time, offered quite considerable obstacles to travel. In the coal-bearing areas these dens presented the first opportunities of exploitation by adit.

The estuaries of the Forth and Tay must be mentioned once more as being, on one hand, valuable arteries of trade ensuring that no part of the county was more than 9 miles from the sea, but at the same time posing real problems for overland movement. In effect, then, Fife is a micro-economy. The existence of these east-west tracts of country and of the great firths meant that there were few major physical obstacles within the county, but at the same time there was no obvious cohesive centre for the county as a whole. Thus, Cupar, the county town, while an excellent focus for the routes and social activities of the mainly rural north and east, is eccentrically positioned to serve the county as a whole. Dunfermline acts as a central place for the south-west while Kirkcaldy fulfils the same function for the eastern section of the coalfield. Something of this lack of a dominant central place within the county was implied, for example, in the Wheatley Commission proposals to divide Fife at the Regional Authority level and administer it from Dundee and Edinburgh (1). In the more distant past, it meant that a meeting such as that held at noon on 3 February 1841 to interest the County in a low water pier north of the Forth was held at New Inn (285048) rather than in

---

(1) "Local Government in Scotland. Royal Commission" (Appendices, 1966-69), 76-81

any of the urban centres (1). The lack of an accessible concentrated market within the county, comparable with those of Edinburgh or Glasgow, was no great impulse to industrialise. Thus Fife is a network rather than a centre - periphery model.

The isolation and fragmentation of Fife are very real phenomena, even today with the great bridges and flexible road transport (2); in the past they were just as real and in many fields Fife lagged behind the rest of Scotland. In agricultural improvements the county produced few innovators, preferring instead to adapt ideas from the Lothians and the Carse of Gowrie. There was no Stafford-Sutherland family possessing an income large enough to enable contemplation of major capital expenditure (3), no Sellar to implement change with "authoritarian efficiency" (4). In transport developments, in the provision of turnpikes and in railway building Fife was not in the forefront of the lowland counties. The introduction of the steam engine to the mining areas of the county was laggardly, in the Parliamentary Papers of the early 19th century Fife is not over-represented, and in the development of the 19th century coal industry the Fife coalfield was the last Scottish coalfield to be intensively worked (5). While it would be an over-simplification to say that isolation and fragmentation caused a time-lag in economic development, it may well be that isolation made the movement of men and their ideas difficult, and, in addition, fragmentation may have tended to restrict the intellectual circle from which the potential innovator could find a stimulus for his ideas.

In terms of climate, Fife is one of the more favoured Scottish counties, with a moderate rainfall, warm summers and a good sunshine record. Rainfall is lowest on the coastal strip from Elie round to Leuchars (28.06 inches) and Newport, increasing westwards to 36 inches at Alloa in Clackmannanshire. Increased elevation brings a higher rainfall, as at Lothrie Reservoir in the Lomonds (700 feet - 37.09 inches), but such a rainfall is but moderate

---

(1) S R O, GD 152/219

(2) W M Stephen, 'The Impact of the Forth Road Bridge on Social Habits in Fife and Kinross', The Dominie, v 12 (1968) 36-43

(3) E Richards, 'The prospect of economic growth in Sutherland at the time of the Clearances, 1809-1813', Sc Hist Rev v 49 (1970), 164-165

(4) E Richards, 'The Mind of Patrick Sellar (1780-1851)', Scottish Studies v 15 (1971), 6

(5) B J Duckham, A History of the Scottish Coal Industry v 1 1700-1815 (Newton Abbot 1970), 82

compared with a similar situation in western Scotland (Loch Thom, Greenock, 70.41 inches, Glen Afton, Ayrshire 57.54 inches). Of the 41 stations in Scotland whose averages of bright sunshine are published by the Meterological Office, the second and fourth sunniest stations (Leuchars, 1485 hours and St Andrews, 1461 hours) are in east Fife, reflecting again the attraction of the coastal strip in terms of weather (1). Again, the influence of the sea is evident in the prevalence, especially in May and June, of advection fog or "haar", resulting in reduced insolation, lowered temperatures and delayed plant growth. Thus, although most of Fife is well-favoured in climatic terms, it has no areas which are particularly "early", like coastal Wigtownshire and Ayrshire, the light Dunbar soils or the Lonmay district of Aberdeenshire.

This climatic desirability, particularly along the coasts, is reflected in the description traditionally ascribed to James VI as a "beggar's mantle fringed with gold", in which the beggar's mantle was the hilly unimproved land of the interior and the fringe of gold the light sunny lands along the coast, with coal mines, salt pans and small ports trading with the north of Scotland and with the lands south and east of the North Sea (2). Of the 81 Royal Burghs of Scotland, 19 were within the present boundaries of Fife, and all but four of these were located on the coast. Of the four non-coastal royal burghs, Dunfermline had its own port at Torryburn (3).

At the opening of the nineteenth century, when agriculture was still the dominant economic activity in Scotland, the author of the General View of the Agriculture of Fife could say that the valuation of Fife was higher than that of any other county of Scotland (4) and that the county's four representatives in Parliament, nearly the eleventh part of the whole representation of Scotland, were no more than its just share and nearly in proportion to its valuation and amount of cess and land tax it was bound

---

(1) 'Averages of Temperature' (Meteorological Office, Met O, 635, 1958);
'Averages of Rainfall' (Meteorological Office, Met O, 735, 1963);
'Averages of Bright Sunshine' (Meteorological Office, Met O, 743, 1963)

(2) G Whittington, 'Land Utilisation in Fife at the close of the Eighteenth Century', Sc. Geog. Mag, v 82 (1966), 192-193

(3) G S Pryde, The Burghs of Scotland (Glasgow 1965)

(4) J Thomson, A General View of the Agriculture of Fife, (Edinburgh 1800), 50

to pay (1). In 1811, the rateable value of the county, with 5.6% of the population, was 6.3% of that of Scotland although it was surpassed by Lanarkshire and Perthshire (2).

Despite the relatively minor part played by agriculture as an employer today, this aspect of the importance of Fife is brought out by contemporary statistics. In 1967 90% of the area of the county under Crops, Grass and Rough Grazings consisted of Crops and Grass, making Fife the Scottish county with the highest proportion of improved land, West Lothian coming second with 85%. Fife had 1.47% of Scotland's Crops, Grass and Rough Grazings, making it the 18th county by area, but 5.11% of Scotland's Crops and Grass. The disproportionately large share of Scotland's agricultural wealth produced in Fife is brought out by the following table:-

Table 1.A

Proportion of certain crops and livestock produced in Fife, as compared with Scotland as a whole, 1967

	Percentage	Ranking
Sugar Beet	48	1
Wheat	14.3	1
Barley	10.2	2
Potatoes, main crop	14.8	3
Mangolds	21.9	4
Tillage	7.9	4
Potatoes, first early	7.9	5
Dairy Cattle	4.3	7
Pigs	4.9	7
Poultry	4.0	7
Turnips	4.0	9
Beef Cattle	2.9	10
Oats	3.2	11

(Source: Agricultural Statistics, Scotland 1969 (Department of Agriculture for Scotland)).

The character of the county is, therefore, one of a well-favoured eastern

---

(1) Ibid, 59

(2) "Origin and Extent of the Several Roads of Scotland. Statement" (Parliamentary Papers, 1813-13, iii) 16

lowland with large areas of low and gently sloping land, a dry sunny climate and a highly productive agriculture. In these respects, eastern Fife closely resembles the lower parts of Angus and East Lothian while the moister west of the county has similarities with an area like West Lothian.

This background, however, is not, perhaps, distinctive enough to justify the separate study of the economic history of Fife. Nevertheless, there are aspects of the county's economic history, particularly in the nineteenth century, that differ quite markedly from the generally accepted pattern of Scottish economic development and it is suggested that these provide a valid field of study.

A useful starting point is to examine the course of population growth in the county over the last two centuries (Fig. 1.2). In the period between 1755 and 1961, the population of Fife almost quadrupled, from 81,570 to 320,541 and yet this great increase was more than simple and continuous. From the first accurate estimate of 1755 to 1811, increase was comparatively slow; but each decennial period thereafter, till 1851, registered an increase of over ten thousand. The next twenty years, from 1851 to 1871, saw a great deceleration of growth, with an increase of only 7189 over the twenty years. More rapid growth was resumed and the next four decades witnessed increases of 11196, 15415, 31491 and 48896. This growth between 1891 and 1911 was greater than that recorded between 1821 and 1891. The decade 1911-1921 registered another increase, this time of over 25000, but this figure cannot be examined on the same basis as other Census returns since the Census enumeration was carried out at holiday time. A decline of 16557 ensued in the decade ending in 1931, the only period in the two centuries during which the county's population fell, the growth being resumed with an increase of 30487 over the twenty years to 1951, and another increase of almost 14000 (13686) to the recorded maximum of 320541 in 1961.

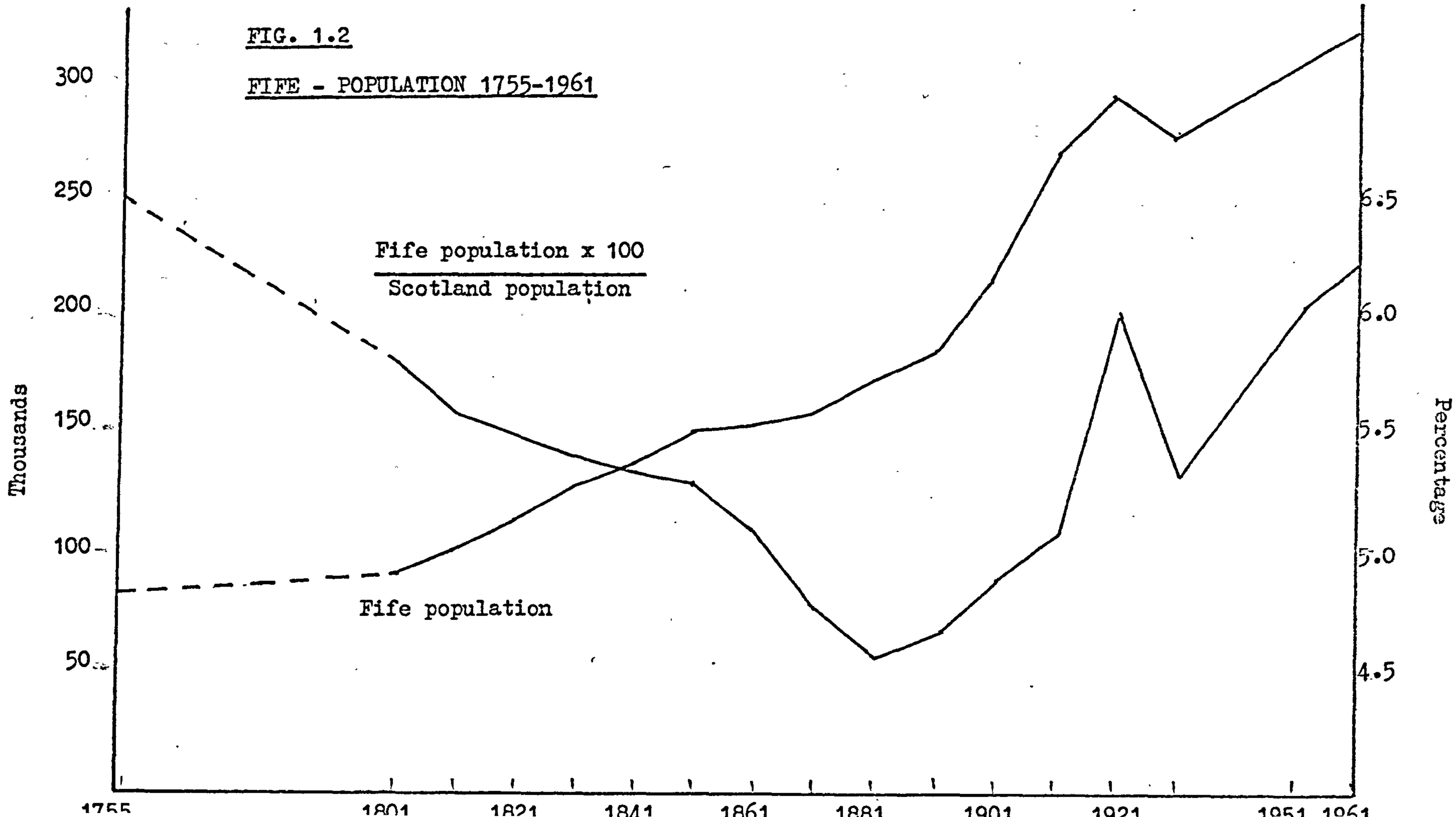
The two centuries of recorded population in Fife are therefore of almost continuous growth but a different impression is obtained from a scrutiny of the population of the county relative to that of Scotland (1). From

---

(1) Vide, Fig. 1.2

FIG. 1.2

FIFE - POPULATION 1755-1961



this standpoint, the demographic history of the county falls into two, quite distinct, periods. At the time of Webster's estimate in 1755, Fife contained 6.5% of Scotland's population. The crude increases of population registered till 1881 were not sufficient to maintain the position of Fife and the relative population fell to 4.6% in 1881, with an acceleration of this decline in the period 1851-1881.

In terms of population, the year 1881 was a turning point in that, as the next four decades produced great increases in gross population, the relative decline was halted and reversed. Relative population went from 4.6% in 1881, to 4.7% in 1891, 4.9% in 1901, 5.1% in 1911 and 6.0% in 1921. The value for 1921 can be regarded as an aberration for the reason noted above while the apparent decline to 5.3% in 1931 may not therefore have been such a setback as might at first appear. The post - 1881 trend was resumed with proportions of 6.0% in 1951 and 6.2% in 1961, when the county, speaking in relative terms, had returned to a late eighteenth century proportion of Scotland's population (1).

Within the county, there has been a varied and complex series of population changes, reflecting the great contrast between the rural east and north and the mining and industrial areas of the west and south. In 1755, the eastern half of the county held 52% of the population, by our own time this share had been reduced to 18%. The two centuries from 1755 saw an increase in the east of 50% but an increase of over 500% in the west. It is difficult to over-emphasise the significance of this change of internal population distribution from a relatively even spread to one of remarkable concentration in the south and west (2).

Fig. 1.3 shows the percentage relationship of the populations of the parishes of Fife of 1911 and those of 1801, and the period when the maximum population was reached in the period 1801-1911. It is clear that large tracts of east and north Fife attained their maxima for the period in the years 1841, 1851 and 1861, declining steadily thereafter; a trend reflecting general rural depopulation associated with more efficient agriculture, the extinction of rural industrial employment

---

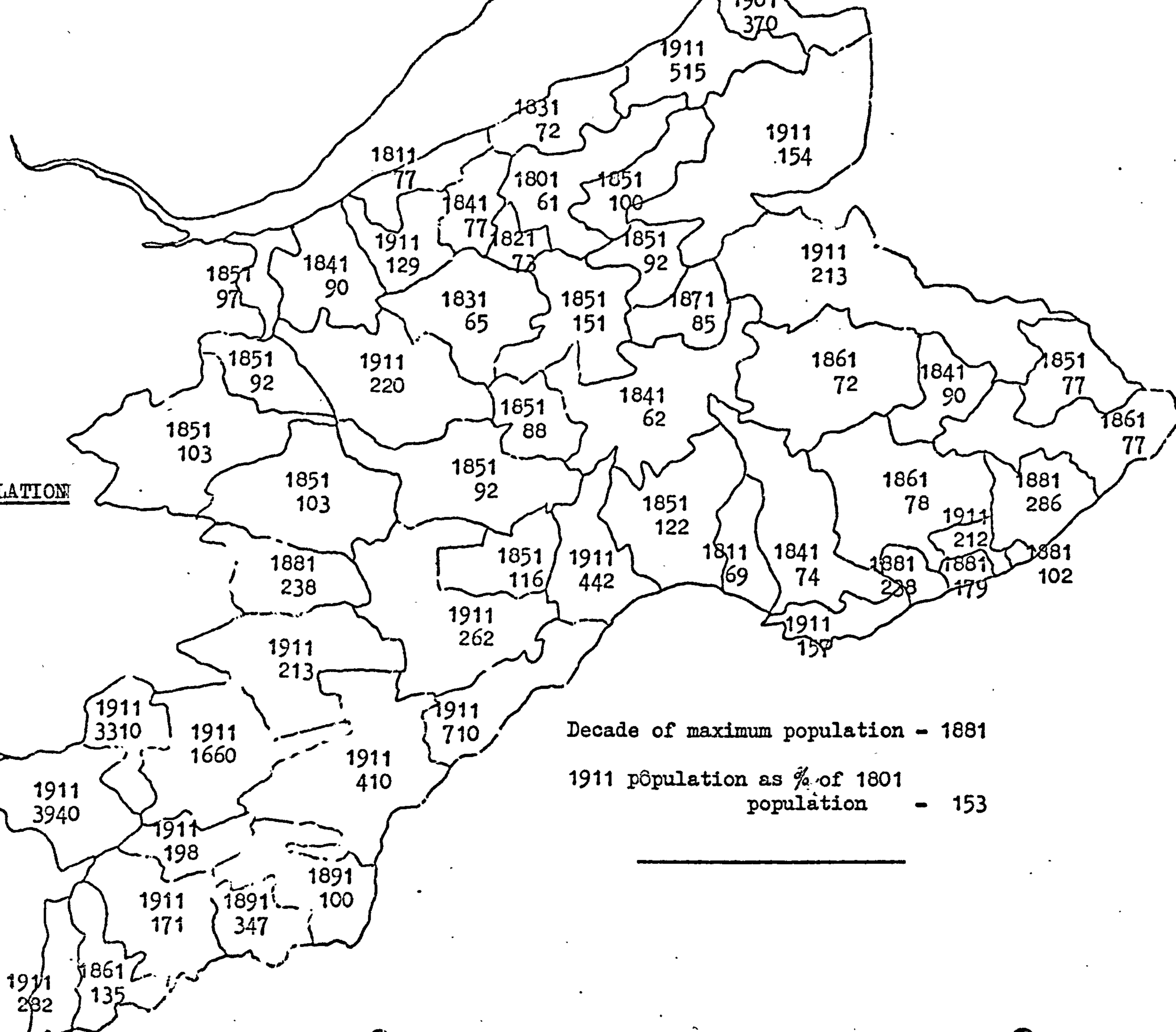
(1) Census of Scotland 1801-1911; Scottish Population Statistics, ed J G Kyd, Scot. Hist. Soc, 3rd series, v 9 (1952)

(2) J C Dewdney, 'Changes in Population Distribution in the County of Fife', Scot. Geog. Mag, v 71 (1955), 26-41

FIG. 1.3

DECADE OF MAXIMUM POPULATION

BY PARISH, 1801-1911



Decade of maximum population - 1881

1911 population as % of 1801 population - 153

in the form of domestic flax-spinning, the decline of hand-loom weaving and the closure of small coalpits and quarries. A few parishes stood out against the general trend for unique local reasons as in Collessie where the developing railway centre of Ladybank more than compensated for losses in the rest of the parish. The comparatively late peak of 1871 registered in Kemback was due to a later survival than normal of water-powered spinning - mills along the Ceres Burn, while the coast parishes from Elie to Kilrenny enjoyed a brief Indian summer when the East Fife Railway from 1861 fostered a tourist industry and revived the fishing. The parishes of the extreme north-east increased almost without exception till 1911, increases associated with tourism and a renascence of the University of St Andrews, with the establishment of the paper mill at Guard Bridge and with the growth of the north shore of Fife as a desirable location for middle-class families from Dundee. Thus the parish of Forgan, in which Newport is situated, increased spasmodically from 916 in 1801 to 1326 in 1861, although falls in population were recorded in 1811 and 1851. With improved steam ferries and the railway bridges commuting to Dundee became a possibility, and the next decades saw increases of 917, 1065, 455, 957 and 51.

In the south and west, a few parishes stood out by reaching their maximum populations early in the nineteenth century. Culross and Tulliallan were old-established coal-mining areas whose relatively shallow coal seams were economically exhausted in the late eighteenth century, while the seafaring and shipbuilding activities of Kincardine declined with the increasing size of ships and change to iron construction in the nineteenth century. Saline and Carnock were parishes in which there was considerable rural depopulation, augmented by the closure of small-scale collieries and short-lived ironstone mines and ironworks. Dalgety repeated the story of the long-exploited Fordell collieries having yielded their easiest and cheapest coals with a much-protracted decline in output and labour. As a further comment on technical progress in the mining industry, most of these parishes have repassed their nineteenth century maxima as a result of twentieth-century deep-mining at Comrie, Blairhall and Valleyfield and the large quantities of labour thereby attracted.

Kinghorn and Leslie were parishes with an early interest in the spinning of flax by water power, but by the 1880s the spinning sector of the linen industry was in severe difficulties, with several major closures among the mills along the Leven and in Kinghorn. Some of the slack in the Kinghorn area was taken up by the large labour force of the Burntisland Oil Company, but with its closure in 1894 the populations of both Burntisland and Kinghorn fell markedly (1).

The remaining 13 parishes in the south and west showed substantial increases in 1911, in most cases associated with the late nineteenth and early twentieth century development of deep coals in the central part of the coalfield and in the parish of Wemyss. Thus, the group of parishes around Cowdenbeath - Beath, Ballingry, Auchterderran, Auchtertool - increased their populations by, respectively, 3870%, 3320%, 157% and 98% in the years from 1801 and 1911, almost entirely as a result of new sinkings. Along the Leven, mining, the paper industry and engineering, both encouraged in part by the ready availability of cheap fuel, were responsible for increases of 156% in Markinch and 344% in Scoonie over a similar period, despite a waning textile industry. Probably no parish was more thoroughly transformed than that of Wemyss, with large new sinkings, the North British Railway and Wemyss Private Railway, and Methil Docks, all combining and interacting to produce an increase of 610% over the period. A growth of a different kind was experienced at Aberdour, where the opening of the Forth (rail) Bridge in 1890 and a good network of Forth steamers fostered the growth of a village of holiday villas and commuters to Edinburgh.

The remaining two parishes, Dunfermline and Kirkcaldy and Dysart, were the two most populous in 1801, when they numbered, respectively, 9980 and 11134 (2). By 1911, these figures had increased to 35731 and 45410, the third parish in the county then being Beath with 24351. This growth, and its continuation to 1961, is in part a measure of the importance of these places as service centres for the western and eastern parts of the main Fife Coalfield, almost separated as they are by the hilly country based on igneous rocks around Burntisland and Kinghorn. In addition, both parishes

(1) W M Stephen, The Binnend Oilworks and the Binn Village, (Kirkcaldy 1969)

(2) The totals for Kirkcaldy and Dysart have been obtained by combining the figures for Abbotshall, Dysart and Kirkcaldy.

were in themselves important mining areas with associated brickworks and, in Kirkcaldy, potteries. Engineering was also important, particularly in Kirkcaldy. Both parishes had important textile industries while, in addition, Kirkcaldy had developed the manufacture of floorcloth and oilcloth to such an extent that 2271 were occupied in this activity in 1911. The naval base at Rosyth was important as a magnet for population in the southern part of Dunfermline parish.

The starting point for this study of Fife from 1790 to 1914 is that the economic history of the county is not just the economic history of Scotland writ small; there are quite substantial differences between the pattern of development in Fife and that of the remainder of the Scottish Lowlands, as usually described.

The two main pillars of the industrial economy of Fife in the nineteenth century were coal and textiles, and in both of these fields of activity generalisations applying to Scotland do not fit the local situation. In the coal industry, Fife had had a very early start in the thirteenth century but in the early and middle nineteenth century was lagging behind the coalfields of the west of Scotland. Part of the answer was in the meagre supplies of good quality iron ore in Fife. Ironworks had been established in several locations at various times but none had survived for any length of time. Part of the explanation lay in the fact that most of the Fife coals were good steam and house coals, but not suitable for coking. Therefore the main outlets for Fife coal were the British coastal trade and exports to the Baltic, north Germany and the Low Countries. Campbell states that "the east coast collieries gained accordingly until 1877, when, for the first time since before the boom of the early 1870s they began to suffer from a decline in both the value and volume of exports. In 1878 some collieries in Fife were closed. Later still, in the 1880s, it became clear that the appearance of inter-district competition .... inhibited revival in any district" (1). While this statement is true enough in terms of coal prices, which were at their highest for the nineteenth century in 1872 and 1873 and failed to reach the same level till after the First World War, it is wide of the mark when we consider coal output and the volume of exports. Campbell himself

---

(1) R H Campbell, Scotland since 1707 (Oxford 1965), 241

further states that "foreign demand was of major importance only in Fife, where nearly half of the output went overseas by the beginning of the twentieth century. The experience of Fife was exceptional, since at the end of the nineteenth century the proportion of Scottish output exported was only slightly higher than for the whole country" (1).

In Fife, coal output in 1870 was 1,250,000 tons, by 1889 output was doubled to reach 2,761,616 tons. In 1900 the output was 5,419,373, while the output was 9,680,206 tons in 1913 (2). This very rapid expansion in output was made possible by an enormous increase in manpower. In 1842 the approximate numbers employed in Fife coal mines were 2238 males and 543 females. At the 1861 Census there were 5252 male and 7 female miners, with 4960 male coal miners and 7 female in 1871. Unfortunately intercensal comparisons are not easily made - to quote the 1871 Census Report "The Abstracts of the Occupations of the People of Scotland are in one sense more unsatisfactory than any of the other series of Tables. This arises from two causes - first, that the Classification on Occupations adopted for these Abstracts is more or less changed at every Census period, so that the Abstracts for 1871 are not strictly comparable with those of 1861 and 1851; and secondly, that the classification adopted is so prolix and minute, embracing nearly seven hundred specific Occupations, that, train as we would, not one half of the clerks who were employed in making the Abstracts could be got to master the exact positions of these seven hundred Occupations in the forms of Table which we used, so that no great confidence can be placed in the particular numbers assigned to each Occupation" (3).

Despite the difficulties of intercensal comparison, change became so rapid from 1871 that marginal problems may be set on one side. Occupied as coal miners in 1881 were 5920 males and 201 females, while those engaged in coalmining and quarrying in 1891 were 9784 males and 320 females. Comparable figures for 1901 were 16397 males and 517 females,

---

(1) Ibid, 242

(2) A S Cunningham, Mining in the "Kingdom" of Fife (2nd edition, Dunfermline 1913), 35-36; A S Cunningham, The Fife Coal Company Limited: The Jubilee Year 1872-1922 (Leven 1922), 25

(3) Report on Census of Scotland (1871) XXXVI

and in 1911 the total figure was 27590 males and 919 females; of these 26634 males were coal-miners, 31.5% of the total occupied males of the county, while the female contingent was 3.2% of the occupies females of Fife. The implications of this great increase in the mining population are clearly profound in terms of migration into and within the county, and of the provision of housing and services adjacent to new sinkings. A measure of the shortage of mining labour from the 1870s was the increasing importance of female surface workers.

As regards coal shipments, the five major coal ports of Fife - Burntisland, Charlestown, Dysart, Methil and (West) Wemyss - sent out 536,980 tons in 1877. A million tons were first shipped in 1885; the 2 million ton mark was attained in 1897, when the completion of No 2 Dock at Methil enabled the export from that port alone to reach 1,090,324 tons. 1902 saw 3 million tons shipped, with the new East Dock at Burntisland achieving over 1 million tons for the first time. The 4 million ton mark was achieved in 1905, 5 million tons were exported in 1907 while, in 1911 6,018,451 tons of Fife coal were shipped from all ports, with Methil responsible for 3,012,440 tons and Burntisland 2,430,708 (1). 49.4% of the Fife output was shipped from these five ports from 1895 to 1900 (2), as compared with figures of 18.9% of Scottish output exported and 17.8% for the United Kingdom (3).

Clearly, then, although collieries in Fife did close in 1878, as stated by Campbell, this was no indication of decline. By the very nature of the operation any coal mine is but a temporary feature. From the opening of the first face exhaustion comes ever nearer, and the small collieries which were closed were more than compensated for by the large new sinkings. Coal production and coal exports expanded very rapidly in Fife at a time when Scottish coalmasters were facing great difficulties. Clearly, this is an aspect of nineteenth century change which invites study, as does the related topic of the origin, recruitment and housing of the large labour force required to expand coal output.

In the manufacture of textiles, Fife differed from most other areas of

---

(1) Cunningham, Mining, 72

(2) Ibid, 81

(3) Campbell, Scotland since 1707, 242

Scotland in that the main concentration, in the nineteenth century as in the eighteenth, was on the spinning of flax and the weaving of linen. Campbell sees the linen industry in Scotland as the spring - board for the development of the cotton industry, which became the pacesetter for the Industrial Revolution (1). Merchants organised the provision of the necessary raw materials, flax and tow, coordinated the different elements of domestic production and marketed the finished linen cloth and so, when technology made possible cheap and large-scale production of cotton goods, the commercial structure existed to organise the acquired skills of the linen weavers (2).

Fife took part in the early establishment of cotton mills in the 1790s, but by 1839 there was no cotton mill as such in the county, although cotton was spun in many flax mills. As this time 3039 persons were occupied in flax mills in Fife, with 17 in a woollen mill at Markinch. By 1861, 6682 males and 9828 females were occupied in cotton and flax working, a figure complicated by Census delimitation problems. "It may be remarked, however, that it is a very great pity that the workers and dealers in cotton were put in the same Sub-Order as the workers and dealers in flax. The supplies of these two distinct classes of products coming from different Countries, the manipulation and the machinery for each being also quite diverse, each ought to have constituted a distinct Sub-Order .... as a stoppage of the cotton supplies brings misery to one County, increased prosperity in another" (3). Nevertheless, separate figures were given for those engaged in flax manufacture, the three leading counties being Forfar (21357), Fife (15943) and Renfrew (3045) and in the manufacture of cotton, where the leading three counties were Lanark (44922), Ayr (13150) and Renfrew (12575), Fife contributing a mere 567 to the Scottish total of 92851 (4).

The figures for successive Census years are given below in Table 1.B

---

(1) Ibid, 47-48

(2) Ibid, 97-104

(3) Report on Census of Scotland (1861), LIV

(4) Census of Scotland, 1861-1911

Table 1.B

Persons engaged in the following manufacturing Occupations

	Woollens	Flax/Linen	Cotton	Floorcloth etc
1871	123	17055	251	215
1881	103	11689	522	689
1891	239	9906	519	1205
1901	112	11209	537	1961
1911	102	12012	101	2507

(Source: Census of Scotland, 1871-1911)

By contrast with mining, almost entirely a male-employing industry, the textile industry was, in the latter part of the period being considered, a complex of occupations in which female workers played a very significant part. In addition, this was the main field of activity for employed females, with 44% of the county's occupied females in 1871, declining to 28% in 1911.

The crude figures conceal local variations, particularly the contrast between the two largest urban and textile centres, Kirkcaldy and Dunfermline. Throughout this period, Dunfermline was a more important flax and linen centre, in terms of numbers employed, than was Kirkcaldy. In addition, Kirkcaldy, with its concentration on medium and coarse linens, had a higher proportion of female labour than Dunfermline, the centre of the highly specialised and demanding linen damask industry. In 1861 there were more males than females in cotton and flax in Dunfermline, while the ratio of females to males in Kirkcaldy was 2.1. The corresponding figure from 1871 to 1911, were, for Dunfermline 1.4, 2.2, 3.5, 2.5 and 2.5 and, for Kirkcaldy, 2.6, 2.8, 3.0, 3.8 and 4.0 (1).

Another point of contrast lay in the establishment of the floorcloth, and subsequently the linoleum, industry in Kirkcaldy. Not counted separately in 1861, 35 workers out of 215 for the county were enumerated as being occupied in the manufacture of waxcloth in 1871. In 1881 the category had been changed to floorcloth when 622 were enumerated in Kirkcaldy out of 689 for the county, by 1891 the figures had become 1150 and 1205

---

(1) Interpretation of Census figures is made complex by changes in burgh boundaries. For Kirkcaldy, the Municipal Burgh has been accepted, an area including the Parliamentary Burghs of Kirkcaldy and Dysart; which in turn included the two Royal Burghs with those names, with the addition of the industrial suburbs of Abbotshall, Pathhead and Sinclairtown.

respectively. Floorcloth and oilcloth manufacture occupied 1961 in Fife in 1901, of whom Kirkcaldy accounted for 1826; and in 1911 the corresponding numbers were 2507 and 2271. The floorcloth industry was an employer of a labour force almost entirely male, with the total female labour force being merely 1 in 1871, 5 in 1881, 7 in 1891, 8 in 1901 and 91 in 1911.

Again, Kirkcaldy emerged in the latter part of the nineteenth century as a considerable centre for the manufacture of porcelain and earthenware. Of 303 persons in Fife occupied in the manufacture of earthenware in 1861, 138 were in Kirkcaldy, the figures thereafter being in 1871, 247 and 157, in 1881, 375 and 364, in 1891, 445 and 421, in 1901, 520 and 437, and in 1911, 433 and 401. In addition, in 1901 and 1911, 293 and 249 persons were respectively occupied in the manufacture of bricks, plain tiles and terra cotta, and in this coarser side of the ceramics industry, there was an even balance between Dunfermline and Kirkcaldy.

In summary, then, the justification for the selection of Fife for research in Economic History is that its industrial evolution has had a different pattern and a different time-scale from the industrial evolution of Scotland as a whole, deriving in part, at least, from isolation with the absence of a large consumer market and dependence on exports. The period chosen for examination is that from 1790 to 1914 and some attention must be paid to the reasons for choosing these terminal dates.

1790 has been selected as a starting date on two grounds. The decade following 1790 contained several fundamental developments, enough to justify this decade's being nominated as the beginning of a great acceleration of economic change dramatic enough to be termed as revolution. Although in mining the decade saw a period of stagnation as the methods found suitable for winning and extracting coal in early times proved inadequate at the greater depths made necessary by a long history of exploitation, at the same time, at a few places in the county, steam engines had been installed and the way ahead was clear for greater development. In the textile industry, the 1790s saw the establishment of water-powered spinning mills and the gathering of hand-loom weavers into factories, movements which were the fore-runners of developments implying major changes in population distribution, prosperity and the discipline of the

labour force. This decade saw also the first effective steps being taken to provide the county with an adequate network of roads, without which movements of men, information and materials must necessarily be slow, cumbersome and even dangerous.

From the stand-point of expediency, the 1790s form an admirable base from which to develop since the Old Statistical Account of that decade provides a great amount of material - of varying quality and quantity, as will be further noted in Chapter 2 - relevant to the changes under way. In addition, the Old Statistical Account was the inspiration and precursor of other texts on a regional level which help to build up a picture of Fife in the early nineteenth century.

As regards 1914, there can be little question as to the significance of the First World War in marking changes of the most fundamental kind. While signs of unease in the British Economy were apparent from 1880, it was possible to ignore slow growth relative to the U S A and Germany as long as industry in Britain was still increasing absolutely and new export markets could be opened up to replace those eroded by later developing countries (1). The factors underlying this slow growth have been sketched out elsewhere (2), but it has been suggested (3) that it was more an exhaustion of a coincidence of favourable factors than a failure of labour or employers' enterprise that was instrumental in effecting a slowing down of real income growth in the years before 1914.

The weaknesses apparent only to a few were exposed during the war, when the re-alignment of industry for war production and the search for alternative sources for essential imports caused massive dislocation. The post-war boom-short-lived- and subsequent slump firmly emphasised the ways in which the home market had changed and markets overseas had been lost during the submarine war, without being regained.

In Fife the first obvious result of the war was chaos in the coal industry. More than a quarter of the Fife Coal Company's employees had joined the armed services by the end of 1915, at some pits production was reduced to the

---

(1) R S Sayers, A History of Economic Change in England 1880-1939 (Oxford 1967), 15-19

(2) S Pollard, The Development of the British Economy 1914-1967 (Second Edition, London 1969), 3-10 ; S B Saul, The Myth of the Great Depression 1873-1896 (London 1969), 49-52

(3) Sayers, Economic Change, 166

equivalent of two normal days output a week, and at three pits work had to be temporarily suspended (1). The dangers of navigation in the North Sea, high insurance rates and the loss of foreign markets meant that the Fife Coal Company's exports were cut in half by the end of 1915. Although demand from the Navy and war industries exceeded supply by the end of the war, the price of the coal requisitioned by the Admirality was below market rates, while production costs rose rapidly (2).

Post-war markets at home and abroad were greatly reduced by the increasing attention paid to fuel economy, the beginnings of competition from internal combustion engines and hydro-electricity, and the opening up of new coalfields in former importing countries. To these factors must be added a backlog of maintenance dating from the war and endemic labour troubles, the end result of these varying factors being production and export figures for coal well below those of 1913. Thus sea-sales accounted for 54% of Fordell output in the period 1910-14, the post-war maximum being 33% of a reduced output in 1920-24 (3).

As regards the linen industry, flax-spinning had largely died out by 1890, but there was still a considerable weaving element. Change was particularly violent in Dunfermline, a town which had, in 1906, exported linen to the value of £362,860 to the United States (4), and was described as having "all its eggs in one basket, a basket lined with damask linen" (5). During the 1914-18 war production was switched to tent cloths and field accoutrements (6); by the time the industry had readjusted to peace-time production, linen tablecloths of floral damask had passed out of favour to be replaced by cork table mats on polished tables (7). The nett result was that, of 11 linen works in operation on the outbreak of war, only two were still weaving linen in 1931 (8), and in Dunfermline

(1) A Muir, The Fife Coal Company Limited, a short history (Leven 1953) 25

(2) Ibid, 26-27

(3) J C Inglis and F Inglis, The Fordell Railway (Larbert 1945), Appendix A

(4) W T Barr, For a web begun; the story of Dunfermline (Edinburgh 1947) 54

(5) Ibid, 13

(6) Ibid, 56

(7) Ibid, 46

(8) The County of Fife, ed A Smith (Edinburgh 1952), 338

today there is no firm still weaving linen. Similarly, linen mills in Dunshelt, Ladybank, Cupar, Kettle and Auchtermuchty closed just after the war, as did spinning mills along the Leven, bleachfields in country districts and the Kirkcaldy potteries.

The sheer loss of manpower, young and vigorous, as a result of the war, cannot be ignored. While the fatalities can be calculated it is impossible to assess the squandered potential of such a family as the Lockbarts, where Jack and George were killed in 1916 and 1917 and Roy died in 1932 of the effects of his war service (1).

Thus 1914 represents the climax of the traditional industries, emphasised further by the formation of the Rosyth naval base in 1903 in an atmosphere of mounting xenophobia. Facing the North Sea, the expected field of operations, in a deep, easily dredged, sheltered and readily defended estuary, and backed up the rich steam coal resources of the Fife coalfield, the naval base was the only large and permanent introduction to the county until the regeneration of the 1960s, associated especially with the introduction of the electronics and telecommunications industries (2).

This thesis therefore attempts to examine industrial change in Fife in the period from 1790 to 1914, and in particular to record the extent to which industrial change is recorded in the landscape. Few counties are so rich in industrial relics as Fife, and it is felt that the greatest contribution would be made by concentrating to some depth on three main sectors of interest - coal-mining, linen manufacture and transport by road and sea - while studying other activities at a more superficial level. Much of the following text will therefore be descriptive of buildings and other man-made structures but this is clearly not enough, since the motivation, the expectations and the fears of the original entrepreneur can scarcely be inferred from the factory he caused to be erected. Few stronger contrasts exist than between the small, unpretentious, linen mills of Kirkcaldy and the much larger Dunfermline mills, most of which have offices and preparing houses with considerable pretensions to architectural merit. An explanation of this contrast is not possible without reference

---

(1) N Lockbart and Sons Ltd, N Lockbart and Sons Ltd, Textile Manufacturers 1797-1947 (Kirkcaldy 1947), 11

(2) Fife Free Press, 12 June 1970; J McNeil, 'Factors in Industrial Location; the Fife case', Sc. Geog. Mag, v 80, (1974), 185-197

to the origins of the entrepreneurs and their products, to the differences between their products, and to the conscious pride felt in these products by the mill-owners and their employees. To the cataloguing and description of the relics must be added some explanation of their provenance and, at the same time, an attempt must be made to pose and answer significant questions.

In connection with coal-mining, can we serve the cause of plotting capital formation, to paraphrase Duckham, by obtaining comparable figures for draining by day-level (adit) or steam-engine? (1).

How much did social and working conditions vary between collieries in the early part of the nineteenth century? Was female labour necessary underground? Why did the great upsurge in coal production come so late in Fife? Was there a link with the iron industry? How important was the establishment of docks and feeder railways? How was the large new labour force recruited? Where did it come from? Were the Irish a significant element in this influx?

In textile manufacture, can we put forward any reasonable explanation for the dominance of linen and the tenuous hold of cotton? How important was local flax? Were there any substantial differences between town and country mills? How did working conditions in textile mills compare with those of the handloom weavers? With the mechanisation of the linen industry considerable industrial suburbs grew up. Thus, in Kirkcaldy, "coeval with the introduction of the Lothrie water, factory after factory has risen in the district of Sinclairtown - Gallatown , the smoke of whose tall chimneys and the pleasant whirr of whose busy looms tell of active industry. Street after street of workmen's dwellings rising towards the west and north of the town tell of social prosperity" (2). Where did the workers from this great expansion of the urban factories in the 1870s come from? Were they displaced handloom weavers? Urban or rural? How were they housed?

As regards transport, is it possible to assess the contribution of statute labour and turnpike trust to road improvement? How closely did road traffic

---

(1) Duckham Scottish Coal Industry, 87

(2) Fife Free Press, 5 July 1884

reflect population distribution within the county, and how much did it reflect movement through the county from outside? How was an eighteenth century road built? Can we compare the roles of local civil engineers with the occasional visits of the celebrated, such as Rennie and Telford? How were harbours kept free of silt? What was the extent of competition between the Broad Ferry and the Queensferry Passage? How did the advent of the steam-boat affect the fortunes of the ferry ports? Where did the early railway workers come from? Was there any challenge to the North British dominance in the county?

Before going on to examine these questions and to detail the industrial remains in Fife it will be advantageous to look at some of the earlier descriptions of the county giving an opportunity to assess the amount and speed of change. An investigation of these forms the basis of the next chapter.

CHAPTER 2

Industrial Change in Fife, 1790-1845

The Old Statistical Account contains a large amount of material descriptive of the 1790s, but it would be best initially to consider the limitations of this compilation - statistical in the sense that it was for "the purpose of ascertaining the quantum of happiness enjoyed by its inhabitants, and the means of its future improvement". The measurement of this quantum of happiness in some approach to a standardised form was possible on the basis of answers to the 160 queries and 6 addenda enclosed with the first circular letter to the clergy, dated 25 May 1790 (1). In the event, there could be no question of standardisation, a condition anticipated by Sinclair himself in a footnote to the letter above:-

"It is not expected, that all the inclosed Queries should be answered by any individual; nor is minute exactness looked for: but it is requested, that as many questions may be attended to, as circumstances will admit" (2).

Probably the strongest characteristic of the Old Statistical Account is the tantalising amount of variation between and within individual accounts. "It was impossible to expect .... the unanimous assistance of so numerous a body as the Clergy of Scotland" (3), and the most obvious measure of enthusiasm is the length of the parish account. Thus, in Fife, three parishes - Anstruther Easter (4), Flisk (5) and Moonzie (6) - are dismissed in only two pages each while Kirkcaldy (7) has 61, Dunfermline (8) 53, and Cupar (9) 36 pages, an arrangement which, fortunately, mirrored their relative importance at the time. In speaking of Scotland as a whole, the early volumes got the most enthusiastic and fullest answers (10), but this was not true of Fife, where the average length of the later parish accounts is greater than that of the earlier.

---

(1) Statistical Account of Scotland, ed Sir John Sinclair (Edinburgh 1791-9) v 20, xx-xxiv

(2) Ibid, v 20, xix

(3) Ibid, v 20, xvi

(4) Ibid, v 16, 243-244

(5) Ibid, v 3, 252-253

(6) Ibid, v 8, 583-584

(7) Ibid, v 18, 1-61

(8) Ibid, v 13, 428-480

(9) Ibid, v 17, 137-172

(10) R Mitchison, Agricultural Sir John (London 1962), 126

FIG. 2.1

FIFE - LOCATION OF PARISHES

A E = Anstruther Easter

A W = Anstruther Wester

P = Pittenweem

S M = St. Monans

The successive volumes were published as accounts became available so that there was a time spread of the Fife accounts from some published in 1791 to others published in 1796, representing a range of economic conditions from boom to depression.

As regards the content of the parish accounts, there is great variation in their value to the economic historian since the contributing ministers could give full rein to their hobby-horses - thus the minister of Abdie: "short biographical sketches, it is believed, are not foreign from the design of this work" (1). Often the result is a long antiquarian discourse or an eulogy of eminent persons, but occasionally there is an account like that of the minister of Markinch, later to be allowed a larger field as author of the General View of the Agriculture of the County of Fife.

The contributors could generally be relied upon to note the curious and unusual, but one cannot be satisfied that the normal and everyday received the same attention. In ten of the less accessible of the 60 (2) parishes notice is made of women spinning flax at home and one might conclude either that this was a local speciality or that this was an activity so general as not to require any specific mention by most of the contributing clergy. Again, there is a very little reference to women and children in coal-mines - is this an indication of their small numbers, of the calm acceptance of a commonplace situation, of the minister's fear of antagonising his patron or of mining communities isolated from the daily lives of others around them?

Another factor to be considered is the accuracy of the contributions and the veracity of the ministers' informants. "The tenants, in many country parishes, did not much relish the inquiries which were made into the produce of the soil, the value of their cattle etc, apprehensive that their landlords might avail themselves too much of that information" (3). In view of the novelty of the concept, it is not unlikely that confusion existed between the new work "statistics" and its German connotation of

---

(1) O S A, v 14, 118

(2) There are 58 civil parishes in Fife today, of these Culross and Tulliallan formed a detached portion of Perthshire until 1891, but are considered part of Fife for the purposes of this thesis. Abbotshall parish was incorporated in Kirkcaldy in 1876, while Dysart parish was added in 1930 to give the present Kirkcaldy and Dysart parish. Fig. 2.1 gives the location of parishes.

(3) O S A, x 20, vi

pertaining to the state, with an ensuing reserve about divulging information. This understandable reserve, with an undercurrent of superstition, is well expressed in the "Statistical verses" of the minister of Lochcarron:-

Now good Sir John, it was for you
I gather'd all my news,
But you will say that I forgot
To count the sheep and cows.

Of these we have a number too,
(But then, 'twixt you and I),
The number they would never tell,
For fear the beasts should die (1).

In compliance with the repeated solicitations of the President of the Board of Agriculture, John Thomson, D D, minister of Markinch, was induced to undertake the task of drawing up the Agricultural Survey of the County of Fife, having shown his accuracy as an observer and reporter in the account of his parish mentioned above. In the survey, Thomson stated that his facts were obtained "partly from my own knowledge, but principally from the communications of others, whose acquaintance, with the state of the county was more intimate and extensive than mine could possibly be" (2). From internal evidence, it is clear that he found, in common with many later commentators, the Old Statistical Account a valuable source. Thomson also used material from Beatson of Piteadie's earlier but much slighter General View (3); but, at the same time, he has a considerable amount of fresh material to present. In the course of this we can build up a picture which gives us some notion of the progress made in the few years since the Old Statistical Account had been prepared - in agriculture especially but also to some extent in the textile industry and in the development of the road system.

Unfortunately, Thomson could spare only 5 pages to coal-mining, a topic which he developed at length in the Old Statistical Account and with which he was clearly equipped to cope, but we are compensated by the availability of Bald's work on the Coal Trade in Scotland, in which Fife takes its place among the

(1) O S A, v 13, 560-561

(2) J Thomson, A General View of the Agriculture of Fife (Edinburgh 1800), 14

(3) R Beatson, General View of the County of Fife with observations on the means of its improvement (Edinburgh 1794)

eastern counties (1).

With the same kind of compilation involved as with the Old Statistical Account, some note must be made of the limitations of the New Statistical Account as a source. Although all the parish accounts (save those for Culross and Tulliallan) were collected into one volume, this masks a long time span in the compilation of the various accounts, Cupar being dated April 1836 (2), while Pittenweem is dated July 1845 (3). As before, there are considerable variations in coverage, from Dunfermline with 91 pages (4), to Saline with less than two (5). Fortunately, however, as with the Old Statistical Account, there is still a rough correlation between the length of the individual reports and the importance of the parishes concerned and the overall impression gained by examining the account along with other contemporary sources is of considerable accuracy and real knowledge of the community.

The two Statistical Accounts - supplemented by the General Views of Thomson and Bald - are useful barometers of industrial change in Fife from 1790 to the 1840s and it is proposed to examine this change in some detail before going on to deal with the main industries of the county in turn.

Agriculture

No apology is necessary for the initial consideration of agriculture, which showed marked changes over the period being considered. In effecting these changes, the county relied more on the pioneering effects of those who had worked outside the county than on any innovations from local land-owners or tenants. The names of those who distinguished themselves as improvers - Wedderburn of Wedderburn, Johnston of Lathrisk, Cheap of Rossie, Gourlay of Craigrothie, Balfour of Balcurvie, Stack of Kingsdale, Fergus of Strathore, Henderson of Hatton, Kinnear of Kinloch, Anderson of Inchrye - have little significance beyond the local scale. Thomson sums up their achievements concisely -"by them, rivers have been straightened and embanked - marshes drained - waste, stubborn or stony land reclaimed -

---

(1) R Bald, A General view of the coal trade of Scotland (Edinburgh 1808)

(2) O S A, v 9, 20

(3) Ibid, v 9, 987

(4) Ibid, v 9, 821-912

(5) Ibid, v 9, 798-800

cold, wet and poor soil sheltered, drained and fertilized - plantations reared - judicious and substantial enclosures executed - and many farmsteads erected on convenient and liberal plans"(1).

It is probably no coincidence that the improvers were to be found mainly in that part of the county west of Cupar and between the Firth of Tay and the River Ore - not the best land in the county but of high enough quality to justify considerable investment. At the same time this part of the county was near the Carse of Gourie, according to the minister of Dairsie the area from which many of the Fife improvers took their examples (2). Also of interest is the fact that only Fergus, a Kirkcaldy linen manufacturer, had links with urban-based industry. On the negative side, the major landowners and the mining landowners were not prominent as improvers, suggesting that agriculture took second place to the development of the industrial sides of the estate and giving a clue to the relative returns to be anticipates from agricultural and industrial exploitation.

The half-century which is the subject of this chapter saw extensive changes over the county. Of the many strands of evidence for this statement only one need be quoted. Cameron is a fairly high, cool, wet parish (for Fife) but - by 1837 - the minister could say "the alteration in the appearance of the parish since the present incumbent first knew it, is very striking. Then, a great quantity of heath was to be seen from the windows of the manse, now it has altogether disappeared and instead of the comparatively barren waste, neat enclosures and fields waving with golden corn meet the eye. The quantity of wood now rising on all sides contributes to enrich the prospect" (3).

Drainage - both in the sense of the reclamation of large marshy areas and meadows liable to flood and of the improvement of existing arable and good pasture - and enclosure were seen as the main processes necessary for the establishment of commercial farming. The largest single drainage operation was the reclamation of Rossie Loch by the straightening and control of the River Eden (4). In west Fife Lochore was drained to give 150 acres of excellent land and better drainage for land nearby which was annually

---

(1) Thomson, General View, 387-388

(2) O S A, v 3, 243

(3) N S A, v 9, 313-314

(4) O S A, v 1, 371; v 4, 440

subjected to floods (1). In Moonzie, a loch nearly two miles long was drained and the new land made to yield "many excellent crops of oats and turnips"(2). Many other patches of wet ground were made into arable land, one of the side-effects being the eradication of the ague (3).

One obstacle to drainage was the existence of many corn mills, each with its mill dam holding back water which an improving landlord would have liked to see moving downstream. In the valley of the Motray Water (Kilmany) three such mills rendered between 300 and 400 acres unfit for tillage, their proprietors being indisposed to give up their privileges for any equivalent compensation (4).

As regards enclosure, by the 1840s, most of the county had been enclosed by dykes or by hedge and ditch. Typically at Wester Strathore the ground was cleared of stones -"which almost covered the surface" - fields were enclosed, drained and manured, and shelter belts were planted to screen the estate (5). In general, the better lands were enclosed first - as in Aberdour, where the southern part of the parish was well cultivated and generally enclosed while the north was but poorly cultivated (6).

At the same time, some of the best land was not enclosed and in this we have the evidence that Fife farmers did not blindly follow the lines of development laid down by the pioneers of the improving movement. The agriculture developed in the best areas of the East Neuk was almost purely arable, with cash sales of grain and potatoes. Cattle were bought in in autumn and fed indoors on roots and hay, to be sold fat in the spring, with the manure as a vital by-product. In consequence, there was no necessity for enclosure and parts of Fife still have the characteristic open aspect of an unenclosed landscape. These include the Crail district, Pittenweem, the part of Falkland parish near the town and parts of Kinghorn parish (7).

The introduction of new crops, improved methods and stock from outside the county also took place in these fifty years. Almost universal was the replacement of summer fallow by the cleaning crops, potatoes and turnips,

---

(1) Ibid, v 7, 314

(2) N S A, v 9, 786

(3) O S A, v 2, 416

(4) Ibid, v 19, 426; Thomson, General View, 339

(5) O S A, v 12, 508

(6) Ibid, v 4, 328

(7) At Grid References 5302, 6007, 260070, 265875

Fife showed losses, as did the coastal parish of Wemyss. A group of parishes from Kinghorn and Burntisland through Auchtertool to Beath and Ballingry showed varying amounts of decline and in the west Culross, Torryburn and Saline also declined.

That this depopulation was not more marked was due to the prevalence of flax-spinning and hand-loom weaving by the rural populace in their homes, and to the desire by farmers to have a large pool of labour available for harvesting, an operation which had not yet been mechanised to any significant extent.

Improvements in treatment of the soil were widespread. Fortunate, in having large deposits of limestone in many parts of the county and extensive fields of marl in other areas, Fife farmers widely practised the application of lime. The Earl of Elgin's lineworks at Charlestown were stated to be the most extensive in Britain, with 200 men quarrying and 80-90,000 tons of limestone processed annually to give an annual value of £10,000. The most northerly part of the county, on volcanic rocks, is deficient in limestone and here lime was obtained by a land carriage of 10-15 miles or by coast-wise traffic from Charlestown or from Sunderland. Lime from Sunderland came by sea to Ferry-Port-on-Craig for 2/=4d the barley boll, while the overland lime cost 3/=1d (1).

In coastal areas seaweed thrown on the shore was used as manure and in the countryside near Culross lime, dung and tan-pit refuse were mixed together and applied to the land (2). The importance of towns as a source of manure is reflected in part in the rent of agricultural land. Land near Kirkcaldy rented at £3:10/= the acre, while the best pasture further out was rented at £2:10 (3). Land near Aberdour, was rented at 50-60 shillings (4), and the best arable elsewhere in the parish for forty. Near Dunfermline land would rent for £3-£5 the acre while the better land to the south rented for £1-£3 (5).

---

(1) OSA, v 8, 468; v 13, 467. Sterling money is used throughout this thesis as it is felt that the expression of the sums of money most commonly met with in the nineteenth century in decimal terms would result in a blurring of these sums and the comparisons being made between them.

(2) Ibid, v 10, 131

(3) Ibid, v 18, 10

(4) Ibid, v 4, 328

(5) Ibid, v 13, 464

A brief consideration of flax culture is relevant in that this was the only industrial crop of prime importance in the county and was the basis of the leading industry of the period. Over half of the parishes grew some flax, and it is interesting to see how the minister of Markinch, was critical of flax culture in his parish (1) but, by the time of writing the General View, came round later to see the value of the crop.

In the 1790s, farmers grew enough flax for themselves, their farm servants and reapers. At the same time flax and potato land was rented out at £3-£4 the acre to cottagers and villagers - payable either in cash or in harvest labour. Such land was enriched by the ashes from the tenants' hearths and "what dung they can procure" (2). Payment of farm servants was often in the form of wages plus victuals and bounties such as enough ground to sow two lippies of flax seed and the seed itself (3).

The culture of flax was by no means universally approved, since flax was considered to be a very exhausting crop which neither fed cattle nor added manure to the ground. Thomson pointed out that it was only when flax followed the other exhausting crops - wheat, barley or oats - that real damage was done, when following potatoes and followed by clover, and rye-grass there were good crops and no damage was done to the land or to succeeding crops. Financially, an acre of flax produced 32 stone of flax at 12 shillings per stone, two bolls of lint seed and the chaff of the seed, a valuable feed for horses, giving a gross return of £21:14/=. Rent, seed, handling after harvest and dressing the flax at the mill, cost £9:10/=8 giving a nett profit of £12:4/=4 per acre. By comparison, a wheat crop would give a gross return of £12:16/=, £3:17/= costs and a net profit of £8:19/=. The favourable margin over barley or oats would be £2 or £3 more (4).

At the same time, flax-growing did present problems which acted increasingly as deterrents as the nineteenth century progressed. Water for the retting of flax after harvest was not uniformly available, particularly when lint-holes were removed in the general interests of good drainage. The best quality of lint was obtained in the middle of the county "where the ground

---

(1) Ibid, v 12, 532

(2) Ibid, v 12, 532

(3) Ibid, v 6, 344; v 13, 26; v 16, 97; v 18, 587. One lippy (2 lbs) gave about 2 stones of lint.

(4) Thomson, General View, 206

is much elevated, and the soil cold and moist-bottomed"(1). The crop was demanding of labour. Thus, flax was often weeded when about four inches long. This operation was "usually performed by women, who range themselves in close array across the field, and in a lying posture, and, with great dexterity and expedition, pick out every weed that is to be seen or can be laid hold of. Sometimes, however, much damage is done by careless of inexperienced hands, bruising the stalks with their shoes and elbows, and tearing up plants with the weeds" (2). At harvest, flax was pulled by hand to preserve the maximum fibre length - even during the Second World War no satisfactory harvesting machinery had been developed for the revival of flax culture. After harvest, the flax was sorted and "rippled" to remove the seed bolls. Watering, or retting, was an additional task involving time and accurate judgement before the flax was spread out in the open to complete the process (3). After collection and storage the crop was scutched and heckled to separate the desired fibres from the woody parts of the stem. Another, unpleasant, concomitant of the cultivation and initial processing of flax was its "poisonous stench" (4). "The stench of the flax is abominable in these parts, so bad indeed that the odour from fields manured with putrid fish - offal, seemed tolerable in comparison" (5).

While flax did not produce fodder and manure equal to other crops, it did produce some 22 stones of oil-cake per acre, equal to double that weight of hay in feeding value. At the same time, it was as good a cash-crop as hay, it lessened the need to import foreign flax, but above all, the opportunity of having a patch of flax acted as a powerful bait for seasonal female labour. The farmer could call on this when required "while, at the same time, he furnishes them with the means of being usefully employed at home, when he has not occasion for their labour"(6).

The environmental disadvantages of flax cultivation, the increasing commercialisation of agriculture, and the replacement of widespread country-spinning by mill-spinning all tended to eliminate flax as a crop from the country's fields but - as will be seen later (7) - its history after 1840 is not one of simple decline.

---

(1) Ibid, 2Lo

(2) Ibid, 202

(3) Ibid, 203

(4) R Southey, Journal of a Tour in Scotland in 1819 (London 1929), 58

(5) Ibid, 61

(6) Thomson, General View, 212-215

(7) Vide infra, Chapter 3

Of proper concern to the industrial archaeologist is the application of power to the farm and the period dealt with here saw considerable changes in this context. In the 1790s, most parishes had at least one water-driven corn or meal mill, thirlage still remaining in some parishes. The horse threshing mill, introduced by Meikle in 1786, was quickly installed in a number of farms in north Fife. Initially, the value of the horse-mill was seen in saving the wages of "a lot-man .... who thrashes for so much the boll" (1) and prejudice had to be overcome. Thus, in Largo, the horse-mill was said to be apt to go wrong because of the very complex construction and the horses were "made giddy by the circular motion" (2).

By 1800 there were nearly 300 horse-mills in the county, some parishes having 7 or 8. The mills varied in size, from two to six horses with an output of 2 to 12 bolls of grain per hour. In addition to thrashing, both water and horse mills were adapted to clean, riddle and sift grain, to work hoists, turnip and straw cutters and for churning butter (3).

By the 1840s thrashing-machines had become so general and so beneficial that it was "difficult to believe how farming could be carried successfully on without them" (4). Carnock was a typical small parish in having a thrashing-machine on every farm except one in 1843; of these, six were horse-driven, four steam-driven, one water-driven and one by steam and water (5), a measure of the cheapening of the steam engine. The minister of Kilconquhar was prophetic in stating that "a new era is commencing for the lessening of labour, by the introduction of steam engines .... It may safely be predicted, that, before another half century elapses, it will be as uncommon to see a thrashing mill driven by horses, as it is now to see corn thrashed with flails"(6).

Overall, the period from 1790 to 1845 saw such agricultural changes that the minister of Cupar could well say "the state of agriculture in this parish is the most approved .... it may be said, that nothing remains to to be done in the way of improvement" (7). By the 1840s, although there

---

(1) O S A, v 4, 234

(2) O S A, v 4, 536

(3) Thomson, General View, 131-133

(4) N S A, v 9, 174

(5) Ibid, v 9, 709

(6) Ibid, v 9, 336

(7) Ibid, v 9, 10

were still areas where short leases were the norm, leases were generally offered for at least nineteen years and there existed pressure to allocate even longer leases of twenty-five or thirty years in order that enterprise and improvement might be encouraged (1).

On the other hand, rural and small town depopulation caused concern. With the enlargement of farms, the difficulty of feuing small patches of land, the beginnings of farm mechanisation and, perhaps most significant, the disappearance of hand spinning and reeling, as an alternative occupation for women, children and the aged "individuals with large families naturally retire from a parish, where there are no manufactories, to towns and places where they can obtain employment for their children" (2). The move towards a market economy and the beginnings of regional specialisation meant that a parish like Cameron, where many farms were laid down in grass, lost population(3). As the minister of Anstruther Easter observed, "capital seems to be flowing steadily to the larger towns, and with it of course that part of the population which cannot find employment here" (4).

Coal-Mining

The mining of coal in the county is of considerable antiquity, with an earliest reference to the opening up of coal workings in a Dunfermline charter of 1291 (5). Coal exists near the surface in the area of Carboniferous rocks which makes up the southern two-thirds of the county and much of the coal near the surface had been exploited by the 1790s. Early mining was extensive rather than intensive in that the efforts of the early miners were circumscribed by their inability to penetrate to any considerable extent into the zone of permanent saturation, necessitating a large number of shallow workings (6).

The mining industry in Fife had, at the time of the Old Statistical Account reached a hiatus. The early workings had worked out the best of the

---

(1) Ibid, v 9, 431

(2) Ibid, v 9, 544-545

(3) Ibid, v 9, 307

(4) Ibid, v 9, 297

(5) D Bremner, The Industries of Scotland (Edinburgh 1869), 1-2

(6) K Goodwin, 'Some social and physical factors in the evolution of a mining landscape', Sc Geog Mag, v 75, (1959), 10

shallow coals, the driving of day-levels had made further exploitation possible but, in turn, their usefulness was limited by the local base-level - the sea or river - while there was, as yet, little provision for the draining of workings by mechanical means. The parish accounts abound with references to coal-works being given up (1). In Crail, vestiges of the pits and mines were easily traced and it was probable that no machinery was used and that the crop - coal only where it was level free (above the water table), had been exhausted (2). In Culross mining ceased in 1789 (3), except for a temporary supply from "the croppings of old works and gleanings accidentally left", since the very rich seams of coal still remaining, at great depth, could not be wrought without considerable expenditure (4). In Torryburn great fields of coal were still to work but they were all "under level", the seams above the level were "wrought out" while the remainder could not be wrought but with the assistance of a powerful engine (5).

Exploitation of coals below the water table involved the individual landowner in an essessment of the profitability of the mining venture. Some entered into combination as a means of ministering expenses, some abandoned their workings. In Dunino it was "doubtful whether any proprietors' future gains will compensate the expenditure necessary for that purpose" (6), and the principal proprietor of the coal-mines of the parish entered into an agreement with the proprietor of an adjoining colliery, to keep his own coal-works shut till those of the second were completely exhausted. In return, he was to receive an annuity of £20 (7). The small coalfield between St Monance and Pittenweam was worked for well over a century and as much coal taken out "as could be procured without a fire engine", then abandoned (8).

Where coal was exploited near a good water-power site, drainage was possible with the installation of water-mills. In Markinch, the River Leven at

---

(1) For example - Abbotshall (v 4, 186), Aberdour (v 4, 329), Beath (v 3, 233), Burntisland (v 2, 432), Carnbee (v 13, 28) Kennoway (v 13, 125).

(2) O S A, v 9, 443

(3) Ibid, v 10, 134

(4) Ibid, v 10, 145

(5) Ibid, v 8, 450

(6) Ibid, v 11, 359

(7) Ibid, v 11,366

(8) Ibid, v 4, 37)

Balbirnie powered a water engine with a wheel 26 feet in diameter working two pumps to a depth of 30 fathoms (1). Balgonie coal was worked for a long period to a depth of 14 fathoms by means of a day level and abandoned. Alexander, Earl of Leven erected a water engine in 1731, with two pumps working to 30 fathoms, but this was overwhelmed by water the following year. The tacksman who had leased the coal abandoned the spot and erected a windmill a little distance away, draining to 14 fathoms. This functioned till 1743 (2). After 1780 three water engines were erected along the Leven (3), but water and wind pumps both suffered from the fact that spells of enforced inactivity occured, while the growth of ground water does not cease.

The steam-engine provided the means of overcoming the problem of underground water. Thus, at Dysart, beds of coal 60 fathoms below the surface were being worked. The water was raised by two steam engines while horses were employed underground to haul the coal to the pit-bottom where it was raised by three horse gins (4). At least another 13 steam engines were in operation in the county in the 1790s, their erection dates suggesting that they were Newcomen engines.

By the time the New Statistical Account come to be written, the steam-engine was a commonplace as far as pumping was concerned, although not yet universally employed for the haulage of coals underground and to the surface. The greater depth to which pits could be sunk - and drained - exposed new wealth to be tapped with the result that many coal-bearing areas, formerly languishing, received a fillip and began a second phase of utilisation. While no really marked changes in population distribution occurred in the early nineteenth century - insofar as the collier population was concerned - it is from the 1840s, that we begin to see the rich homogeneous deposits of west Fife drawing away from the restricted faulted, coal basins of Fife east of the Leven, with their additional problems of water and igneous intrusions. Nevertheless, it was the late nineteenth century before the discovery of deep coals in the Lochgelly-

---

(1) Ibid, v 12, 539-540

(2) Ibid, v 12, 538-539

(3) Ibid, v 12, 543

(4) Ibid, v 12, 504

Cowdenbeath district and the export explosion of the Wemyss collieries were embodied in massive population movements.

Typical was the small coalfield of Kilmux, where for fifty years a day-level, 350 fathoms long, drained seams worked on the longwall system. When the seams were nearly worked out, Fernie, the proprietor, had a pit sunk to a depth of 54 fathoms in 1838, drained by a 47 h.p. engine (1). At Wemyss, working had gone on continuously for two centuries but by 1838 the pit went down to 50 fathoms below sea level and yielded 40000 tons a year (2). "There are several very powerful engines employed in this very extensive coal establishment", said the reporter, adding an elegant tribute to "the very active and efficient management and direction of Mr David Landale, mining engineer"(3) - one of a dynasty of such in the county (4).

At Fordell the existing day-level made drainage of the workings less difficult since the pumps had merely to lift the water to the level and not to the surface (5).

Elsewhere in the Dunfermline district, the pattern was repeated. The Wallsend Pit was completed at the end of 1839, at 105 fathoms the deepest in Scotland, entirely superseding the existing Baldridge pit and yielding as much as the previous total output of the district (6). Wellwood "was a few years since greatly increased in value, both to the proprietor and lessee, by the erection of a powerful steam-engine for drawing the water, whereby an excellent seam of splint-coal was reached, much admired for its cleanness and purity" (7).

Three main kinds of outlet existed for coal production, there were local land sales, exports around the coast and overseas, and industrial uses. Consumption under each of these headings was increasing as a result of a rising standard of living and industrial growth. Bald, comparing 1808 with fifty years previously, stated that "a person of the same class of society keeps at least double, if not treble, the number of fires in his house" (8).

---

(1) N S A, v 9, 384

(2) Ibid, v 9, 395

(3) Ibid, v 9, 396

(4) Vide infra, Chapter 4

(5) N S A, v 9, 184

(6) Ibid, v 9, 831

(7) Ibid, v 9, 834

(8) Bald, Coal Trade, 95

At the same time, iron manufacture, distilling, glass-making, the installation of steam engines and of town gas plants helped to create a substantial industrial demand.

The small collieries and those too far from the coast to be able to lay down waggonways to ship coal for export tended to supply towns and villages in the interior and particularly in the north of Fife. In these areas coal hauled overland from such collieries as Balgonie, Balbirnie, Clunie, Drumcarro and Largoward entered into competition with coal shipped coastwise from the Forth, from the Tyne and from the Wear.

In the town of St Andrews sea-coal was chiefly used, in 1838 the prices being, per ton, 18/= to £1:1/= at the harbour for Newcastle coal, and 15/= to 18/= for coal from the Forth. In the country districts there was more dependence on overland supply - "those who are in the possession of horses and carriages, find it advantageous to procure coals directly from the pit; but where it is requisite to pay hire and tolls, a family can be nearly as cheaply supplied by sea-borne coal" (1). The nearest source of coal to Kilmany was twelve miles away. At the pithead in 1838, the cost of a double cart of six loads was from 7/=6 to 9/=6, with the cost of transport and tolls adding 8/=10. At the pier of Balmerino, three miles from Kilmany church, English coal cost 15/= to 17/=, and Scotch 12/=6 to 17/= (2). With carriage at 4/= for a double cart, the balance was a fine one, which could be tipped by such matters as the calorific value of the coal, availability in summer when prices were low and whether or not one depended on the transport of others. In Scoonie Englis coal was so much more expensive than local coal that its use was generally confined to the wealthier classes (4) while the minister of Flisk neatly summed up the situation thus - "the farmer chiefly consumes English, the cottager Scotch coal" (5).

Considerable quantities of coal were shipped out of the county. In the 1790s according to the parish accounts, the main receiving areas were Edinburgh, the coal-deficient east coast from the Tay north, and north-west Europe

---

(1) Bald, Coal Trade, 95

(2) N S A, v 9, 495

(3) Ibid, v 9, 557

(4) Ibid, v 9, 277

(5) Ibid, v 9, 609

for great coal, with freights for chews always lower because of the speedier loading possible (1).

Not only Edinburgh, but all the ports supplied from the Firth of Forth, shared this prejudice in favour of great coal. In the Glasgow area only the small coal, below one inch, was separated and as a result there were major differences in the cost of coal to the customer and in the way that coal required to be handled.

The tendency to favour great coal no doubt stemmed from the adulteration of coal on some previous occasion and could be expected to decline as reliable links were established between coal consumer, coal merchant, coal shipper and the originating colliery and as domestic burning appliances became more efficient.

Clearly, then, this "strong and deep-rooted prejudice" for great coal bore a large part of the responsibility for the relatively high coal prices in the Edinburgh area. At the same time, the need for careful handling of the great coal at every transfer stage from coal-face to customer meant the careful attention of human operatives and therefore human porterage. It would be of interest to trace the disappearance of the "great coal prejudice" in east Scotland, although an inspection of the coal merchants' yards at Haymarket Station, Edinburgh might suggest its continued existence!

The industrial uses for Fife coal in part stemmed from the efforts of colliery-owners trying to find an outlet for small coal which was almost unsaleable and might even be thrown back into the workings. The terms for the two smallest grades - lime-coal and panwood - describe their principal uses in the 1790s, although a soft coal like the Fordell Blawlowan, because it could not survive a journey as "great coal", found its main use in limeworks (2).

Salt pans were found all along the south coast in the 1790s, from Kincardine to Pittenweem, although the industry languished where coal was not readily available - as at Kincardine (3). The removal of salt duties in 1825 seriously hampered the making of salt. At Pittenweem and

---

(1) Ibid, 55

(2) N S A, v 9, 185

(3) J H Adams, ' The Salt Industry of the Forth Basin', Sc Geog Mag v 81 (1965), 161; O S A, v 11, 549

Torryburn, salt-making was completely abandoned (1). The nine pans at Methil went out of action and the seven at West Wemyss were reduced to two, so that, from average annual sales of 50400 bushels in 1818-1820, West Wemyss and Methil sales fell to 6200 bushels in the late 1830s. (2)

In pointing out the importance of the connection of landowners with mineral ventures, leading them into association with industry, Ward (3) casts a light on a simple kind of industrial complex which developed along the south coast of Fife, at places like Wemyss, St David's and Charlestown. Coal mining, transport to the coast and coal exporting were the main business of these estates but where, as at Charlestown, other resources existed ancillary developments might take place. Thus - at Charlestown - 12000 tons of coal per annum were burned in the limeworks in the 1790s, salt was made and a brickworks established (4).

Growing industrialisation in the Fife towns did have its effect - at Markinch "the sale (of coal) was originally confined to the country demand, but latterly the manufacturies on the Leven and Ore waters, and in Kirkcaldy, have drawn their supplies from thence" (5). The distilleries were an important market, as were gasworks, but, overall, the main industrial markets for Fife coal were out of the county, just like the domestic markets. Industrialisation was going on in the county but the delay in the mechanisation of linen - weaving, the sporadic occurrence of iron ore and the scarcity of good coking coals meant that there was no domestic upsurge of industrial demand. Therefore the coal industry of the county continued to look outward for its markets.

As regards labour, exact information is, in the main, scanty, whether one considers numbers, wages of the degree or freedom enjoyed by miners and collieries at different times.

In the 1790s, the size of enterprise varied greatly, from 12 miners in Kettle (6), 36 in Pittenweem - "all free" (7), to Dunfermline with a total of 1020 persons attached to the mines, 180 colliers, 140 bearers, 300 persons above ground engaged in repairing roads, driving and shipping

---

(1) N S A, v 9, 732, 984

(2) Ibid, 397-398

(3) J T Ward, 'Landowners and Mining', 106 in Land and Industry, eds J T Ward and R G Wilson (Newton Abbot 1971).

(4) O S A, v 13, 467

(5) N S A, v 9, 663

(6) O S A, v 1, 373

(7) Ibid, v 4, 372

coals and 400 women and children occasionally supported by the mines. In addition, at Dunfermline there were 200 horses above and below the surface (1).

Wages appeared to vary greatly, between 10/= weekly for a collier at Auchterderran (2) and 18/= at Pittenweem (3).

Little change in terms of numbers and wages seemed to have taken place by the 1830s, despite the abolition of serfdom, the deepening of pits and the beginning of mechanical haulage. A number of small collieries still existed - 15 to 20 men at Kelty (4), 43 at Cassingry (5), 39 men at Lochgelly, with 12 women below ground, 7 at Ramsay's colliery at Dundonald (6).

Wemyss, Fordell and Dunfermline dominated the scene. In Wemyss there were employed in mining 300 men (170 of whom were colliers), 44 boys and 52 girls; in addition, smiths, wrights and masons were also involved. The wages for this labour force amounted to more than £400 every two weeks (7). At Fordell 406 were in actual employment, 100 men, 186 unmarried men and boys and 120 women and girls, with a total dependent population of some 800. Nearly 70000 tons of coal were sold annually from Fordell(8).

In the parish of Dunfermline the five working collieries used in total 17 steam engines, from 12 to 120 horse power, in pumping. 18 horses were used underground and 50 on railways. About 120000 tons of coal were raised per annum, half of which came from Wallsend. The labour force consisted of 881 males and 296 females, on whom were dependent a total population of 2910. In November 1842 the daily wages after deduction for light, sick fund and education, were, for men, 2/=6 - 3/=3, for boys of 10 and over, 9d - 2/=3, women and girls, 8d - 1/=3, girls under 10, 6d (9). That such wages were more than enough for existence is shown by the 108 coal-hewers and miners who opened accounts with the National Security Savings Bank between 1838 and 1842 (10).

---

(1) Ibid, v 13, 476

(2) Ibid, v 1, 460

(3) Ibid, v 4, 370

(4) N S A, v 9, 177

(5) Ibid, v 9, 915-916

(6) Ibid, v 9, 70

(7) Ibid, v 9, 395

(8) Ibid, v 9, 187

(9) Ibid, v 9, 836

(10) Ibid, v 9, 893

It will be recalled that little mention is made of female labour in either Statistical Account and in Bald we have a commentator engaged in the coal industry with the courage to criticise a characteristic feature of the industry's organisation on the grounds of humanity. Four methods are described, by means of which coal was transported from coal-face to surface. First was underground horse haulage, with machinery performing the vertical lift. Second, where height was restricted, the coal was drawn in "small wheel carriages", by men, women or boys hired for the purpose. Third, women bearers carried coal from face to pit-bottom, where again machinery performed the heavy lifting. Fourth, "the most severe and slavish" women carried coal not only to the pit-bottom, but from there to the surface, performing, as part of their daily routine, almost unbelievable feats of endurance (1). Bald witnessed a woman, who, twenty-four times in a day, carried a load of 1½ cwts 150 yards underground, 117 feet up a stair-pit and 20 yards at the surface - a total vertical haul of 153 feet (2). In addition to the sheer volume of toil involved, female labour meant that the collier's house was neglected, his meals unsatisfactory and the children largely cared for by others (3).

Arguments existed for both the employment of horses and of women underground. Where women bearers were employed already, the introduction of horses meant expenditure on buying and feeding horses, on making good roads underground, on grooming, shoeing etc; each horse needed a boy to drive it and, even when the colliers were not working, the upkeep of horses continued (4). Since most women bearers were members of the colliers' family, human transport was, superficially at least, cheaper than animal transport. Nevertheless, indisposition of the female members of the family work-unit meant a diminution of earnings (5), while "a continual sinking of pits" and "a constant making of roads and removing of machinery" (6) resulted from the need for pits to be close together. Short-run economic motives therefore favoured the use of women bearers while a longer view would favour the use of animal or power haulage which might

---

(1) Bald, Coal Trade, 128-129

(2) Ibid, 132-135

(3) Ibid, 138

(4) Ibid, 91-92

(5) Ibid, 92

(6) Ibid, 93

attract colliers without families and also make an asset of the small coal.

Of the bearers, the fremit bearers were in the worst case, being unrelated to those who employed them and completely at the disposal of the oversman below ground (1). Bald recognised that any change should be gradually made (2), that "young women are to be found, who, from early habit, will cheerfully submit to the drudgery; but the married women ought, for a thousand reasons, to be relieved from the bondage" (3).

Unfortunately, Bald's description is very much a generalised regional view, and, while women bearers are mentioned in connection with Midlothian (4), it is not clear to what extent female haulage was the custom in other areas, nor is it clear to what extent the work of bearers described by Bald was typical. These are questions, therefore, that invite further examination.

Textiles

The period under consideration was one of considerable change in the textile industry, the leading manufacturing industry in the county. In the early part of the period, between November 1787 and November 1798, 50,113,955½ yards of linen cloth were stamped for sale in the county, with a total value of £2,019,123:4/=9¾d. In terms of output the leading years were 1796, 1795, 1793 and 1792, with a general upward trend in prices from 8^{8}/12d per yard in 1788 to 10¾d in 1796 and 10^{5}/12d in 1798. In addition to stamped linen, some 600,000 yards of plain linen were annually manufactured by private families for their own use, most of it fine fabric. Damask and fine diapers for tablecloths were also not included. In total, Thomson estimated that 23,192 persons, young and old, were engaged in the production of linen, with 4½ hands being employed at each loom (5).

By the 1790s, the linen industry had outgrown the supply of domestic flax, but, as noted above, this home-grown flax was by no means negligible. The initial processing - retting, scutching and heckling the flax - was, in

(1) Ibid, 141
(2) Ibid, 142
(3) Ibid, 144
(4) Ibid, 91
(5) Thomson, General View, 302

flax was raised in a considerable way. Thus there were lint mills in Kilmany, Monimail, Leuchars, Abdie (2), Auchtermuchty (2), Cults (2), Ceres (5), Largo (3), Carnbee, Dysart (7), Markinch (8), Dunfermline and Beath. The last was a horse-mill, while the others were, by description or implication, based on water-power. These mills were, as far as the information goes, one-man enterprises only (1).

Yarn was imported from abroad, but a widespread activity of the women of the county was the spinning of flax - locally-grown or imported from Russia or Holland - by hand. About thirty years before the Old Statistical Account the women used the one-handed wheel, a sufficient day's output for a woman being a hesp, the fourth part of a spindle. At 10d per spindle, a woman's weekly earnings were 1/=3d. By the 1790s, the two-handed wheel was in almost universal use and, by its means, women could spin 2½ spindles a week, making 2/=6 (2).

There was some flexibility in the organisation of this spinning activity; much of the finished yarn was destined for weaving in the same area, some was sold to weavers in the large towns, particularly Dunfermline and Kirkcaldy, while some lint was put out to the country spinners by manufacturers and their agents to be collected again when spun. Two aspects of the putting-out system are shown in the accounts of Kirkcaldy and Auchtertool. In Kirkcaldy "after the flax is heckled the manufacturer sends it to the undertakers in different parts of the country, who give it out to be spun, and receive a certain commission on the quantity of yard returned by them. The expense of spinning, when commission and carriage are included, amounts at an average to 1/3 the spindle. Besides the yarn spun on the manufacturers' account a considerable quantity is regularly bought in from the neighbourhood; and frequently from Montrose, Brechin, Cuper - Angus etc" (3). "A great part of the women, too, who reside in the village" of Auchtertool "are employed in spinning but to the same manufactories" of Kirkcaldy and Linktown of Abbotshall , "they spin on the two-handed wheel, and are able to earn from 6d to 8d per day, according to their particular alertness and dexterity" (4).

---

(1) OSA, V2, 400, 411; v 3, 234; v 4, 539; v 5, 384; v 6, 345, v 12, 554 v 13, 33; v 14, 124; v 18, 590; v 19, 427

(2) Ibid, v 6, 43

(3) Ibid, v 18, 29

(4) Ibid, v 8, 115

The mechanisation of flax-spinning, and hence its concentration into a few well-located centres, was much slower than the corresponding mechanisation of cotton-spinning. As far as Fife was concerned, a number of mills were set up to spin cotton, these were important merely in pointing the way to water-powered flax-spinning and by 1800 cotton appeared only as an ingredient in the checks and ticks of Kirkcaldy (1).

The motive power for the short-lived cotton industry in Kirkcaldy was the horse; a more permanent foundation was at Kirkland on the Leven, where Aislabie, Neilson and Company, set up a large mill to spin cotton and linen yarn, which was them woven into cloth on the premises (2). Archibald Neilson, a Dundee merchant and stampmaster, started Kirkland in 1788 with John Aislabie, a London merchant, for cotton spinning, but as early as 1794 it had been adapted for flax-spinning. It became well known for its size, the excellence of the management and the quality of its yarn (3).

The other early, successful, flax-spinning mills were all on water-power sites. The most dramatic example of the search for this type of site was the transformation of Kinghorn from a poor ferry port dependent on horse-hiring and the knitting of stockings to "one of the most flourishing towns upon the coast of Fife". James Aytoun, later known as "the father of the linen industry", was trained in Manchester and Darlington before choosing Kinghorn for the "teasing and rolling and spinning of cotton and flax, by means of the Arkwright and Darlington machinery" in 1792 or 1793 (4). The Kinghorn Burn was harnessed to provide power for four mills, although these proved too much for the flow of the burn. Aytoun installed a Newcomen engine - a "coal-work engine on the old principle" - before leaving in disgust in 1802. The other mill-owners had more success by installing Boulton and Watt engines (5).

The impact on the little burgh was considerable. The average weekly wage of young women dependent on flax-spinning, needlework or stocking-knitting

---

(1) Thomson, General View, 307

(2) Ibid, v 16, 521

(3) The Dundee Textile Industry 1790-1885, ed E Gauldie (Scottish History Society, Edinburgh 1969), 8 - 10

(4) O S A, v 12, 238

(5) J Bryson, The Industries of Kirkcaldy and district (Kirkcaldy, 1872), 9

had been 1/=6 to 2/=. They could now earn 5/= to 7/=6. The minister of Kinghorn could write approvingly ; "little girls between 8 and 12 years of age, who before were a burden to their fathers and mothers, by engaging at these works, are not only able to support themselves, but to assist their aged and indigent parents". The boys - who had previously gone to sea or run about idle - turned to the loom and apprenticed themselves to weavers (1).

The search for water-power sites went on into the nineteenth century. The Eden above Cupar, Ceres and Largo Burns, above all the Leven, became magnets for entrepreneurs seeking power sites and the need for power was great enough to induce such manufacturers as William, James and David Yool to set up mills on the Ceres Burn (Blebo 1827, Yoolfield 1839) and the Eden (Tarvit 1799). At such new sites accommodation had to be provided for the workers and their families; at Yoolfield there was in addition a school and library provided (2). Such rural sites often had a steam engine to provide power in summer, when water was scarce.

Also in the early years of the nineteenth century the Watt steam engine began to be applied to flax-spinning, helping to create another distribution of flax mills in the two largest towns of the county, Dunfermline and Kirkcaldy. This was seen as a liberating development, since entrepreneurs could set up their mills in towns with good shipping facilities or with abundant labour (3). In fact, Turner has shown how the existing commercial structure, labour supply and coal supplies favoured Dunfermline and Kirkcaldy, while the detailed siting of a mill often depended on a small stream suitable for steam-raising and condensing purposes (4).

In addition to the economies of scale, which meant that yarn was "produced at about two thirds less than when spun by the hand labour" (5), mill-spun yarn had the advantage of its regular quality, one of the factors helping to reduce the amount of idle time suffered by weavers. Not unexpectedly, the concentration of flax-spinning into comparatively few

(1) O S A, v 12, 239

(2) N S A, v 9, 527

(3) Thomson, General View, 307

(4) W H K Turner, 'The Textile Industries of Dunfermline and Kirkcaldy 1700-1900' Sc Geog Mag, v 73 (1957) 139-141

(5) N S A, v 9, 157

production units meant widespread repercussions. Thus, in Kettle, "elder women and widows are generally employed in winding pirns; but for these there is a great want of employment since the lint-wheel failed them" (1). In many parts of the county hand-spinning ceased to exist, and with it the only employment for women (2).

In Dysart, where "formerly almost every female was taught to spin lint, but for many years past, this practice has entirely ceased" disruption would have been minimised by the opening of the flax-mills (3), but in areas like Kennoway many members of the community were placed at risk. Here donations and church collections were used to help individuals not on the poor's roll. The fund thus formed was used to subsidise the spinning of dressed flax by the old people. Their earnings were very small, "but whatever it may amount to, it is the fruit of labour, and it is prized as such" (4).

The establishment of urban and country spinning mills and the concomitant decline of domestic spinning had a marked effect on the population pattern. Thus, the population of Kinghorn rose from 2443 in 1821 to 2934 in 1841. The chief cause of this marked rise was "the extension of the flax spinning mills, which has brought a considerable number of strangers to the place for employment" (5). The same order of increase was true of Markinch where industrial development, "both retained the native population and attracted influx from less favoured districts - emigration even of individuals being very rare" (6). Balgonie Mills employed 265 people spinning flax and tow, imported from the Baltic, Archangel, Holland, France and Iceland, for local use and for export to France. Adjacent, the village of Milton of Balgonie nearly doubled its population to 580 after the enlargement of the works in 1836-37 (7). The same kind of spectacular increase was to be noted further up the Leven where the population more than doubled from 1212 in 1785 to 2749 in 1831 with the establishment of six spinning mills and three large bleachfields (8).

---

(1) Ibid, v 9, 109

(2) Ibid, v 9, 473

(3) Ibid, v 9, 145

(4) Ibid, v 9, 389-390

(5) Ibid, v 9, 811

(6) Ibid, v 9, 669

(7) Ibid, v 9, 674-675

(8) Ibid, v 9, 117

Over the period concerned, flax-spinning clearly underwent considerable change, from a dispersed, domestic activity to a factory industry located at two kinds of site, the fairly remote water-power site and the later established urban one.

Weaving was by no means a full-time occupation for all and alternative employment might bring in increased income at certain seasons or provide a cushion in difficult times. The young men of Balmerino went off to the Greenland whaling in summer (1), the 20 to 30 weavers at Kingsbarns - at certain seasons of the year - were employed as fishermen (2). The salmon fishing at Newburgh afforded to about 60 of the weavers "a healthful as well as lucrative recreation from the sedentary in-door labours, during the summer months" (3), and when the price of cloth fell many of the Newburgh weavers took up the seafaring life (4). Most common was the practice among women in the rural areas of weaving in winter and going on to outdoor work in summer. While there was always a demand for labour at harvest time, the great fluctuations in cloth prices in the early 1840s, resulting in incomes being halved or even cut to a third, meant that alternatives would be eagerly sought after.

The final products covered a wide range of linens, with a certain degree of regional specialisation which changed little over the period being considered. In the north and east Fife the main products were coarse brown linens, single and double sailcloth and Osnaburghs for Dundee merchants. In Kirkcaldy and its tributary areas the main products were checks, ticks and cheap plain linen for sheeting. Three-quarters of the Kirkcaldy linen was sold in England, whence a small quantity went to the West Indies and America, an eighth was sold in Glasgow for export to the Americas and the remainder was consumed locally (5). Half the Dysart cloth was sold in London, a quarter in Manchester, Liverpool, Nottingham, Leeds and other Yorkshire towns, and the remaining quarter, chiefly the coarse kind, in Glasgow (6).

Cupar was the principal market in Fife for coarse linens such as Osnaburghs,

---

(1) Ibid, v9, 592
(2) O S A, v 4, 256
(3) N S A, v 9, 74
(4) O S A, v 8, 180
(5) Ibid, v 18, 32
(6) Ibid, v 12, 511

Silesias and tow sheeting (1). Much of this material, from Cupar itself, Falkland, Kettle and Ceres was marketed "green", or unbleached, in Cupar for the London and Glasgow markets.

The south-west of the county was dominated by the diaper or table linen manufacture of Dunfermline. Until about 1749 this was a summer occupation with checks and ticks being woven in winter, but specialisation resulted in the almost total conversion to diaper weaving in Dunfermline and the areas nearby, such as Culross, where girdlemaking and shoemaking had collapsed to free labour for the linen industry. The manufacture of table linen was advanced by the premiums paid for designs, and the introduction of the fly-shuttle, which made it possible to weave a web 2½ yards broad (2).

By 1844 there were 3517 looms (3000 damask and 517 diaper). Of these 3517 looms, 570 were out of the parish, in the adjoining parishes of Torryburn, Carnock (208), Culross (70), and Inverkeithing. Weavers dependent on the Dunfermline trade were to be found as far away as Kinross, Auchtermuchty, Leslie and Strathmiglo and the total number of persons employed as weavers and in the ancillary occupations was 5044 (3).

The organisation of weaving activity was very varied, showing evidence of the transition from sporadic subsistence activity to carefully controlled centralisation. Stages in this transition would be manufacture for local demand, manufacture for sale in a local market or for sale to a merchant, manufacturing in one's own home the raw materials supplied by the merchant for collection by him and manufacturing with other weavers in a workshop or factory provided by the merchant. Examples of each of these stages were to be found in the 1790s. Thus, in Ferry-Port-on-Craig "the other artists" work "principally for the use of the people in the parish and neighbourhood" (4).

In Largo and Newburgh the weaver with some control over his own work was to be found, "those who can afford to purchase yarn work check and green linen which they sell in Dysart, Kirkcaldy, Cupar and Dundee" (5). In

---

(1) Ibid, v 17, 144
(2) Ibid, v 13, 432
(3) N S A, v 9, 887
(4) O S A, v 8, 463
(5) Ibid, v4, 539

Newburgh, "while they continue at the loom, they do not, in general, arrange themselves under different masters, who might furnish them with materials, and pay them for their work .... the greater part of them weave their own yarn and bring their own webs to sale .... to a few of their own number, who again dispose of them at Perth, Dundee, Cupar, Auchtermuchty and Glasgow, to persons there who purchase them either with their own capital or upon commission for the English markets".

Finally, the collection of a number of weavers under one roof was already achieved in Newburgh where "workshops may be met with, in which near a dozen of looms are employed by one manufacture" (1).

The flax spinners were clearly in a strong position in relation to the importation and preparation of the raw materials for weaving, in addition, the commercial organisation built up in connection with domestic spinning may well have proved capable of being adapted to the needs of a weaving enterprise. Certainly, at Neilson's Kirkland Mill, as well as the 283 employed in the spinning mill and the 241 in the cloth manufactory, there were many out-workers at Kilconquhar, St Andrews and other places in the east (2).

Weaving started off as a widely dispersed activity related to the wide-spread culture of flax, its concentration into a relatively small number of urban mills was long delayed because of two factors. The relative inelasticity of flax meant that there were technical difficulties in adapting machinery already in use in the cotton industry (3). Again, where a large pool of hand-loom weavers existed, there was little incentive to mechanise.

Although the weavers were dispersed, their organisation was concentrated into a few focal points - the coast towns, including Dundee, Dunfermline, Cupar and, to a much lesser extent some of the long-established interior villages like Kettle and Strathmiglo. North and east Fife was tributary to Cupar, Newburgh and - above all - Dundee. Cupar had at least "ten district manufacturers with their capitals embarked in the linen trade" (4). Thirteen

---

(1) Ibid, v 8, 180-181

(2) N S A, v 9, 332, 397, 476

(3) Vide infra, Chapter 7

(4) N S A, v 9, 12; W H K Turner, 'Some Eighteenth century developments in the textile region of East Central Scotland' Sc Geog Mag v 69 (1953), 15

individuals employed all the Newburgh weavers (564 looms were in the town in 1833) and also furnished work for many in Cupar, Springfield, Pitlessie, Kettle, Markinch, Falkland, Freuchie, Auchtermuchty, Strathmiglo, Abernethy, Aberargie and Kintillo (1). Not surprisingly, members of this group were to be noted taking up partnerships in shipping firms and acting as trustees on such turnpike trusts as the Leven Road and Bridge (2).

Any consideration of earnings is complicated by a number of factors, not the least of these being the flexibility enjoyed by the domestic worker. The mill-worker was subject to the discipline affectingly implied by the Kinghorn minister - "instead of the deep-toned vespers sounding the prayers from St Leonard's Tower, there is now heard the sharp and enlivening bell summoning the healthy light-hearted young people to the spinning manufactory" (3) - and his hours and earnings are fairly well established. Again, his earnings were usually net and did not imply, as did the weaver's earnings, payments for heat and light, preparing the yarn and time lost in setting up the looms.

In the 1840s mill work was already producing social change in the way that young women were unable to learn "sewing and other things necessary to make them good housewives, when they become mothers of families" (4). Wheaten bread had gradually taken over from oaten, a phenomenon ascribed to the working women finding "their time better occupied in this, than, preparing food for the family, and so purchase at the shops" (5). Dysart, brings out the different between the struggling hand-loom weaver and the discipline of the spinning-mill. "The weavers are engaged all the six days of the week, when they can find employment. Some of them, indeed, are obliged to work from four or five in the morning till ten or eleven at night; and after all their industry, will not earn more than 5/= or 6/= per week. It is almost needless to add, that this is but a poor remuneration for their labour; that the effects of such long hours on their health are anything but good, and are very adverse to mental improvement.

---

(1) N S A, v 9, 76

(2) Fife and Kinross Register 1828, Kirkcaldy and London Shipping Company; (Cupar 1828); W Pagan, Road Reform (Edinburgh 1845), 144

(3) N S A, v 9, 809

(4) Ibid, v 9, 118

(5) Ibid, v 9, 123

> "At the mill where flax is spun, the work people are employed from half-past five in the morning till eight at night, half an hour being allowed for breakfast and the same for dinner. The earnings of the female mill-spinners are from 6/= to 7/= weekly. It deserves to be mentioned that the proprietors of this mill are men of great respectability; that they take an interest in the morals of the young people; and that they will not allow the most distant approaches to anything like vice" (1).

Whether or not the mill at Dysart was typical - and the evidence suggests that most owners of mills outside the towns showed some concern for the welfare of their employees - it is clear that the collection of workers into factories, had, to some extent, shifted the responsibility for training and education from the family to the employer.

Of activities ancillary to the textile industry, three only will be mentioned. The table linen manufacture involved a small number of designers, pattern drawers and pattern cutters for the Jacquard loom. Although not numbering more than 24 persons with houses, machinery and floating capital of only £1590 this was nevertheless to be an important development in an aspect of a trade in which fashion played an important role (2).

More important was the development of the engineering side of the textile industry in Kirkcaldy. Three works, specialising in making flax-spinning machines and steam engines, were set up, employing in total 200 men at an average wage of 15/= per week, and involving a capital investment of £21000. In addition to work for the local mills, the original raison d'etre extensive orders were carried out for Ireland, Europe and the British colonies (3).

Finally, the lively state of the linen trade was reflected in the establishment of a correspondingly important trade in bleaching and dyeing. Dunfermline had four dyeworks (4), and 185 men and women bleaching both yarn and cloth (5). The Swan brothers of St Leonard's mill, Kinghorn,

---

(1) Ibid, v 9, 138

(2) Ibid, v 9, 887

(3) Ibid, v 9, 756

(4) Ibid, v 9, 891

(5) Ibid, v 9, 887

employed 70 at their bleachfield at Nether Tyrie (1). The checks and ticks of south Fife demanded bleaching and dyeing far more than did the coarse linens of the north so that Kirkcaldy and the Leven valley were of importance. The small streams near Kirkcaldy, the Tyrie, Tiel and Den Burns were used as far as possible, but in addition Kirkcaldy merchants and manufacturers had five other bleachfields in other parts of the county, the total annual receipts of the Kirkcaldy-owned bleachfields being £30000 (2).

In Leslie the three considerable bleachfields using the Leven employed 140 people, working ten hours per day and earning 10/= per week (men), 5/= (women), or 2/= to 3/= (beginners) (3). Further down the Leven were three bleachfields at Rothes, Balgonie and Haugh Mill, all in Markinch. The first employed 110 and the second 70. At Thornton, Lochty Bleachfield belonged to David Landale of Kirkcaldy and employed 90 while a vitriol works supplied the surrounding districts (4). Looking towards Dundee, the mills on the Ceres Burn encouraged the establishment in 1825 of St Ann's Bleaching Company, employing 35 to 40 hands. Brown yarn from the mills was bleached and then woven into dowlas and sheeting. Previously, only "brown Silesias" of low value were woven so that the Ceres district was able to engage in a trade which was more lucrative as a result, first of the establishment of the water-based Dura Den mills, and, secondly, of the water-based bleachfield (5).

In the period considered, the output of cloth increased greatly, in some areas the increase was fourfold. This increase was obtained, not by mechanisation or by any massive movement into weaving factory conditions, but by a scattered and diverse workforce supplied with uniform raw materials and kept up to the mark by the growing competition from machine-woven cotton goods (6)

Transport

The penetration of eastern Scotland by the Firths of Forth and Tay confers accessibility to transport by sea at the expense of easy and cheap overland

---

(1) Ibid, v 9, 812-813
(2) Ibid, v 9, 157, 755
(3) Ibid, v 9, 119
(4) Ibid, v 9, 676-677
(5) Ibid, v 9, 527-528
(6) N S A, v 9, 46,81 .

transport from north to south. In the late eighteenth century the condition of roads in the county was most unsatisfactory. Auchterderran was "inaccessible on the north for six months of the year" (1), with resulting difficulties for marketing agricultural produce. In Carnock the roads in summer were tolerable but in winter, or "during a long course of rainy weather", they were hardly passable (2); in Cults, the Kirkcaldy-Dundee road was "still nearly in a state of nature" (3). The crossroads of Cupar were in general, exceedingly ill kept (4); while the by-roads of Markinch were in a very bad condition, being almost impassable in winter and in wet summer weather (5). In some areas there was a want of bridges; thus the lowest bridge on the Leven was 2 miles from the sea and there was no bridge over the Scoonie river, resulting in "no passage for carriages, but with a manifest danger" (6).

Of public transport there was none. Anyone proceeding on a journey had to provide his own transport or hire a chaise, as illustrated in the following letter written by David Methven, Cupar to George Henderson, Ladeddie (7) on 17 December 1785.

"It affords me great pleasure to find you disposed to take your Travelling Tacks abroad again. I only regret that I cannot absolutely promise to send a Chaise, by own being engaged to Capt Duncan the hour you mention. And I sent Carnegies this forenoon to Kinghorn, and not certain if it returns this night. I immediately sent to hire Cockburns but he is from home this evening with one of his Chaise horses therefore could get no answer, but it is more than probable she is not engaged. If he (as he is confoundedly kittle) should decline coming your way on account of the deep ruts of the road, I will make an exchange by sending him to St Fort and send my Chaise to you in short your Journey shall not be stopt, if my best endeavours can effectuate it" (8). Besides the complexity of preparing for the journey it is important to note the references to the ruts in the road and to the ferry at Kinghorn.

---

(1) O S A, v 1, 452
(2) Ibid, v 11, 493
(3) Ibid, v 2, 411
(4) Ibid, v 17, 168
(5) Ibid, v 12, 528
(6) Ibid, v 5, 118
(7) Grid Reference, NO 443129
(9) Howie of Grange papers, Kinghorn

The movement of persons was not easy but the movement of goods was just as slow and expensive. Thus coal at Auchterderran was 1/=6 for as much as two horses could easily draw on a cart and the cost for transport to Auchtertool, 2 or 3 miles away, put the cost of a load up to 3/= (1). Balgonie coal was 7d for 18 stone at the pithead, with carriage to Monimail, 10 miles away, another 7d (2). Half a ton of coal in Kirkcaldy cost 3/=1 or 3/=6. Dysart coal was 2/1 at the pithead, with an additional shilling for freight while Cluny coal was cheaper at the pithead at 1/=6 but the freight was 2/=, the distances involved being respectively, two and four miles (3).

No aspect of Fife in the 1790s was more affected by the time-lag between parish accounts than the means by which roads were put into a satisfactory state, since this was the decade in which substantial improvements began to be made. These were effected in two ways. Heritors and tenants were obliged to perform work on the roads; this statute labour was commuted to a money payment so that a professional surveyor and staff could tackle the problem of maintenance in a specialist way. "The general opinion is, that if the money raised by them (assessment in money) is properly applied, it is the only effectual way to make good roads and bridges, and keep them in proper repair" (4). The order of assessment is given by the figures for Auchtertool where a plough was assessed at ten shillings per annum, half a plough at five shillings and a householder not on the poor roll at 1/=6 (5). While the statute labour roads in general left a lot to be desired, in areas like those around St Andrews the commuted statute labour produced a network of roads in good condition, although many of them were later turnpiked.

The second method was the establishment of turnpike trusts to take over certain roads - usually roads of some importance - to charge toll and to borrow money on the security of the tolls in order to put the roads in order. This process had just begun in the 1790s in Fife, with the initial resentment overcome and a general realisation that a good network of roads justified some temporary dislocation: thus, "turnpike roads began to be

---

(1) O S A, v 8, 119
(2) Ibid, v 2, 405
(3) Ibid, v 18, 14
(4) Ibid, v 4, 404
(5) Ibid, v 8, 119

formed in the parish of Cupar only within these last few years. The measure met, at first, with almost universal opposition from the adjacent country. The farmers, however, have already entirely changed their opinion with respect to turnpikes; they pay cheerfully at the toll-bars, and seem, in general, to be convinced of the vast importance and utility of the roads that have been formed" (1).

During and after the 1790s most of the principal roads were turnpiked, and the professional management of both turnpikes and statute labour roads resulted in a bettering of actual road conditions, although not necessarily in a rationalisation of travelling patterns. The actual techniques of road repair and construction had by 1840 been regularised and popularly circulated so that, for example, in Culross "the roads are made and kept in repair entirely upon Mr McAdam's judicious system" (2). Instances are many of reported improvements in the quality of the county's roads, like Dysart ("the turnpike roads are in excellent condition"), Leuchars ("the roads throughout the parish are kept without difficulty in the best repair"), Kilconquhar ("excellent turnpike roads run in all directions through the parish"), and Balmerino ("there are no turnpike roads in the parish; but the statute labour roads are in good condition") (3). Criticism, where it existed, was of some of the statute labour roads. The statute labour roads in Carnock were " very indifferent", with the road between Carnock and Cairneyhill in "a wretched state .... so that the intercourse between these villages is very much impeded, especially in winter" (4). In Torryburn, certain roads in winter were "in many places almost impassable", a situation made worse by the shutting up of other roads and footpaths by two local proprietors (5).

Complaints were aired as to the alignment of roads, as in Auchterderran ("the lines have not been well chosen; but we are thankful for the roads as they are") (6), and Auchtertool ("the road is kept in good repair, but the line of road is objectionable. There are several hard pulls in it, which would be avoided by another line without a pull in it. The preferable line is so obvious, that the manner in which carriage was performed and the

---

(1) Ibid, v 17, 168

(2) N S A, v 10, 603

(3) Ibid, v 9, 140, 227, 333, 593

(4) Ibid, v 9, 711

(5) Ibid, v 9, 736

(6) Ibid, v 9, 170

imperfect manner in which roads formerly were made and kept, can alone account for its not being preferred at first. Carriage was then performed on horseback, and, as ridges were generally driest, they were preferred as the lines of roads"). The steepness of the hills on the direct route between Auchtertool and Kinghorn was such that the route over the West Bridge in Linktown, three miles longer, was sometimes preferred for carriages (1).

Several instances were recorded of improvements in the lines of roads, as in Cameron where a new road (the modern B940) had just been opened up between the St Andrews - Anstruther roads, making it much easier to reach the south and east coasts (2). Four miles of new turnpike had been created in Culross, which obviated the need to follow "the former incommodious post roads" twisting along the shore (3).

As well as serving communities within the county the roads served as feeders to and distributaries from the ferries across Forth and Tay and ferry improvements went hand in hand with better road access. About 1790s a new turnpike was made to Woodhaven, which became for a time the leading ferry port on the south side of the Tay. In 1806 another turnpike was created through the exertions of Berry of Tayfield, shortening the distance to the coast, creating a shorter ferry passage - "the thoroughfare began gradually to change, so as at length to make Newport the principal place of resort of those travelling to the north-east" (4). In 1830 "the new and beautiful line of road between the village" (of Ferry-Port-On-Craig) and Newport was made "and may be regarded as one of the most valuable improvements to the place which has been accomplished for many years" (5).

A useful network of coach services was now in operation. Some of these - the three public daily four-horse coaches from Edinburgh to Perth and Aberdeen via Queensferry, the three daily coaches from Edinburgh to Dundee via Kirkcaldy and Cupar - reflected Fife's position as a stepping-stone on the main east coast routes. Others - the daily coach from Kirkcaldy to Glasgow via Dunfermline, Kincardine and Forth and Clyde Canal from Lock 16 (superseded by railway from Falkirk), the daily Perth - Kirkcaldy coach, the

---

(1) Ibid, v 9, 262-263

(2) Ibid, v 9, 311

(3) Ibid, v 10, 603

(4) Ibid, v 9, 512-513

(5) Ibid, v 9, 86

daily East Fife - Kirkcaldy coach and the coaches from Cuper and St Andrews to Largo (daily in summer, thrice-weekly in winter) - functioned as ferry feeders (1). Carriers, vans and foot-runners helped to fill in the gaps (2).

One consequence of improved roads and of the regular coach services running on them was the beginning of seaside places developing into summer resorts. Burntisland, with its advantages of pure air, bathing facilities, pleasant walks and varied scenery, added to the ferry service across the Forth, became a favourite watering-place with accommodation ranging from "a small sum up to fifteen or twenty guineas per month". The vitriol works were converted into cottages for summer visitors (3). At Newburgh "attracted, accordingly, by the beauty of the situation, and its easy access by steam and coach conveyance, families from a distance are beginning to resort to the town during summer" (4).

Another form of overland transport, different from the roads in that no network was formed, were the tramways laid to transport coal from inland collieries to limeworks, saltpans and harbours on the coast. That at Halbeath was "a proper waggon road laid with timber, for the distance of five miles, and kept in good repair at great expense. Twenty-four wagons are employed, they are drawn, some by one and others by two horses, and bring down two tons each time". Halbeath coal was exported from Inverkeithing to the tune of over 25,000 tons annually (5). In the neighbouring parish of Dalgety the Fordell Railway extended to almost four miles from the pits to the salt pans and harbour of St Davids, with the coal being carried in wagons containing 48 cwts. (6). The Earl of Elgin's industrial complex of coal and limestone mines, harbour and workers' village included wagonways to bring together coal and limestone at Charlestown (7). The eastern part of the coalfield had its two-mile wagonway running from the pits at Kirkland to Methil harbour (8)

By 1840 there had been no substantial change in the waggonways. The Halbeath Railway was converted from wooden rails to iron about 1811 and branches were

---

(1) Ibid, v 9, 12, 77, 760
(2) Ibid, v 9, 77
(3) Ibid, v 9, 425
(4) Ibid, v 9, 57
(5) O S A, v 10, 507
(6) Ibid, v 15, 270
(7) Ibid, v 13, 467
(8) Ibid, v 16, 518

made to Townhill and Appin Collieries (1). The Fordell Railway was also converted to iron (2). Stevenson surveyed lines in 1820 and 1836 and there was interest evidenced in a railway from Burntisland to the Tay, with a spur from New Inn to Newburgh and another from Kirkcaldy to Lochgelly (3). When the railway was strung across Fife it was not, however, these branches that were laid out.

In any examination of sea transport as it affected the county in the late eighteenth century the most striking impression must be of a large number of small harbours. This stemmed from three factors - the long inland penetration of the firths which is such a striking feature of the geography of the east coast, the poor state of the roads, tending to produce a large number of small ports with hinterlands restricted by transport costs, and the small size of the vessels of the time, rendering large harbours superfluous in all but a few cases. Thus, at Inverkeithing, forty or fifty vessels could be waiting for coal, especially in winter (4). Ships of 500 tons burden would sail to Newburgh, but the maximum tonnage of vessels proceeding up the Tay to Perth was 200, so that part of the cargoes of larger vessels were distributed among lighters at Newburgh (5). Nevertheless there were exceptions, in general it could be said that the largest vessels of 200-300 tons concentrated on long-distance trade to the West Indies, the Mediterranean and the Levant, and to the East Indies. This class of vessel also took part in the Greenland whale fishery. Smaller vessels, sloops and brigantines of some 50 tons, engaged in the coastal and short-sea trades across the North Sea to the Baltic, Germany and the Netherlands. These categories were not, however, mutually exclusive since at least one vessel of 24 tons made a successful return passage from Kirkcaldy to the West Indies (6).

The goods handled were a reflection of the importance of primary industry in the county. Coal exports have been mentioned above, as has the trade in lime; limestone and ironstone were shipped to Carron from Aberdour, Burntisland and Dysart and paving stones for London were exported via Newburgh from the north of Fife (7). Fish were sent to Edinburgh from

(1) N S A, v 9, 245

(2) Ibid, v 9, 186

(3) Ibid, v 9, 19, 760

(4) O S A, v 10, 505

(5) Ibid, v 8, 172

(6) Day book, ledger and waste book of AB for 1830 (manuscript in possession of Mr Wilson, Palm Villa, Kirkcaldy)

(7) O S A, v 12, 516

Wemyss and Anstruther and to Dundee from Ferry-Port-on-Craig. The East Neuk ports from Pittenweem round to Kingsbarns shipped lobsters to the London market, £1000 being brought in in this fashion (1). Salmon was also destined for the London market, with special handling as befitted a commodity of high value. The fish were caught all along the Tay and taken to Newburgh and Perth; they were also carried overland from the River Leven (2). For the voyage to London the salmon were packed on ice, or sent fresh when abundant or "the weather not uncommonly warm" (3).

Agricultural products were exported mainly from the eastern part of the county. Edinburgh and Leith were markets for grain and cattle while the opening of the complete Forth and Clyde in 1790 opened up the Glasgow market for cereal crops. Thus, from Crail "barley, beans and wheat are sent every year to Glasgow and the neighbourhood. The Opening of the Canal between the Forth and the Clyde has been of immense advantage to the farmers and landholders in this part of the country, who formerly could find no good market for what corns they raised, beyond what was required for home consumption" (4).

The other main class of exports was woven cloth, dealt with in some detail above.

Imports were varied but had certain local concentrations. The north- eastern part of the county imported coal, lime, with barley for the distillery in Kincaple. The shipbuilding ports - Methil, West Wemyss, Dysart, Kirkcaldy and Kincardine - imported wood and iron from the Baltic. Flax, flax-seed and linen yarn for the textile industry were imported at the same ports, along with a great range of minor foodstuffs, beverages, bleaching materials and seeds (5).

A highly specialised form of sea transport was the ferry, necessary for crossing the Tay and Forth if a detour was to be avoided. On the Tay, Smeaton's bridge of 1771 was an alternative crossing involving a detour that was not excessive, adding only 13 miles for example, to a journey

---

(1) Ibid, v 3, 78; v 9, 446

(2) Ibid, v 5, 109

(3) Ibid, v 8, 172

(4) Ibid, v 9, 440

(5) Ibid, v 12, 516

from Dundee to North Queensferry. Thus the Tay ferries at Newport, Woodhaven and Tayport, opposite Dundee and Broughty Ferry, lost much traffic to the bridge (1). In Ferry-Port-On-Craig, "fewer people travel this way and the road has become almost deserted. Drovers still frequently pass here, having good conveniency for their cattle on both sides of the river". The fare for a man was 2d and that for a horse 4d (2).

Crossing the Forth was another matter. The lowest bridge was at Stirling so that substantial mileages were saved by a ferry crossing. Thus a journey from Perth to Edinburgh was 67 miles by Stirling,but only 43 by Queensferry; from Dundee the journey to Edinburgh was 89 miles by Perth and Stirling, 65 miles by Perth and Queensferry, but by the ferries at Woodhaven and Pettycur the mileage was reduced to 33 - although at the expense of two sea crossings involving problems of tide, or tempest, of calm and of barely seaworthy vessels.

The ferry passages over the Forth can be divided into the Broad Ferries - from the knuckle of land between Burntisland and Kirkcaldy - the Narrow Ferry - where the rocky peninsula at North Queensferry narrows the Forth - and theferries of the upper Forth.

The ferry at Pettycur was the principal crossing point in the 1790s, "with 9 passage boats of 50 or 60 tons each, and a few pinnaces that ply the ferry" (3). Kirkcaldy had two ferry-boats at this time (4), while Burntisland had 3 "large, stout boats and a small one, that goes at half-tide. They cross every day, when passengers cast up" (5). The Narrow Ferry or Queensferry Passage had four boats and four yawls on it and was reckoned to be "safe and expeditious" (6).

On the upper Forth two passage boats operated between Torryburn and Bo'ness. The larger was built by Dunfermline merchants for the transport of manufactured diapers for transhipment to London and the return carriage of London goods (7). The ferry from Kincardine to Higgins' Neuk in some respects reflected the problems of all the Forth and Tay ferries. It was only within

---

(1) Ibid, v 16, 90
(2) Ibid, v 8, 457
(3) Ibid, v 12, 238
(4) Ibid, v 18, 25
(5) Ibid, v 2, 433
(6) Ibid, v 10, 506
(7) Ibid, v 8, 453

two hours of flood tide that the boats could pass with a horse, while foot passengers were often obliged to wade through mud for forty yards at low water (1).

In the New Statistical Account there is some evidence of the beginning of change in sea transport, with the advent of the steam vessel and a more vigorous commercial spirit finding expression in better harbours. St David's was improved in 1832 by Sir Philip Durham in order to make it suitable for ships of 450 to 500 tons and drawing 17 to 18 feet. The amount laid out was £2000 "without which it would have been impossible to have effected the present extensive sales" from Fordell (2). Kirkcaldy too found it necessary to improve and extend the harbour which, being accessible to heavily-laden vessels only at spring tides, appeared to have an adverse influence on the development of the town's trade (3). St Andrews was typical of many small ports in being unable to cope with ships exceeding 100 tons, or drawing over 14 feet, even at spring tides. Drying out at low water and with a sand bar keeping out large vessels, sluicing the harbour was ineffective and it was already apparent that only very heavy expense could materially improve it (4).

The trade in exporting coal from such ports as Methil, St David's, Inverkeithing and Charlestown has already been alluded to, as have the destinations of finished textiles. Other large-scale movements of produce were the export of large amounts of grain and potatoes - mainly to London - from Tayside and the East Neuk (5). Thus Messrs Rintoul of Balmerino shipped over 6500 bolls to London in some years (6) while the more varied trade of a port with an industrial hinterland, like Leven, is shown below:-

---

(1) Ibid, v 11, 550
(2) N S A, v 9, 187
(3) Ibid, v 9, 759
(4) Ibid, v 9, 477-479
(5) Ibid, v 9, 349, 963
(6) Ibid, v 9, 593

Table. 2.A

Trade of Leven, 1835

Imports			Exports		
Ashes, 556 barrels	- L.	4170	Bone-dust, 500 tons	- L.	3000
Bones, 232 tons	-	951	Bricks and tiles	-	80
Wheat, 205 quarters	-	410	Linen cloth, 900 bales	-	18000
Barley, 995 quarters	-	1244	Cast-iron, 215 tons	-	2580
Malt, 266 quarters	-	638	Pig-iron, 30 tons	-	180
Coals, 577 tons	-	230	Ochre, 191 tons	-	573
Flax, 357 tons	-	17850	Oats, 60 quarters	-	60
Hemp, 361 tons	-	7942	Potatoes, 2084 bolls	-	730
Herrings, 272 barrels	-	272	Whisky, 376 puncheons	-	15040
Pig iron, 440 tons	-	2200	Yarn, 440 tons	-	20240
Rape cake, 40 tons	-	220	Total	L.	60483
Stones, 1322 tons	-	220			
Slates, 105 tons	-	330			
Timber	-	6513			
Total	L.	43199			

(Source - New Statistical Account, v 9, 273)

Regular services ran from Leith to Stirling, picking up trade at such places as Crombie (1), and Kincardine (2), and from Leith to Dundee, Arbroath and Montrose, again calling at such places as Elie (3). Steam packets ran across the Firth from Kirkcaldy, Leven and Largo to Leith and Newhaven and ships from Kirkcaldy sailed to Glasgow, the waters of Europe and the Americas and even beyond the Cape of Good Hope (4).

The broad pattern of ferry services was unchanged, but there were changes of detail of two main kinds, related to the introduction of steamer services and to the improvement of ferry piers and feeder roads. Quite marked changes were observable at Kinghorn where "in the absence of steamers and stage-coaches, the town was usually crowded with passengers, waiting for fair weather to allow the boats to set sail. The whole town on these

---

(1) Ibid, v 9, 736

(2) Ibid, v 10, 871

(3) Ibid, v 9, 299

(4) Ibid, v 9, 756

occasions was wont to be an inn". The introduction of steam vessels from the 1820s, the regularity of their running and their connection with coach services meant that people were moved through the town with a minimum of delay, producing a "deficiency of bustle and traffic" (1). Elsewhere on the Forth, a steam-boat plied the ferry between Kirkcaldy and Newhaven, making four passages in each direction in summer, and in winter, three (2). Two steam-boats linked Dysart with Newhaven (3), and from Largo a steamer ran twice daily in summer and once in winter to Newhaven (4). Burntisland was also connected with Newhaven by ferry but the fares were considered very high - cabin 2/=, steerage 1/=6 - and it was only when the weather was too severe for Pettycur to be used that the Dundee and Perth coaches came to Burntisland (5).

On the Tay, there was an interplay of forces resulting in a shifting of traffic as one pier was improved and another became obsolescent. The movement of emphasis from Woodhaven to Newport consequent on road improvement in 1806 has been noted above but both Newport and Woodhaven were served until 1822 when ferry harbours at Newport and Dundee, designed by Telford rationalised the traffic "so that having been .... one of the worst and most dangerous, it now ranks among the safest, most expeditious, and convenient ferries in the kingdom". The service was basically an hourly one from either side, operated by two double-hulled steam-boats, supplemented by a large sail-boat, a pinnace and a yawl (6). At nearby Ferry-Port-On-Craig, despite an "excellent sailing vessel" serving Dundee daily (7), "neither horses nor cattle, however, cross the river by this passage, since the erection of the steam-boat between Newport and Dundee ....". "There is nothing in which we seem to be left so far behind, amid the improvements of the age, as the state of the ferry passage, which has still to be effected in every state of the weather by small sailing boats. Scarcely anywhere else in the kingdom is this now the case on a passage of nearly two miles. A steam boat is therefore much desiderated" (8).

---

(1) Ibid, v 9, 813-814
(2) Ibid, v 9, 760
(3) Ibid, v 9, 140
(4) Ibid, v 9, 442
(5) Ibid, v 9, 419
(6) Ibid, v 9, 514
(7) Ibid, v 9, 86
(8) Ibid, v 9, 88

Categorically, Thomson states "there is no canal in Fife", reminding us that no part of the county is more than nine miles from navigable water and no doubt ignoring the supposed canal dug to convey the retired Sir Andrew Wood from Largo House to church on Sundays as of merely antiquarian interest (1). In his second Appendix, however, he gives information "respecting a small inland canal, which Mr Low of Burnturk has projected, and is, at present, carrying into execution" (2). This canal, of which more details will be given later, was intended to link the most northerly coal and most northerly limestone in Fife, with a branch to the north to take the burnt limestone to an inclined plane and the main road near Kettle, the two parts being, respectively, two miles and half a mile long. The problem however, is that Thomson is describing a construction which has just been begun and which may not have been carried to its conclusion. Thus, Mr Low "means to convey the raw limestone to draw-kills, which he has cut", "it is intended that after the first year the loaded carriages shall draw up the empty ones", "the boats .... on the upper canal .... are to be from four to ten tons burden", "the conveyance .... is to be effected", "the larger boats .... are to be conducted" (3). The general impression resulting from such a description is to question whether the canal was ever viable, especially since there is a dearth of later references to it (4).

It would seem necessary, therefore, that Fife's only commercial canal be "rediscovered" and that a description of the remains be compiled as a match to Thomson's view of the project.

This chapter represents an attempt to show to what extent the nature and scale of economic activity in the 1790s altered in the first part of the nineteenth century. This consideration has perforce been rather generalised and, as a consequence of the nature of the sources, wanting in statistical content, using the adjective in its twentieth-century connotation. The remainder of this thesis, then, starts from the foundation now laid and examines the significant areas of the industrial archaeology of Fife,

---

(1) Thomson, General View, 293-294

(2) Ibid, 403

(3) Ibid, 404-406

(4) Both Duckham (Scottish Coal Industry) and Lindsay (Canals of Scotland) base their descriptions on Thomson, although Mrs Lindsay, in a private communication, stated that her mother-in-law had seen the ditch which constituted the remains of the canal.

attempting not only to catalogue the provenance of such evidence as is traceable in the landscape in the 1970s but also to answer the critical questions posed in Chapter 1.

CHAPTER 3

Agriculture and Rural Industries

The various developments described in Chapter 2 transformed agriculture in Fife from a subsistence activity to one in which production of crops and livestock for marketing became paramount. The steadings built in the late eighteenth century and, especially, during the golden years of the middle of the nineteenth century are the outward expressions in stone of the commercial outlook of tenant farmer, landowner and owner-occupier. Perhaps no other nineteenth century building expressed its function so eloquently by means of appearance and layout than did the farm steading and, despite the passage of more than a century since many were designed and built, subsequent technological change has resulted in internal adaptation and piecemeal addition rather than in complete replacement. It hardly seems possible that any other industry than farming could have more functioning survivals.

Clearly, the study of farm buildings and machinery is one of the greatest possible potential interest. Hudson (1) has indicated some possible lines of approach while Butt (2) has provided an outline for field investigation and an analysis of the penumbra of rural industries. The ideal would be a blanket survey of the county's farm buildings along the lines developed by Dunnett but this would involve major practical difficulties. In the course of a season's work, Dunnett (3) covered 130 farm steadings. There were in 1967 1452 agricultural units in Fife and, while many of these were small and others merely statistical units, having been united with and worked from other units, fully a thousand of these are full-time farms with a full provision of suitable buildings. A thorough survey of the county's farm buildings would, in itself, constitute a considerable and worthwhile area of research and as such has not been attempted here. What has been done is to look at specific topics - drainage and reclamation works, and the division of commonties, the cessation of flax culture, the nature and distribution of farm power generation, rural processing industries - in the hope that some useful contribution to knowledge can be made, albeit to a limited extent.

---

(1) K Hudson, Industrial Archaeology (London 1963) 149-153

(2) J Butt, The Industrial Archaeology of Scotland (Newton Abbot, 1967) 28 - 55, 331

(3) R Dunnett, East Lothian Farm Buildings (Haddington 1968)

Reclamation

Reference was made in Chapter 2 to the drainage of Rossie Loch and Lochore and to the injudicious position of corn mills in Kilmany parish. Although commenced in 1740, the straightening of the Eden was undertaken in a piecemeal way since it proved impossible for the riverine proprietors to cooperate in producing any overall plan until the late nineteenth century when James Leslie of Edinburgh was able to carry out defensive works along the Eden using various combinations of stakes and stones at a cost of 4/=6 to 5/=6 per yard (1). The Kilmany problem was solved in 1842 by creating a new drain, 1172 yards long, leading up from Rathillet Bridge (355205) to drain 122 acres of hitherto wet land in Km. squares 3420 and 3520 (2).

Lochore was drained by Highlanders under the supervision of Captain Park, the factor of Bruce of Kinross. The early part of 1793 was very wet, so much so that the roads were almost impassable (3) and the beginnings of drainage efforts were set at naught. As Park reported of the bridge over the Ore at the outlet of the former loch "I find I must widen the Bridge also for in some of our late heavy rains the current of water was choaked up by the narrowness of the arch, so much so that the whole bed of the loch was overflow'ed" (4). Nevertheless, by the summer Park was pushing hard to get his cross drains completed and on the 8th of July was to be found apologising that his "various avocations this week will not admit of my being a day absent without running the risque of throwing my Drainers idle, they are twenty-four in number" (5) The whole bed of the loch was now surrounded by a ditch and not a drop of standing water was to be seen. The cross drains were begun in July, when Park was unwilling to trust the direction of them to the judgment of his Highlanders but insisted on superintending their lining out himself (6). Very abundant crops were yielded for some time, but the drain was not wide enough to carry off the water in heavy rains, with resulting occasional flooding (7). Mining operations resulted in the reappearance of the loch in the 1930s, when it came to form the centre-piece of a sordid, depressing mining landscape. Now this area has been

(1) S R O, RHP 4473

(2) S R O, RHP 10207

(3) S R O, GD 29/2063/40

(4) S R O, GD 29/2063/45

(5) S R O, GD 29/2063/55

(6) Ibid

(7) N S A, v. 9, 447

reclaimed by Fife County Council Planning Department: old bings have been lowered and spread, old subsidence hollows have been filled so that the passage of a few years will see the loch in its final form as fishing and sailing focus of a regional park.

On the boundary between Fife and Kinross, 3 miles north-east of Lochore, about 8000 acres of flat, ill-drained land at Boglochty (2098) were drained in the 1830s. Being the boundary of four estates, the straightening of the Lochty Burn draining Boglochty necessitated cooperation between neighbouring proprietors. Responsible for planning the project was Alexander Blackadder, civil engineer of Stirling, who was paid £22: 3/=9 for reports and travelling expenses to the end of 1836 (1). The contractor, Peter Sinclair, received a total payment of £324: 15/=1¾d in instalments as the work was completed and measured. The total spent on draining Boglochty was £384: 1/=, divided as follows:- Kinninmonth £145: 0/=5½d. Capledraw £78: 2/=3d, Pitkinnie £20: 12/=6d, and Kirkness £140: 5/=9½d (2).

The main drain was inspected again by Blackadder on 20th April 1837, to reveal partial obstruction of the free flow of water in the drain by stones, gravel, sand and moss. The lowest section of the drain was of rock, merely requiring the removal of stones from the drain floor. Further upstream the bottom and sides were of fine sand, necessitating the clearing out of the cut to its original depth and widening it by 3 feet. An 18-inch wall was built on either side of the channel to a height of 2 feet and the slope above this turfed and covered with best soil and seeded with grass. The most westerly stretch of the drain was in fine sand, with fine clay at the extreme west. Here the sides had fallen into the cut, making necessary the restoration of the cut to its former size and form. This was done by means of moss turf alone, using blocks of turf like rubble, filling in the space between wall and surrounding land, and then sowing with natural grasses (3).

The outfall of drainage ditches into trunk streams might present problems, particularly when there arose the question of interference with existing mills. Within a mile along the River Ore were Ore Mills (flour) and at Mackie's Mill, a meal mill and a lint mill. In 1804, Sir James St Clair and General Wemyss were already in dispute since

---

(1) S R O, GD 1/42/19

(2) S R O, GD 1/42/22

(3) S R O, GD 1/42/19

the height of Mackie's Mill weir banked up the river to reduce the effectiveness of the tail race at Ore Mills. To the problem of accommodating St Clair's tenant at Ore Mills was added that of the disposal of water from Ore Mills Moss and Wemyss Moss to the south. The problem was solved by taking the tail water from Ore Mills into the Mackie's Mill lade and leading the drainage ditches into this, General Wemyss having the right to stop the lade at any time (1).

A major reclamation from the tidal reaches of the upper Forth was achieved in the parishes of Culross and Tulliallan, at the time a detached portion of Perthshire, the claim being made that "a larger extent of rich alluvial land has been gained from the sea than by any other similar work in Scotland" (2). This reclamation was in two parts of 152 and 214 acres. The smaller was achieved by building an embankment 2020 yards long from the Clackmannanshire boundary near Kennetpans (918885) to the village of Kincardine. The construction of this embankment 100 yards above low water mark occupied from April 1821 to the end of the summer of 1822. After closure, the embankment was further heightened in 1823, 1824 and 1836, with a cost, to the end of 1826, of £6104: 0/=7. The new land was divided into fields in 1823 and these were wedge-drained in the following year before being sown with oats (3). The crop failed, the harvest yielding less than the seed sown, but from 1825 to 1829 the new fields were laid down to grass and then cropped successfully. It is significant that, while rape was widely used as a fodder crop and source of oil at this time, no use should have been made of it as a pioneer crop in newly-created salt-saturated land as is done in the Netherlands today.

Eastwards from Kincardine the Longannet embankment of 3046 yards was begun in the spring of 1829, using rubble from Longannet quarry brought along a specially constructed waggonway. This reclamation proved much more difficult to achieve and it was not until January 1838 that the tide slaps were closed to keep out the sea. 170000 tons of stone and quarry rubbish went into the embankment, the cost to February 1838 being

---

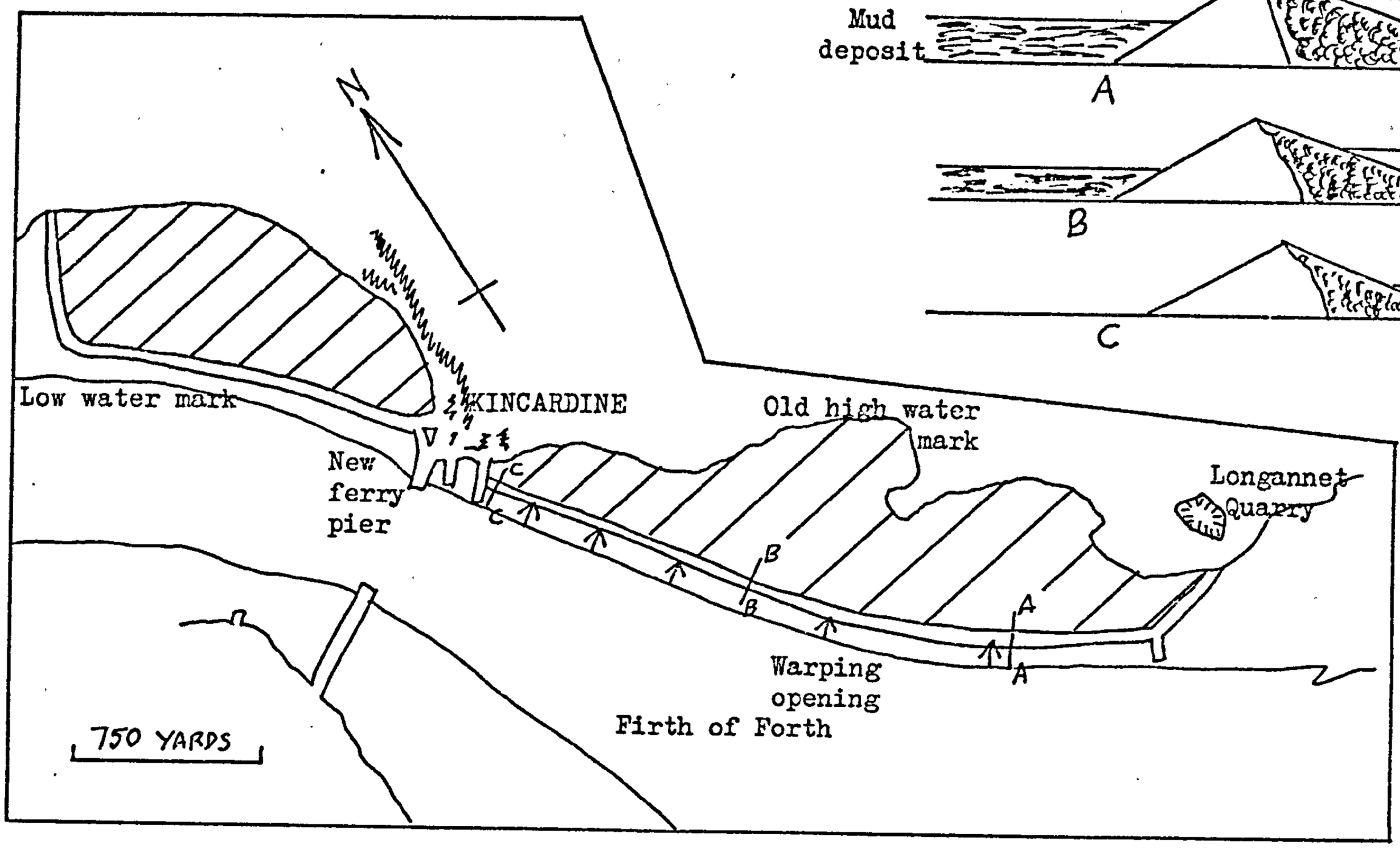
(1) S R O, GD 164/341

(2) W Menzies, 'Report on the Embankments and Ferry Piers on the Estate of Tulliallan', Highland Society's Prize Essays, v 12 (1839), 489

(3) Ibid, 490

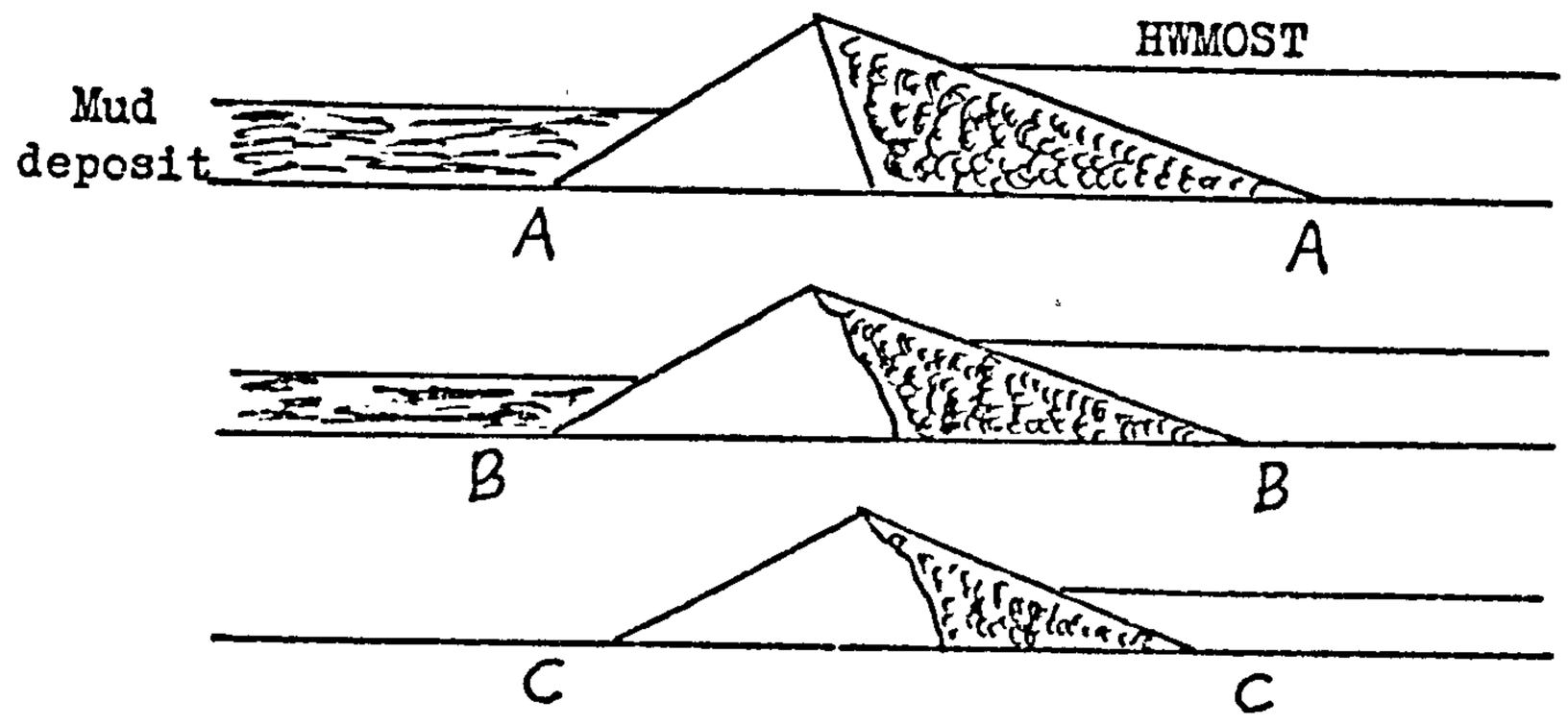
FIG. 3.1

KINCARDINE RECLAMATION



SECTIONS

100 FEET



£1159: 7/=7d. (1) (Fig. 3.1).

The new embankments made necessary the building of new ferry piers at Kincardine in the summer of 1828 at a cost of £3837: 4/=1 (2). Further heightening and strengthening were carried out when the 10¾ mile single-track coastal railway between Dunfermline and Alloa, built under the North British Railway (General Powers) Act of 1908, was constructed (3). In future major reclamations will be made in lagoons between Preston Island (0085) and Longannet power station, which itself stands on land reclaimed from the mud flats by the fly ash from Kincardine power station.

While agricultural production could be increased by the drainage of wet areas and the creation of new land, the same ends could be achieved by the more efficient use of common lands. A good example of this was the division of the Commonty of the Lands of Falkland in the year 1818. 2578 acres in the Lomond Hills had a total annual value of £748, common to the towns people of Falkland, Newton of Falkland and Freuchie, and to the nearby heritors (4). "Many individuals nicknamed 'scrapies' kept horses and cattle in the town" - of Falkland - "and, if fame may be believed, supported them by pilfering freely from their neighbours, but when questioned how they supported their cattle, the ready answer was, "O, by sending them to the hill""(5). While undivided, no improvement could be made on the Lomonds, so that they remained unenclosed and unplanted well after the generality of the county. Neighbouring proprietors - particularly Johnston of Lathrisk and Hope of Rankeillor, the main beneficiaries of the drainage of Rossie Loch - having improved their own estates (6), sought to develop more land in the wartime boom of the first years of the nineteenth century, only to find their efforts under the 1695 Act blocked by the Royal Burgh of

---

(1) Ibid, 497-499

(2) Ibid, 494

(3) A S Cunningham Culross, past and present, and Torryburn and Valleyfield, 2nd edition, (Leven 1906), 82

(4) S R O, RHP 489

(5) N S A, v9, 935

(6) Ibid, 934

Falkland. By a special Act of 1815 (1), Sir William Rae, Bart. of St Catherine's (later Lord Advocate) was appointed to arbitrate in the division of the commonty, the award being made on 27th July 1816 and put into operation on 30th December 1818.

By the award, the East Law Lime Quarry (238060), Wilkie's Quarry (202068) and Long Craig Quarries (204057) were maintained in the communal states with those persons named in the award, and their successors, entitled to dig, win, burn or carry away any limestone or freestone found within the 30 acres concerned for the use of themselves and their lands only. Roads giving access to the quarries and the divided commonty were nominated as being open for the use of the persons named and their successors. The remainder of the commonty was divided into areas ranging from the 413 acres alloted to Skene of Hallyards down to 20.251 acres shared by Jean Wishart of Falkland and 39 other persons - weavers, carters, wrights, labourers, a flesher and a merchant (2). "Immediately upon the division taking place, the large heritors, Mr Bruce of Falkland, Mr Johnston of Lathrisk, and Mr Balfour of Balbirnie, proceeded to subdivide their respective portions, which had the effect of greatly improving the appearance of the county and raising the value of the land" (3). For example, Bruce improved several hundred acres by ploughing, taking a crop of oats, liming and draining the next year, taking another crop of oats and then laying down to grass. By this treatment, the annual value of this land was increased from something merely nominal to - in some instances - £2 per Scotch acre. The 'scrapies' passed away and the commonty soon proved "quiet and industrious" (4).

Evidence on the ground of the division of the Commonty of the Lands of Falkland consists of the quarries, the access roads and a number of marker stones, square in section, two feet high and incised on top with the inscription "WR 1818". At least 61 of these stones were set up in 1818 (5) but most have since disappeared. The remainder provide the

---

(1) 55 Geo. 111, C 55

(2) S R O, Deed Warrant, series 80, 18/1/1819; S R O, RHP, 1028

(3) N S A, v 9, 934

(4) Ibid, v 9, 935

(5) S R O, RHP, 1028

Ordnance Survey with suitably stable bench mark locations and, although the inscription has given rise to much local speculation (1), it is clear that "WR" is Sir William Rae and "1818" the year of division of the commonty.

Flax Culture

Although of considerable antiquity in Scotland, the culture of flax was greatly encouraged after the establishment of the Board of Trustees for Manufacturers on 18 July 1727, by His Majesty's Patent for Improving Fisheries and Manufacturers in Scotland (2). The Board encouraged the linen trade at all possible levels, by paying salaries to stamp-masters and inspectors, by assisting bleachers and flax-scutchers to fit up their establishments, by giving prizes to weavers of the best cloth manufactured and awards for new discoveries or improvements. Salaries were given to spinning school mistresses and to foreign manufacturers brought over to pass on techniques of preparing flax, weaving and making reeds and looms (3). Premiums were paid for lint seed sown - at a rate of 15/= per acre, later increased to 20/= - and flax seed saved at the end of the season was awarded a premium of 1/= per peck in the early days of the Board and 9d in 1809 (4). No claims for less than 16 pecks sown in one farm or one parish were entertained, 16 pecks being regarded as the equivalent of 2 acres (5).

There would be no question of the success of the Board of Manufacturers in fostering the growth of the linen industry, so much so that home supplies of flax proved quite insufficient to supply the industry. In 1813 the Fife millspinners were wholly employed in spinning yarn for Osnaburgs and other coarse cloths made in Angus; while most manufacturers in Fife and Perth were dependent, partly on local hand-spinning, but mainly on Irish and German yarns (6). Foreign and Irish competition

---

(1) T G Snoddy, Afoot in Fife (Edinburgh 1950), 128

(2) A J Warden, The Linen Trade, Ancient and Modern (London 1864), 444

(3) Ibid, 446

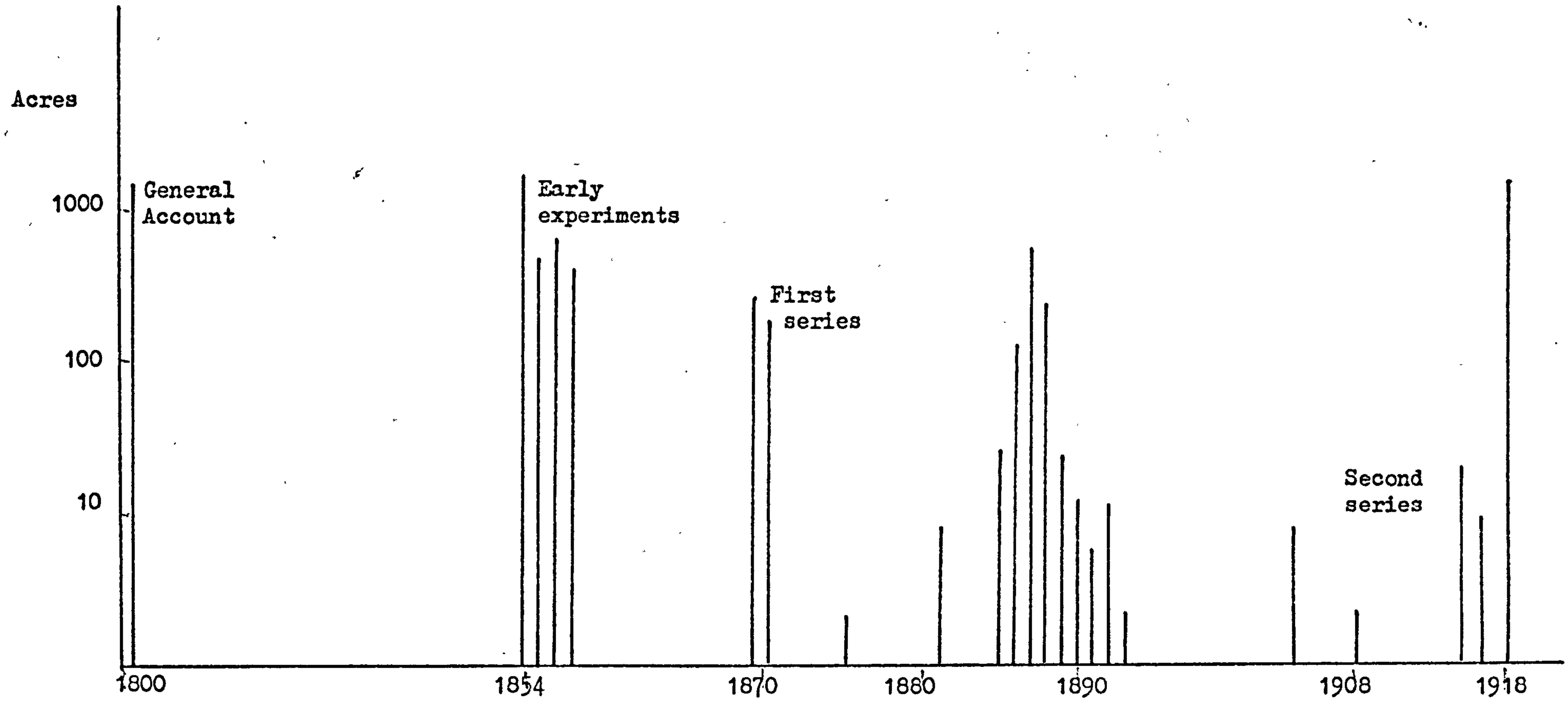
(4) Ibid, 461

(5) Ibid, 463

(6) Ibid, 462

FIG. 3.2

FIFE - ACREAGE UNDER FLAX, 1800-1918



kept down flax prices while the very high grain and cattle prices from 1795 to 1815 made farmers less anxious to grow flax (1) - the result was a decline in the flax acreage in the early nineteenth century, even before the abolition of premiums in 1829. The Scottish acreage fell from 5000 in 1812 to 2861 in 1824 and 778 in 1829 (2). In 1834 great complaints were made about the growth of flax at home having ceased (3), and, while this was an exaggeration, there seemed every reason to support that flax would become very soon as much of an anachronism as bere. Nevertheless, flax-growing in Scotland, and particularly in Fife, had still a violently fluctuating course to run and such evidence as we have shows no immediate diminution of acreage with the cessation of the work of the Board of Trustees.

The only early figure available for flax culture in Fife is Thomson's estimate of 1500 acres in 1800 (4). One might suppose that more certainty could be established with the appearance of county agricultural statistics from 1854, and parish statistics from 1869. It is on the basis of these figures that Fig. 3.2 has been constructed. Closer investigation is required to test these figures. The four years beginning 1854 were years of experiment in the collection of agricultural statistics and for these years enumerators were employed by the Highland and Agricultural Society of Scotland. In 1854 all properties were surveyed but from 1855 to 1857 properties in the Lowland counties rented below £10 were not surveyed. From 1866 to 1911 agricultural censuses were carried out by the Excise Officers of the Board of Inland Revenue (The Board of Customs and Excise after 1909) on a purely voluntary basis. 1868, 1871-73, and 1876 were omitted. Variation was observed in the minimum size of holding surveyed, ¼ acre being the minimum from 1869 till 1892, when 1 acre became the minimum holding. The Second Series of parish summaries, beginning in 1912, covered all holdings exceeding 1 acre in extent, but there was no statutory and compulsory basis till the Agricultural Returns Act of 1925. Before that date defects were supplied by estimate (1).

---

(1) J Farquharson, 'On the cultivation of flax', Trans. High. Agri. Soc, Scot. series 3, v 5 (185 -53), 331

(2) Warden, Linen Trade, 463

(3) N S A, v 9, 83

(4) J Thomson, A General View of the Agriculture of Fife (Edinburgh 1800), 199

(5) S R O, AF 39/13/1 - 6; AF 40/1/2; AF 40/2/1; AF 40/3/2; AF 40/6/2; AF 40/7/2

The variations in collection of county and parish statistics are of particular relevance to flax culture in view of the fact that so much of the flax crop - as noted in Chapter 2 - was grown in small plots for domestic use. 1648¾ acrea of flax were recorded for Fife in 1854 and 428¼ in the following year, and this may be a reflection of the exclusion of small properties from survey in the latter year. Again, with a crop occupying less that 0.1% of the cropped area of the county from 1855 onwards, one would expect to find omissions and approximations in the final figures.

However, the general picture for the latter part of the nineteenth century is clear, with a steady decline in acreage to the 1870s. It seems likely that the early 1850s saw a revival of interest in flax culture with two factors making flax more attractive than in the early years of the century. The lesser profitability of corn and cattle in mid-century encouraged experiment with other crops and calculations showed flax to be from £1: 0/=4 to £1: 18/=4¼ more profitable than oats per Imperial acre and £1: 4/=3 more profitable than potatoes (1). While hand-weeding was still carried out when the flax seedlings were 3 inches high (2) and flax was still pulled by hand at harvest, these operations were less laborious than ordinary farm operations. It was clear also that land cropped with flax was cleaner than other land, due to the very thick sowing of flax seed and the stifling of weeds as the summer progressed. Barley and grass following flax and adjoining swedes showed no sign that the flax crop had exhausted the soil while beans grew more luxuriantly on former flax land (3).

Secondly, the evolution of Schenk's patent hot-water system of retting meant that the growing of flax and the preparation of fibre could become two distinct and separate employments with opportunities for specialisation. The processes of steeping or retting - for which more of the old lint-pots had disappeared with improvements in drainage (4) -

---

(1) W Reid, 'On the cultivation of flax', Trans. High. Agric. Soc. Scot. series 3, v 5 (1851-53), 334

(2) Ibid, 333; R Hodgson 'On the cultivation of flax', Trans. High. Agri. Soc. Scot. series 3, v 5 (1851-53), 318

(3) Reid, Flax, 335

(4) Farquharson, Flax, 331

FIG. 3.3

FIFE - PARISHES GROWING FLAX

1790s and 1830s

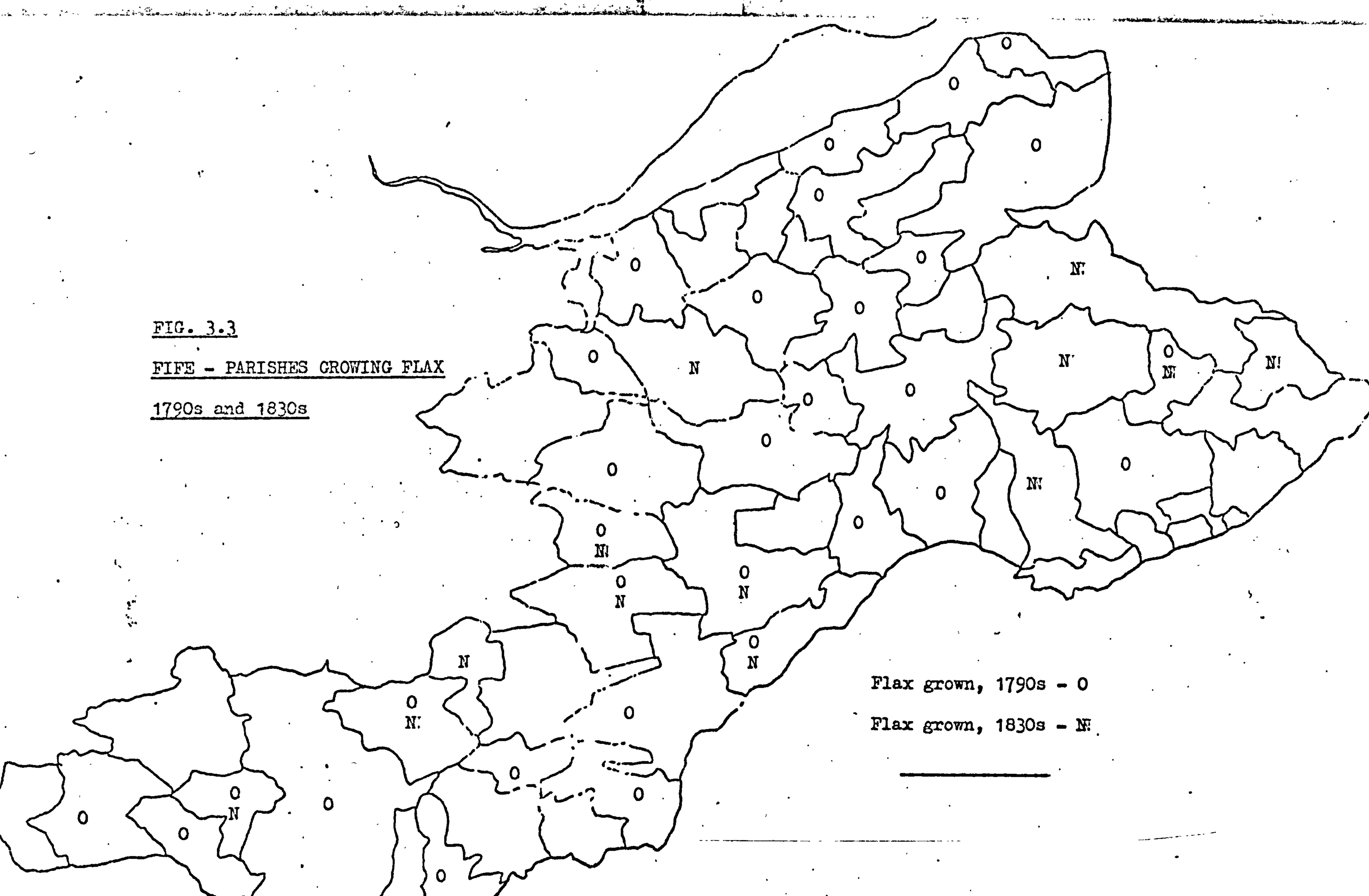
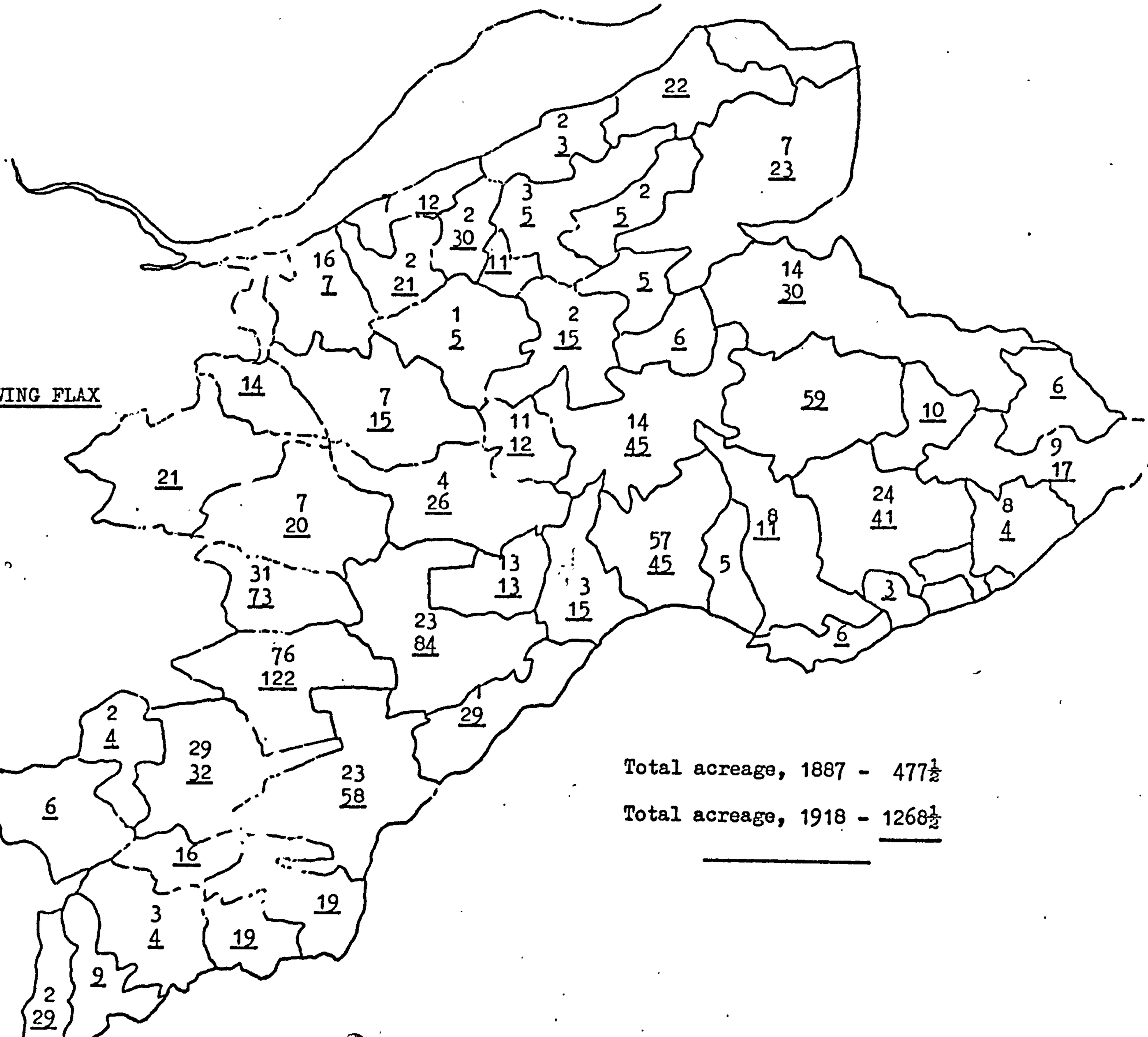


FIG. 3.4

FIFE - PARISHES GROWING FLAX

1887 and 1918



Total acreage, 1887 - 477½

Total acreage, 1918 - 1268½

draining and grassing were superseded by steeping in hot water for a considerable period at a small number of establishments - in Ireland eighteen and, in Great Britain, Marshall of Leeds, Clarke, Plummer and Co, Newcastle, Baxter, Dundee and Fergus, Prinlaws, Leslie, Fife (1). Thrashed flax-straw was sent to Prinlaws and subjected to various treatments. Retted cold, the yield was 7.90% of dressed flax worth £34 per ton, twice steeped in hot water at 80 - 90° F. the yield was 12.96% worth £45. Hot water retting imparted a softness to the fibre and a fineness to the colour which increased the value of the flax fibre by as much as 60% (2). Watt of Glasgow patented an elaboration of the Schenk process in which flax-straw was exposed to a current of steam which condensed in the flax, trickled down through it and moistened it, speeding up retting and giving as a by-product a flax-liquor greedily swallowed by cattle, containing as it did over three times as much solid matter as the liquor deriving from the Schenk process (3).

Nevertheless, the raising of flax had virtually ceased by the 'seventies. An attempt was made to revive the industry from 1885. A minor peak of 477½ acres in 1887 coincided with the issue of a pamphlet on flax-growing by Messrs W and D C Thomson, Dundee but from 1889 till World War I the culture of flax was almost completely unknown (4). A curious feature of the detailed picture was the amount of short-term fluctuations. Thus, in Kinglassie were grown, in respectively 1885, 1886, 1887, 1888 and 1889, 5, 44, 76, 16 and 0 acres. In the same years 0, 0, 57, 30 and 1½ were raised in Largo, where 102 and 54 had been raised in 1869 and 1870. Figures 3.3 and 3.4 show the distribution of flax culture in the 1790s, the 1830s, 1887 and 1918.

The only year in which 1000 acres of flax were exceeded after 1854 was 1918 (1268½ acres) and, although this is outside the strict chronological framework it is felt a brief note must be made of this phenomenon. By

---

(1) Ibid, 331; Hodgson, Flax, 313

(2) Reid, Flax, 335

(3) T Anderson, 'On the composition of the flax-liquor obtained by Watt's patent process for preparing flax', Trans. High. Agric. Soc. Scot. series 3, v 5 (1851-53), 563-564

(4) T Young, 'Flax growing in Scotland', Trans. High. Agric. Soc. Scot. series 5, v 32, (1920), 81

the outbreak of the First World War the flax crop in Scotland was all but extinct, the English crop was negligible and even the Irish crop was much reduced (44000 acres as opposed to 301691 when at its zenith in 1864). Russia provided over 80% of Britain's flax and tow and the Revolution produced a condition of chaos cutting off supplies of a raw material essential for tenting, tarpaulins and, perhaps most essential, aeroplane wing fabric (1). At the end of 1917 the Board of Agriculture formed a Flax Production Branch with centres of activity in Somerset, Suffolk, Lincolnshire, Yorkshire and Fife, local administration being in the hands of Flax Advisory Committees. Two former bleach works - Walkerton at Leslie and Headwell at Dunfermline - were equipped as complete factories to deal, respectively, with 1000 and 500 acres, while Cupar Mills and Silverburn Mill, Leven, were established as deseeding stations (2).

In Scotland, 1350 acres were sown in 1918, almost all in Fife, the farmer receiving free seed, £8: 10/= per ton of crop and guaranteed labour for pulling the flax at 49/= the acre (3). 16 acres were sown from Japanese seed and the rest from Dutch, imported with great difficulty by submarine under wartime blockade conditions (4). Presumably by this time the acreage of flax grown at home was not sufficient even to produce a crop of seed. 230 growers planted the 1350 acres (5), needing 1400 temporary women workers to weed and pull the flax at harvest. The workers - among whom were many university students - received 15/= per week if board and lodgings were provided (usually in a tented camp), 30/= if living at home. Many workers helped with the Somerset crop before moving north to deal with the later harvest in Fife; cheap rail warrants were given for travel from home, there was paid travel to the fields and each worker received a free pair of gloves (6) The 1918 crop averaged 41 cwts. of flax to the acre, with a top yield of

---

(1) Ibid, 81
(2) Ibid, 83
(3) Ibid, 84
(4) Ibid, 87
(5) Ibid, 88
(6) Ibid, 89

4 tons and, on average, each ton of flax yielded 1½ cwts. of flax fibre, 3 cwts. of uncleaned tow fibre, besides 2½ cwts. of chaff for feeding and 3½ cwts. of linseed for industrial or feeding purposes (1).

Despite £16 per tone being allowed for 1919, 1000 acres only were arranged to be grown in 1919 (2) and only 500 in 1920 (3), an indication of the gradual re-assertion of normal commercial conditions over emergency wartime demands.

Mills

One possible approach to agrarian history is that of the application of power to agriculture and much work has been done, to take only one example, on the influence of farm implements, notably the plough, and the labour team on field patterns. Two kinds of power would appear to be necessary on the type of farm familiar to contemporary British eyes, a mobile form suitable for field work and stationary central equipment for carrying out simple processing, such as the grinding of grain, straw-chopping, bruising oats, mixing feed and chopping turnips. In so far as this central equipment required to be specially housed there is a justification for studying this aspect of the application of power to farm work. The main forms in which power has been developed on Fife farms within the relevant period have received their outward expression in the water-mill, the windmill, the horse-mill and the farm chimney, with oil- and gas- engines and electric motors beginning to be accepted towards the close of the period.

As Butt has pointed out, relative costs were of crucial importance in determining the form of power adopted in each farm, while location with respect to suitable streams was critical in the choice between horse and water mill. Butt gives the cost of erection of a horse gin as about £70 in 1797 (4), but the evidence from Fife would suggest that the initial cost of such an installation could be substantially less in an area where stone and timber were cheap. Thus Charles Umpherston of Loanhead agreed to construct a threshing mill for Lord Bruce. Writing on 28th July 1798

---

(1) Ibid, 91

(2) Ibid, 97

(3) Ibid, 99

(4) J Butt, Industrial Archaeology of Scotland (Newton Abbot 1967), 31

the mill was to be ready by 10th October and "the price that I have got for twelve months past is £37 and the materials taken from my shop and the men their board when putting it up we make some parts stronger than we did at that time this is for a mill of the same construction as Mr Hutchisons" (1). William Haig of Kincaple (St Andrews) had at his distillery in 1796 a thatched threshing mill shed insured for £10 with machinery insured for a further £40 (2). John Coupar of Stirton (St Monance) and David Cunningham of Delachy (Aberdour) were farmers with threshing mills and machinery insured for, respectively, £35 (3) and £30 (4).

Even allowing for the workmen's board during installation it is quite clear that a threshing mill, horse-driven, could be erected for well under £50. Haig also insured a windmill at Kincaple for £200, plus £50 (5) for the machinery and stones - clearly a much larger investment than for a horse-mill and with a much lesser degree of control over the periods of availability. The water corn mill clearly suffered from the restrictions imposed by site and by the availability of water in times of frost and drought. In addition, maintenance of dam, lade and wheel was a continuous item of expenditure.

For all that, such a mill as was insured by Robert Robertson of Ovenstone Mill (Carnbee) for £20 in 1800 (6) - a water corn mill with machinery and no kiln - was clearly very competitive. On the other hand, Robert Wardlaw of Balcurvie (Markinch) insured his water corn mill, barley mill and kiln for £200, with an additional £300 for the water wheel and machinery with three pairs of stones (7). Robert Beatson of Kilrie (Kinghorn) in 1796 considered the value of his new barn, threshing mill and corn mills adjoining to be worth £300 and the water-

---

(1) S R O, GD 29/2115

(2) Sun Fire Insurance Company, GH 11937/37/663281

(3) Ibid, GH 11937/37/711871

(4) Ibid, GH 11937/37/711870

(5) Ibid, GH 11937/37/663281

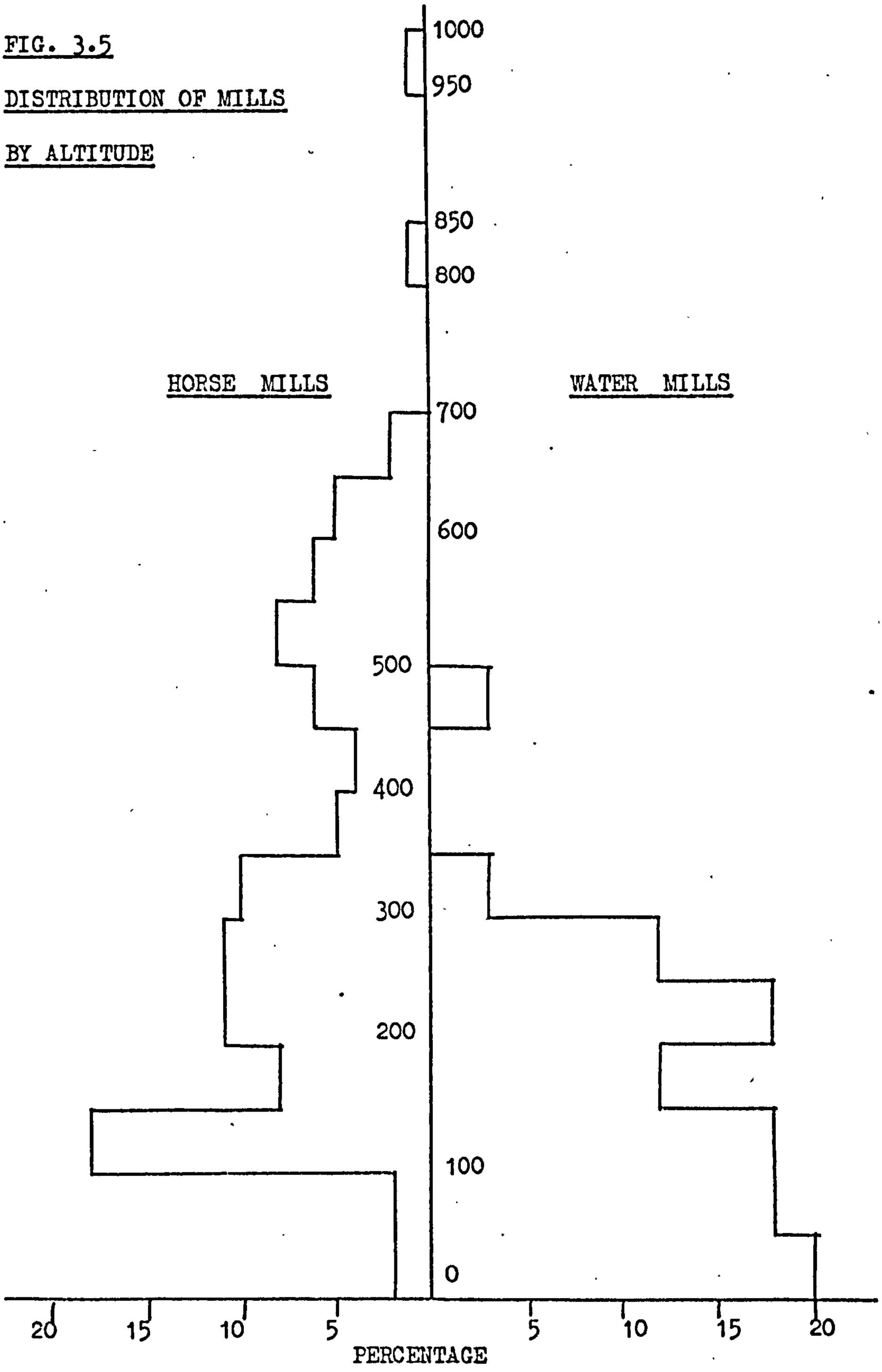
(6) Ibid, GH 11937/37/711855

(7) Ibid, GH 11937/110/907906

FIG. 3.5

DISTRIBUTION OF MILLS

BY ALTITUDE



wheel and fixed machinery £160 (1). The solitary tide mill, the Sea Mills at Burntisland, was insured at £1000, with £500 for the water wheels, standing and going gears, millstones, wire machines and dressing machines (2).

Inspection in the field and in the laboratory gives a subjective view of the distribution of horse and water mills. In order to quantify this more exactly a 5% sample of the area of Fife was prepared. The sample was selected by using random sampling numbers to isolate 67 kilometre squares (3) which were then examined closely using the corresponding areas of the First Editions of the Ordnance Survey Six-Inch map (1855-56) and Twenty-Five Inch map (1893-95). In the squares so selected there were 19 horse mills attached to farms, 5 farm water mills and 6 other water mills. Although water mills might fall into disuse and horse mills be converted to house steam engines there is no reason to suppose that this sample is unrepresentative of early nineteenth century power distribution.

Fig. 3.5 shows the distribution of horse and water mills by altitude, based on those mills alluded to in the previous paragraph and others noted in the course of field and map investigations - a total of 102 horse mills and 35 farm water mills. The water mills were significantly located on the lower ground, over half being below 150 feet, while the horse mill was clearly selected for installation at the higher farms, where - although potential power was greater - streams are smaller or even absent and their flow irregular and unreliable. Typical relationships between topography, water and horse mills are brought out in Fig. 3.6 based on kilometre square 2688 (Kinghorn). A list of farms with horse and water mills is given in Appendix A. Although incomplete, it represents the first approach towards a definitive list for the county.

With the advance of the nineteenth century and its improvements in technology and transport, the installation of steam power became a possibility. In 1825 a brick chimney cost about £25 and the engine as much as £400 (4); by mid-century a fixed steam-engine placed in a horse-

---

(1) Ibid, GH 11937/37/653578

(2) Ibid, GH 11937/38/716295

(3) S Gregory, Statistical Methods and the Geographer, (London 1963), 90-93

(4) Butt, Industrial Archaeology, 31

FIG. 3.6

KILOMETRE SQUARE 2688, SHOWING WATER AND HORSE MILL

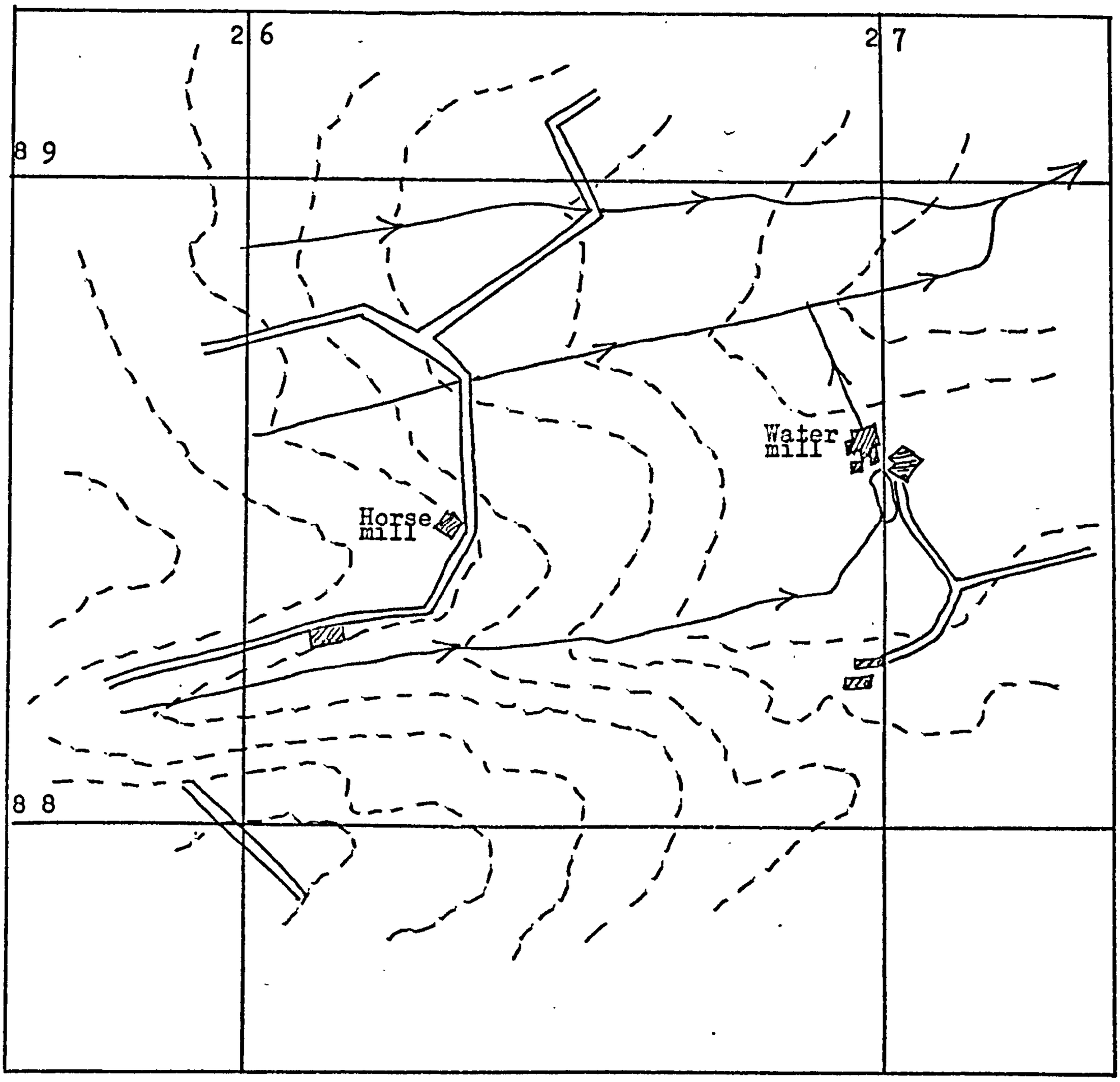


PLATE 3.a

HORSE-MILL, BINNEND (233872)

GENERAL VIEW

PLATE 3.b

BINNEND - DETAILS OF ROOF STRUCTURE

gang cost - for mason work and making a well for boiler water - from £55 for a 5 h p engine to £65 for a 8 - 9 h p model. Opinion wavered between the portable engine threshing in the field, popular in England, and the permanent farm engine. A 50 cwt. 5 h p portable engine threshing 35 quarters of wheat in a 10-hour day cost £174 (£217 - 7 h p, £248 - 9 h p) (1). A fixed Cornish engine burning 5 to 7 lb of fuel per horse power per hour cost £95 for 5 h p (£120 - 7 h p, £140 - 9 h p) so that the initial cost of the fixed steam engine and its installation was significantly less than that of a corresponding mobile engine. In addition, the portable engine required top quality fuel while the fixed engine was fired with the cheaper dross (2). Besides threshing and dressing grain, the fixed steam-engine could work a force-pump to impel liquid manure through pipes and distribute it over fields, could drive many machines as mentioned above, but in addition the steam could be used for steaming dairy utensils and cooking feed for cattle and pigs (3).

Binnhead (Burntisland) (233872) is a fine example of a horse-mill whose partial decay makes possible close study of the details of construction. Situated in the north-western angle of the abandoned steading, this is an octagonal building with sandstone rubble walls 2 feet thick and 9 feet high, the walls being from 11 to 15 feet long, alternate walls being longer and pined with 11 foot doors. The interior of the structure is circular in plan with a diameter of 32 feet.

Although the roof has been almost stripped of pantiles, the woodwork is still sound and has a functional complexity which achieves great visual satisfaction. Eight main joists, from the eight corners of the building, rise to the top of the mill and each of the triangular panels thus formed is partly filled with seven smaller joists of different lengths springing from the wall and fixed by nails at the upper end to the main joists forming the other two sides of the triangle. All of these joists are of 7 inches by 2 inches timber, with the smaller

---

(1) R Ritchie, 'On the comparative advantages of fixed and portable steam-power for the purposes of a farm', Trans. High. Agri. Soc. Scot. series 3, v 5 (1851-53), 291

(2) Ibid, 294

(3) Ibid, 299

PLATE 3.c

BINNEND - DETAILS OF CENTRAL PILLAR

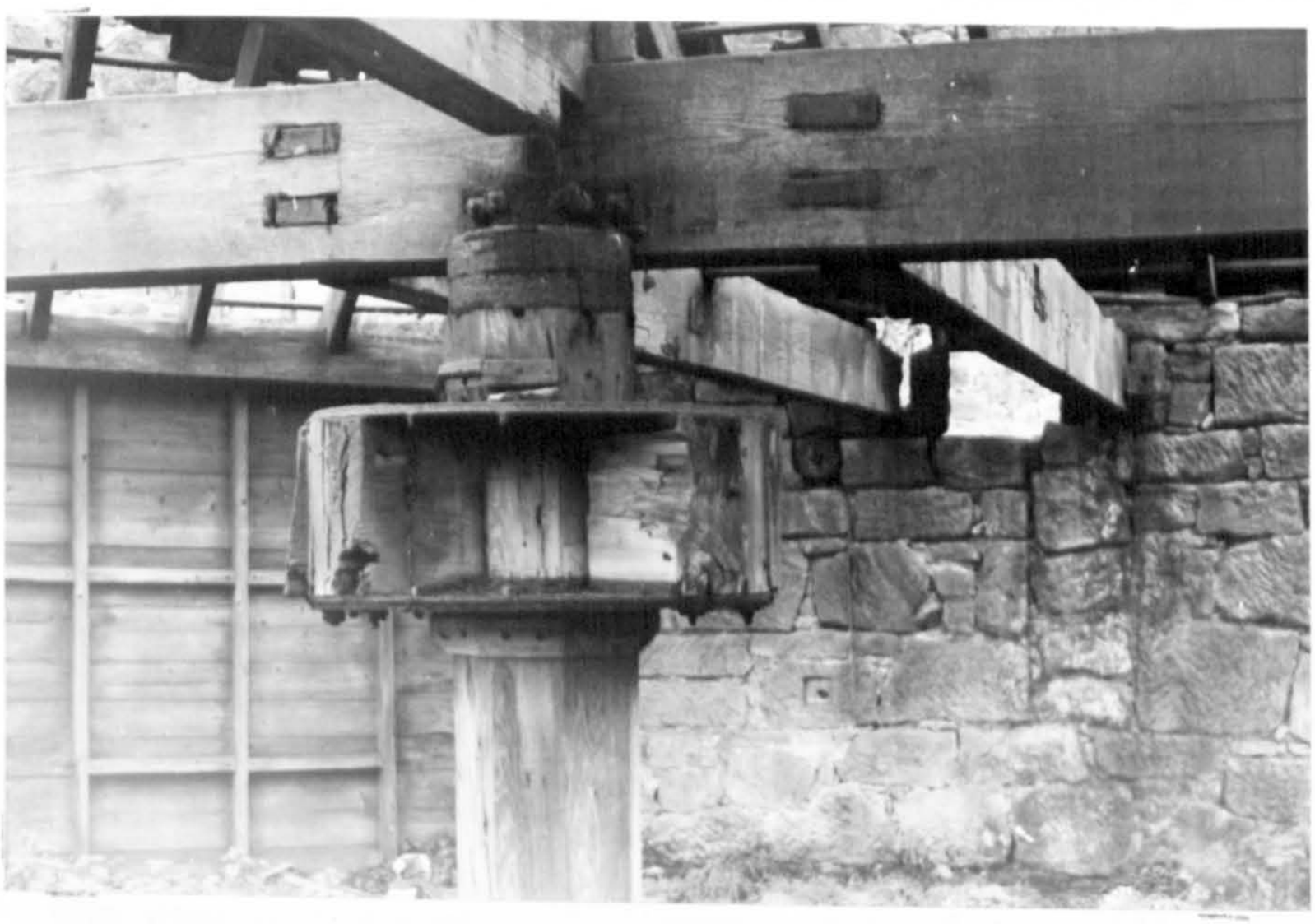


PLATE 3.d

OIL-MILL, BURNTISLAND (229858)

- demolished 1970

joists spaced at about 2 foot centres. Light inch-square battens are slung horizontally across the eight triangular panels and it was on these battens that the pantiles were hung. To give additional strength to the roof the main beam - 13 inches by 8 inches and itself supported at the ends by the outer wall - supports a vertical member from whose upper end 16 radial stays meet the outer framework. A second vertical member meets the first end-on and from its upper end 8 further stays radiate out to meet the 8 main joists, the whole producing a robustly satisfying example of rural craftsmanship.

The interior of the mill has the main beam noted above with another cross beam meeting an octagonal wooden pillar 11 inches across. On this, 5 feet above the ground two circular iron plates of 28 inches diameter are located 10 inches apart, the space between being filled with wooden blocks. Four of these are the sawn-off ends of the horizontal arms to which the horses'harness were attached, the others acted as wedges. The whole fitting is firmly clamped by bolts holding the plates together. The upper part of the pillar is iron-shod and lines up with a void in the steading wall, 6 feet 3 inches off the ground (above head height) and measuring 24 inches by 16 inches. The belt drive from the central rotating pillar ran through this aperture to be connected to the machinery within the steading.

The only known remaining water-mill to be seen at work in the county is at Lindores Mill (245186) where a small stream has been impounded to give enough water for intermittent use. The wheel is all wooden, with metal bearings, a high-breast wheel with flat paddles which would appear to be at least a partial replacement of an unrefined character. The building itself is of sandstone, three storeyed and built into the hillside so that the drying kiln floor is adjacent to an entrance on the top floor and finished products come out at the ground floor door. Within the mill the wheel is still used to drive the millstones for meal, a straw-cutter and bruiser. Hoists are also worked off the drive but the kiln is no longer used as such and the steel drying floor has been sold for scrap.

The tide-mill at Burntisland ceased to operate in the early years of this century (1). Its roofless shell now functions as a car lock-up,

---

(1) J Geddie, The Fringes of Fife (new edition, Edinburgh, no date), 80

the basin which was filled with water at high tide has been filled with the red waste from the British Aluminium Company's works, and a few rotting stumps are all that remain of the sluices and mill machinery.

Rural Processing

The distinction between processing of crops on the farm and rural industries is very far from being clear, since many farmers found it a natural progression to go from brewing and grinding grain for their own purposes and for their immediate neighbours to production for the market. Thus George Lowe of Plaisterers (Markinch) was a farmer whose farm property was insured for £430 in 1800, plus a malt kiln at £20 and brew-house, byre and stable at £50 (1). On a larger scale John Stocks of Bridgeton of Invertiel (Kinghorn, now Kirkcaldy) insured farm property to the value of £885, with a malt barn at £100 (with stock and utensils at £250), a kiln at £30 (with grain and utensils at £30) and brewhouse, storehouse and loft at £20 (plus £15) - a total of £445 for the brewery buildings, equipment and stock (2). In this we see the emergence of the specialised brewery supplying a mainly urban market. Stocks' brewery continued at West Bridge until the 1950s and became a lemonade bottling and storage works before demolition in 1969.

Insurance company records suggest that about 1800 a disparity had already evolved between the size of breweries in the villages and small towns and in the larger towns. For example the two breweries in Strathmiglo (3) and one in Kinghorn (4) had a top valuation of £500 and a mean of £400 but, on the other hand, five breweries in Dunfermline had a top valuation of £1400 and a mean of £860 (5) Three breweries in Kirkcaldy has a top valuation of £1000 and a mean of £717 (6) while the brewery at Cupar was in the small-town class at £450 (7).

---

(1) Sun Fire Insurance Company, GH 11937/34/707710

(2) Ibid, GH 11937/37/714542

(3) Ibid, GH 11937/11/648811; GH 11937/34/708337

(4) Ibid, GH 11937/35/711295

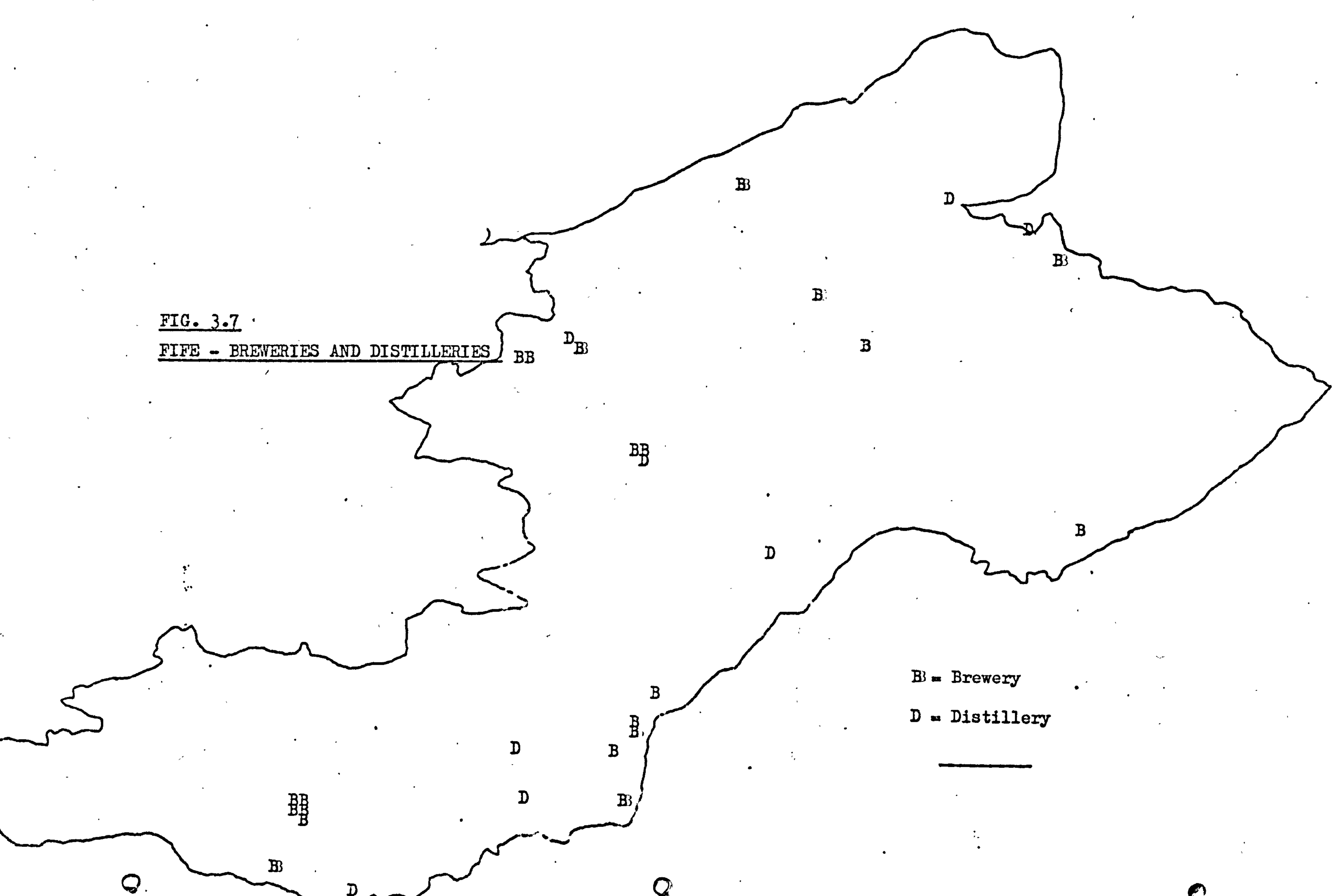
(5) Ibid, GH 11937/12/651566; GH 11937/32/701331; GH 11937/35/711296; GH 11937/37/713779; GH 11937/37/713781

(6) Ibid, GH 11937/8/613361; GH 11937/8/635506; GH 11937/32/701355

(7) Ibid, GH 11937/32/703113

FIG. 3.7

FIFE - BREWERIES AND DISTILLERIES



Typically nineteenth century in their evolution were the interests of the Bonthrone family of Newton of Falkland. With a steady brewing business dating from 1600, considerable advances were made from 1800 when brewing and malting premises were obtained in Auchtermuchty, St Monance and St Andrews (1). In 1870 a small malthouse was established at Falkland Road Station, but closed again just before World War One. Glen Newton Brewery, also in Newton of Falkland, was taken over during that war. The original Newton of Falkland brewery was completely rebuilt for a second time around 1890, in the course of which traces of at least four previous kilns were found, but ceased brewing beer in 1920 - the second last brewery in the county to cease operations (2).

Reasons for the atrophy of the small town and country breweries are not far to seek. The needs relevant for the original sites did not guarantee that those sites would be forever the most suitable; large-scale advertising and the gradual elimination of the free house have meant the concentration of the industry into a few giant hands. Nevertheless, malting is still an industry of some rural importance.

Another considerable consumer of the grain crop has been the distillery industry, meticulously dealt with elsewhere by Glen (3). She isolates the factors helping to concentrate whisky production in the Lowlands as the availability of water, grain, coal and labour, combined with the role of transport in bringing together malt and grain whiskies for blending. Yet, while Fife has always rated highly as a grain producer, the distilleries in the county have had a chequered existence.

The Stratheden Distillery at Auchtermuchty was founded in 1829 by Alexander Bonthrone (4), two years being necessary to blast and cut into the igneous rock of the site. The buildings were rather scattered, with four barley lofts and four malt floors in various parts of the town. A water wheel drove a corn and flour mill and at the same time worked the mashing machinery and pumped wort from the mash tun through the coolers. 3000 gallons of a good malt whisky were made the first year, the output going up subsequently to 20000 gallons, mainly for Leith, Glasgow and

---

(1) A Bonthrone & Sons Ltd, The Story of Bonthrone of Newton, 1600-1950, (Kirkcaldy 1950), 6

(2) Ibid, 11

(3) I A Glen, An Economic History of the Distillery Industry in Scotland, 1750-1914 (unpublished Ph D thesis, University of Strathclyde 1969)

(4) Bonthrone, Bonthrone of Newton, 6

London (1). Centralisation in the 1920s brought about its demise, although the buildings still function as grain stores.

Auchertool Distillery was founded as a brewery in 1650 and was in good repute for its ales, porter and table-beer in the eighteenth century and till its conversion to a distillery in 1845. Private families, inns and alehouses were supplied, but the greater part of its ales were shipped at Kirkcaldy for London (2). 86000 gallons per annum of a pure malt whisky were produced, moved by horse to Kirkcaldy station, whence it was railed to many parts of England and Scotland. In 1887 there were 3 large barley lofts, 3 kilns, 9 warehouses and new maltings measuring 178 feet (3).

The new distillery buildings noted by Barnard were part of the great expansion of the whisky trade in the 1870s (4), also at this time was built Sanderson Terrace ("Piano Row"), a row of terraced houses for the distillery workers which would not be out of place in a city but which - tucked in as it is between a bonded warehouse and a huddle of country cottages - is merely incongruous in Auchtertool. Although still possessing the characteristic pagoda roofs and full complement of distillery buildings, Auchtertool is now used only as a bond, having ceased to make whisky in 1911 (5).

Using the fine water supply from Dunearn Hill (6), W Young and Company's Grange Distillery at Burntisland was established in 1786 (7). A fine lowland malt was made at Grange, 185,000 gallons of it in 1836 (8), and a maximum of 260,000 to be sold in Scotland - 1517 gallons were bought for the Earl of Elgin's sutlery in 1824 (9) - England, India and the

---

(1) A Barnard, The Whisky Distilleries of the United Kingdom (London 1887) 305-306

(2) N S A, v 9, 257

(3) Barnard, Whisky Distilleries, 312-313

(4) Glen, Distilling Industry, 498-499

(5) Ibid, 695

(6) S R O, RHP 252

(7) Barnard, Whisky Distilleries, 316

(8) N S A, v 9, 417

(9) Earl of Elgin's papers (Sutlery Records, 1824)

Colonies. The distillery buildings cover 6 acres and Young's had their own gas works, a steam engine by J Brown of Kirkcaldy and a Merryweather fire engine (1) - now in the Industrial Annexe of Kirkcaldy Museum. An ancillary activity associated with the disposal of the draff, or exhausted grain, was the feeding of about 700 head of cattle annually, producing an income of £10850 in 1836 (2).

Like many other malt distilleries, the Grange Distillery found demand and prices falling in the early years of the twentieth century and was one of the distilleries which combined to form Scottish Malt Distilleries in 1914 (3).

The maltings and distillery at Inverkeithing carried on by Duncan Montgomerie and Co were in existence from 1784 to 1864, when it became an oil-refinery before in turn being acquired by Caldwell's the paper-makers, in 1919, its use now being as a store (4). In 1800 the distillery, other buildings and stock were valued at £1550 for insurance purposes (5). 80 men were employed here in 1836, when the Coffey still was in operation producing whisky for the local and English markets, chiefly in London (6). This is the earliest reference to the use of the Coffey still in Scotland (7).

No name has a longer connection with distilling in Fife than Haig, a name still associated with the only surviving distillery in the county. Of the five Haig brothers who served under the Steins of Kilbagie the youngest, William, moved to Fife where he took over the management of the Kincaple distillery (8), built about 1770 by his Uncle, William Stein (9). In 1796 we find him described as "William Haig of Kincaple,

---

(1) Barnard, Whisky Distilleries, 317

(2) N S A, v 9, 417; S R O, RHP 325

(3) Glen, Distillery Industry, 715-716

(4) W Stephen, The Story of Inverkeithing and Rosyth (Edinburgh 1938), 98

(5) Sun Fire Insurance Company, GH 11937/37/711887

(6) N S A, v 9, 244

(7) Glen, Distillery Industry, 399

(8) J Lover, The House of Haig (Markinch 1958), 21

(9) Ibid, 37

St Andrews, distiller" in a policy valuing the enterprise at £4400 (1), A larger distillery was established nearby at Seggie (now Guard Bridge) in 1810; 100 were employed and again large amounts of cattle were fed (2).

Laver implies that William's son John Haig started the Cameron Bridge Distillery in 1824 on a greenfield site by the Old Cameron Mills (3). In fact, John Edington and Company were distilling at Cameron Bridge in 1814 when the buildings - again including a cattle byre - stock and utensils were insured for £13300 (4). John Haig worked the distillery from 1824 till 1877, when Cameron Bridge was absorbed in the newly-founded Distillers Company Limited. The blending side of the business, as John Haig Sons and Co, was removed to Markinch and reorganised in 1894, as John Haig and Company (5).

Initially malt whisky was produced, but after the acceptance of the Coffey Patent Still in 1831 a much larger proportion of grain spirit was distilled, Cameron Bridge being always one of the front-runners in terms of technical innovation and of scale (6). Cameron Bridge - the only distillery remaining in Fife - was larger than all the others combined by the late nineteenth century when 1,300,000 gallons were being produced annually. The distillery covers 14 acres and in the nineteenth century 4 large water wheels on the Leven provided the main motive power in the works. In addition, there were five 20 horse power engines, a fire prevention system, cooperage, gas works and railway sidings. Bakers' yeast was produced for Glasgow and London. The whisky made at Cameron Bridge was said "to have no rival in the world" (7).

---

(1) Sun Fire Insurance Company, GH 11937/17/663281

(2) Laver, House of Haig, 37

(3) Ibid, 38-39

(4) Sun Fire Insurance Company, GH 11937/111/900943

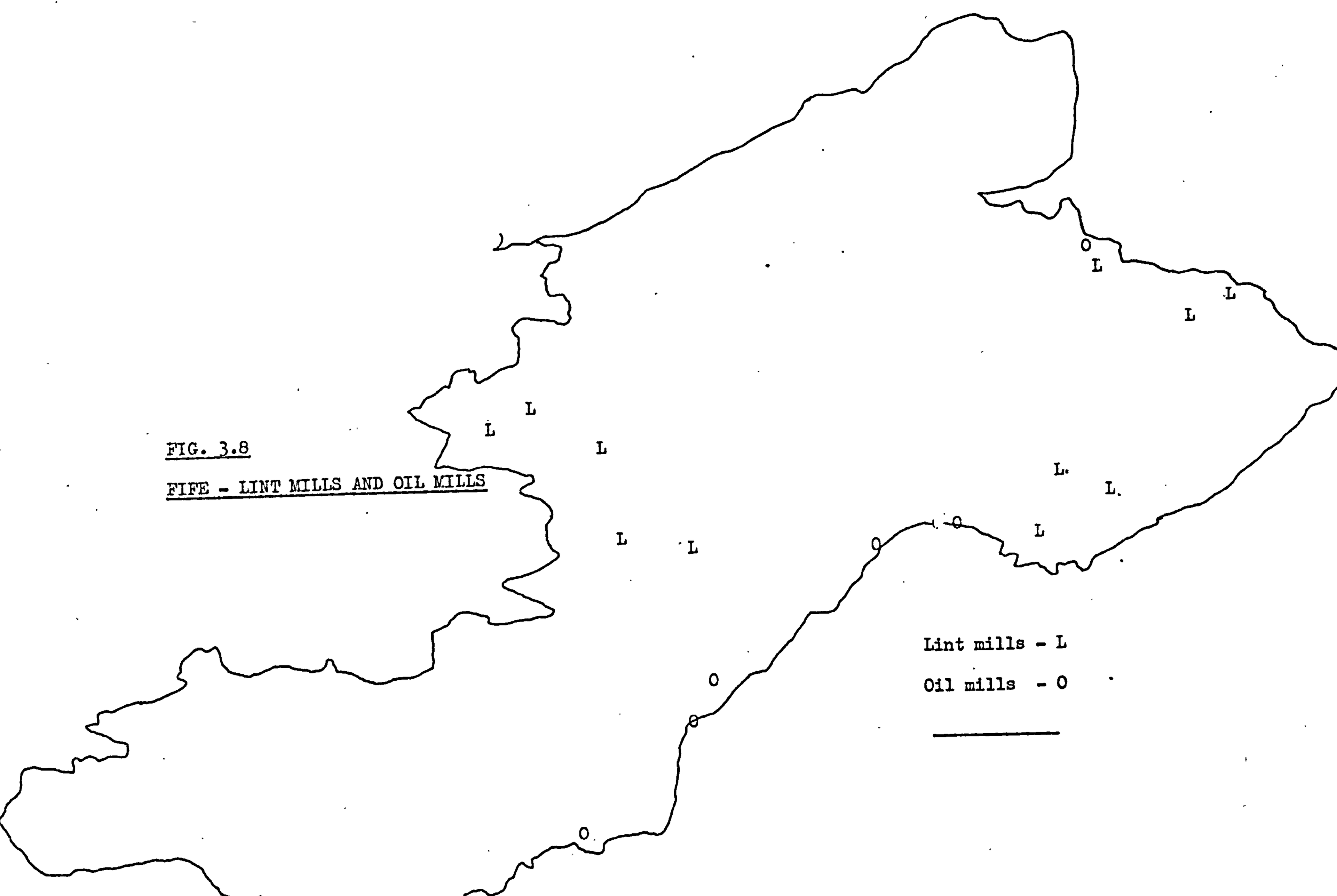
(5) Laver, House of Haig, 42; Glen, Distillery Industry, 511

(6) Glen, Distillery Industry, 384-385. This source usefully traces the distilling activities and dynastic alliances of the Steins and the Haigs.

(7) Barnard, Whisky Distilleries, 309-310

FIG. 3.8

FIFE - LINT MILLS AND OIL MILLS



Stemming directly from the growth of flax in the county was the establishment of lint mills for breaking and scutching flax, in other words, for separating the fibrous core of the plant from the woody parts of the stem and from the seed bolls. These mills were generally quite small, the largest set up, at Balcarres, being able to employ only nine at one time. All were based on water, but some of the streams concerned were able only to be used for part of the year. Dewars Mill, near St Andrews, relied also on the drainage from coal workings, being "supplied with water from Coal Mines and other adjacent Springs in the neighbourhood and is served with water for 7 months in the year if not prevented by extraordinary Frosts". The modest size of the mills is confirmed by their low rent, from £10 (Edenshead) to £25 and 14 stone of dressed flax (Balcarres) and by the fact that some of the millers were also hecklers. Output varied from 400 stones in a year (Edenshead) to 1300 (Leslie) and the cost of dressing flax ran from 1/=6 per stone around Falkland to 2/= in east Fife (1).

The value of linseed as an agricultural feeding stuff was already established and one consequence of the decline of the home crop was to turn to imported vegetable seeds as the bases for feeding stuffs and industrial raw materials. A number of mills were set up in the small ports of St Andrews, Leven, Largo, Kirkcaldy and Burntisland. The only such mill set up away from a quayside was R and W Wyllie's small mill set up to crush linseed at the Sinclairtown end of Kirkcaldy and it was unsuccessful, running for only a few years. It appears in the Directory of 1878 but not in that of 1886 (2).

Most of these mills used both water and steam power, but the most successful, that at Burntisland, was based on steam power only. David Russell & Co had a mill at Largo before 1860 and crushed cotton-seed from 1864, claiming that it was the earliest to produce edible cottonseed oil. In 1877, the Russell co-partnery - which consisted of David Russell, Peter Wilson, Alexander Philp and half a dozen others, all people with Fife farming interests - took over the Old Sugar House

---

(1) S R O, N6 1/19/1

(2) H W Brace, History of Seed Crushing in Great Britain (London 1960) 136, 138, 155

in Burntisland, adapted it and made considerable additions (1). The original plant consisted of one pair of vertical edge runners, direct pumps, heating kettles, 36 press boxes. In 1891 the old style presses were converted into Anglo-American presses and a new compound tandem condensing engine was put in, the condensing water being drawn from the sea. 200 tons of Oilseed were crushed per week.

Cottonseed was the staple of Russell's Mills. In the early years of Egyptian cotton culture good seed was of more value to the grower than the quality of the cotton staple (2), and the early oil yields were accordingly substantial. The passage of time brought a reduction in oil content of cottonseed and the growing obsolescence of the plant as control passed to British Oil and Cake Mills Ltd in June 1899. Again, this is a case of the withering away of the small-town enterprise in face of economies of scale. From 1903 Burntisland was linked with the Leith Branch of the B O and C M and ceased crushing cottonseed and linseed in 1946; Leith itself now being no more than a depot (3). The two very large, six-storey rubble factory blocks at Burntisland Harbour stood, strengthened by the extensive use of tie rods with massive tie plates, until demolished in 1970.

Besides those mentioned above there were other rural processing industries in great variety. Thus, of the 30 mills along the Eden studied by Jespersen, besides meal and flax mills there were mills for crushing barley or potatoes for starch, for making bobbins, for fulling cloth, for grinding coffee and for sawing timber (4). Tanneries were common in the small towns like Cupar and Kinghorn, where one was converted into a golf club factory and another became Darney's Glue Works, later a dance hall and bingo pavilion.

Overall, the great range of rural processing activities and the ubiquity of small processing units is a reflection of the high productivity of Fife agriculture, the diversity of crops resulting from the

---

(1) Ibid, 104

(2) Fife Free Press, 13 February 1886

(3) For much of the information on Burntisland, I am indebted to Mr Davis, Manager, Leith Depot, British Oil and Cake Mills Ltd.

(4) A Jespersen, 'Watermills on the River Eden', Proc. Soc. Ants. Scot. v 97 (1963-64), 238, 240, 242

comparative benevolence of the climatic and soil endowment and the demand from a reasonably large internal market together with the access given to other parts of the country from the many small ports.

CHAPTER 4

Quarrying

The extraction of minerals other than coal has been of considerable importance in the county of Fife, igneous rocks, limestone, sand and gravel being still important products. With Carboniferous rocks in great variety in the south, igneous rocks in the north and in patches in most other parts of the county and, overall, a great mantle of glacial drift, this wide variation of solid and drift geology means that the consideration of a great number of sites is a major problem, many of these sites being little more than roadside scratchings to provide road metal. Even in the early twentieth century, by which time quarrying activities had become somewhat rationalised, there were 91 quarries and 7 mines other than coal mines in the county, with 1015 men employed in them in 1902.

The three principal types of rock quarried that year were igneous rocks (141141 tons), limestone (102751 tons) and sandstone (79471 tons) worth, respectively, £30488, £24365 and £15795. In terms of tonnage, Fife was third to Aberdeenshire for igneous rocks, second to Midlothian for limestone, and ninth to Lanarkshire for sandstone. Other minerals produced were ironstone (33861 tons, a mere 4% of Scottish output), fireclay (24341 tons), clay and shale (23268 tons), gravel and sand (8385 tons) (1).

Ironstone

Far less significant than in Ayrshire, Lanarkshire, and Stirlingshire in changing the face of the landscape and influencing population movement was the development of ironstone in Fife. The two principal forms of ironstone found in Scotland are clayband and blackband ironstone. Each of these is a bedded impure iron-ore, with the iron occurring as siderite ($FeCO_3$). In blackband ironstone there is enough carbonaceous material, dispersed through the rock or in layers, to make the ironstone self-burning (2).

---

(1) 'Minerals statistics. Accounts and Papers' (Parliamentary Papers 1904, CVI), 160-161

(2) E H Francis, The Economic Geology of the Fife Coalfield, Area 11 2nd edition (Edinburgh 1961), 141

FIG. 4.1

FIFE - LIMESTONE QUARRIES AND MINES

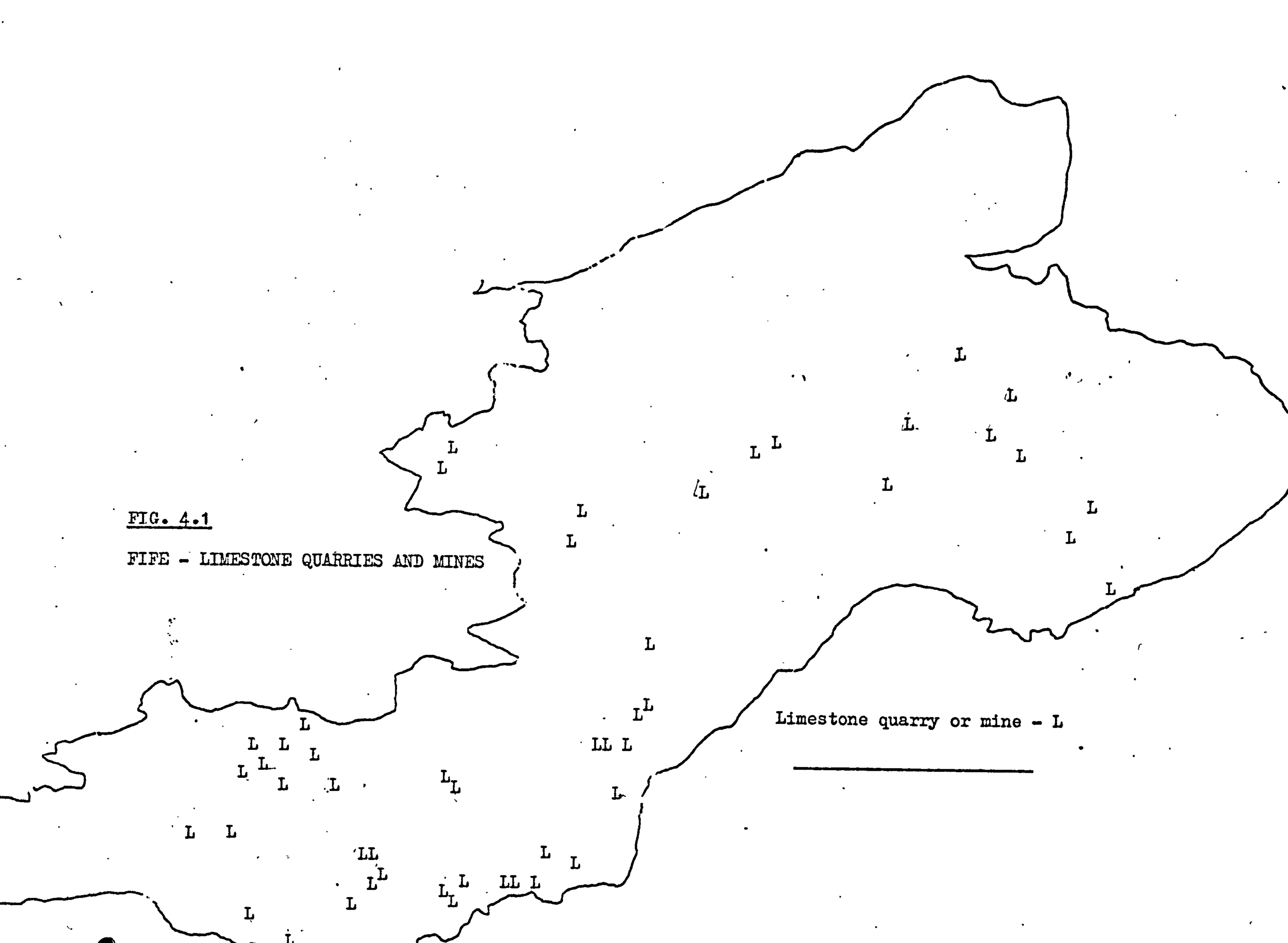


FIG. 4.2

FIFE - OTHER MINES AND QUARRIES

Galena - G

Ironstone - I

Ochre - O

Sandstone - S

Ironstone was to be found in many of the Carboniferous areas of the county, often closely associated with coal, and proved a useful cash sale for many landowners in the late eighteenth and early nineteenth centuries. Butt (1), Duckham (2) and Ward (3) have described the ill-fated Balgonie ironworks, near Markinch, but few early attempts were made to smelt iron in Fife. Instead, early iron exploitation often consisted of digging and collecting along the sea shore. Thus, at Anstruther, "a considerable quantity of ironstone is to be found along the shores of the burgh, which the magistrates let for 1/= per ton; and it is afterwards quarried and collected and shipped for Newcastle " (4). From Kingsbarns, iron ore from the shore also went to Newcastle (5) while from St Monance the ore, "chiefly found in the form of small stones, of one or two pounds weight", was used for ballast, bringing in 9/= per 24 cwt. (6).

Movements of iron ore also took place in a westerly direction. The interest of Devon Ironworks in a lease of ironstone on the Earl of Morton's property at Aberdour was less useful than their acceptance of the raw limestone quarry surplus and certainly provided a much less certain and less durable market than Carron Company (7). At Dysart were five beds of ironstone (8) which were worked north of Gallatown by Carron from Whitsunday 1796 to Martinmas 1798, by which time they had worked out all the ironstone covered by their lease. This 2½ year lease earned the landowner, Sir James St Clair, £300; Carron obtaining their ore at 10d per ton. Annual output over this period was about 2880 tons.

---

(1) J Butt, The Industrial Archaeology of Scotland (Newton Abbot, 1967), 112

(2) B F Duckham, A History of the Scottish Coal Industry, volume 1, 1700-1815 (Newton Abbot 1970), 146

(3) J T Ward 'Landowners and Mining', 82-83 in Land and Industry, eg J T Ward and R G Wilson (Newton Abbot 1971)

(4) N S A, v 9, 615

(5) Ibid, 92

(6) Ibid, 340

(7) S R O, GD 150/Box 110

(8) N S A, v 9, 129

Another lease was arranged for the ironstone south of Gallatown, by which the Company engaged to pay 1/= per ton instead of a fixed annual sum. The lease ran from 1800, the first stone being raised in Spring 1801 and 1482 tons being raised to Martinmas of that year (1). About 1813, globular masses of iron ore were sold at 10/=6 per ton to Carron Company from the Dunnikier Colliery, near Kirkcaldy (2), but with the growing efficiency of the West of Scotland iron industry the prices obtainable for iron ore hardly justified major mining activity. Thus the Earl of Elgin, who was buying ironstone from the workers at his "Lyme Craig" at 4d per cart (3), ceased operations in 1835 which were producing 4000 to 5000 tons annually (4).

Many of the early mining entrepreneurs were more to be admired for their enthusiasm than for their expertise. Henrietta Keddie's father was a Cupar solicitor who leased the Grange Colliery at Elie about 1838, but "in the very beginning fortune was missed by my

> father's inevitable ignorance of the science of mineralogy. In boring to ascertain the exact situation of the coal-seam for which the pits were to be sunk, the borers passed through a layer or bed of ironstone, the nature of which was undetected. It was not recognised then either by the workmen or by my father. Had it been known it would have probably altered entirely the story of the pits and of all connected with them .... Ironstone was eagerly sought after and highly valued. The circumstance that no blast-furnaces were anywhere near Grange coal-pits, and that the half-burnt stone would have to be carried to a distance to be further smelted, was of less moment at the time, because Elie Harbour, on the Firth of Forth, from which it would have been shipped, was a primitive concern in the hands of the representatives of one of the old county families .... widely-known for his easy-going generosity. He would have been the last man to have rendered the exporting of the ironstone profitless by exacting such heavy harbour dues as to make the transport of little value to the coal-master. As it was, the opportunity was lost ...." (5).

(1) S R O, GD 164/349

(2) N S A, v 9, 742

(3) Earl of Elgin's papers, Broomhall

(4) N S A, v 9, 843

(5) H Keddie, Three Generations (London 1911), 127-128

The opportunity occurred a second time, when Henrietta Keddie's brother

> "found the ironstone which our father had missed in sinking the main pit of Grange Colliery. Naturally it was a source of much eager speculation .... we thought for a time Eldorado was reached".
>
> "But opportunities once missed are rarely regained. The spendthrift, easy-dealing Laird of Elie House .... was long since ruined and dead. The estate - including Elie Harbour on the Firth - had been sold to, of all people, one of the great iron-masters of Western Scotland. Naturally he did not desire an increase of iron not his own put on the market" (1)

The ironmaster was William Baird (1796-1864), one of the Bairds of Gartsherrie, who, in addition to the estate of Rosemount in Ayrshire where he resided, acquired the Elie estate in 1854 (2). "The apportioning of the harbour dues was in the hands of the new Laird and they were laid on to such a forbidding extent that when Robert attempted to ship the half-calcined ore to the Newcastle-upon-Tyne furnaces, the profit to the lease-holder was next to nil" (3).

Carron Company conducted six borings on the estates of Newbigging and Walton near Burntisland acquired for their limestone. The company went to 18 fathoms, but without success (4). Substantial developments were mainly in the interior of the county where a number of ironstone deposits were exploited at the same time as coal deposits. The pioneer was Sir Charles Halkett Bt, of Pitfirrane, who started working two seams of 4 and 2½ inches thick in 1771 (5). The ore was of excellent quality for making cannon and was exported to Carron for that purpose. The Coltness Iron Company Ltd put down Blairhall Diamond Bore to a depth of 356 fathoms a mile west of Oakely Station, proving a total thickness of eighty feet of coal and 3 feet 4 inches of ironstone, the thickest ironstone seam being the Inzievar of Blairhall seam 15 inches thick (6). In the same area the Forth Iron Company had a chequered

---

(1) Ibid, 242-243

(2) A McGeorge, The Bairds of Gartsherrie (Glasgow 1875), 96

(3) Keddie, Three Generations, 244

(4) S R O, GD 58/18/57

(5) O S A, v 13, 469

(6) A Geikie, The Geology of Central and Western Fife and Kinross (Glasgow 1900), 131-132, 268-273

existence, an anonymous report going as follows:-

"Oakley 14th and 15th September 1860

For this Iron work I am unable to draw out a table as to material used for 5 Furnaces, I saw the cast on the night of the 14th the whole amount of 5 Furnaces was only 12 Ton 3 cwt. On the morning of the 15th the cast was 12 Ton 10 cwt. For the last twelve month past they have not averaged 5 Ton each Furnace. They complain for want to good Coal and Oar. The Oakley Coal is about the worst Coal I have seen for Blast Furnaces. They work a Coal of their own at Halbeath which is better than there own. They sometimes use the Wellwood Coal which is the best in Fife for Furnaces. They have been trying to use all Oakley Coal which is cheap cost 4/=9 per ton laid down at the Furnaces but it will not do of itself and not with one half Oakley and the other half Halbeath. The men say give us two of Halbeath and one of Oakley and we will make more Iron. Whenever the Furnaces begin to get sound by the use of Halbeath and Wellwood back they must go to half Oakley and half Halbeath and down comes the produce. The price of the Halbeath coal laid down at the Furnaces is 6/=9, that of Wellwood 9/=6, Mine (ore) 13/=, Limestone 6/=. The Ironstone in Cumrie estate or North Oakley is the best they have. That in South Oakley is not so clean being mixed and run with blaes which destroys it very much. At the west end of Cumrie estate they have put down a pit to a depth of 125 fathoms. The ironstone found at one side of the pit it is 5 inches in thickness the other 10 inches. They have 2 cuppled Engines for pumping the water being heavey. Also 2 Winding Engines all good of there kind. They have good Engines on there Coal and Ironstone pits. The Iron Works is not kept tiddy altho they have plent of men and room about them. You find scrapes here and there and all kinds of rubbish almost nothing in its proper place. All the Furnaces was fitted up for collecting the gases for the heaters and Engine boilers. They have now abandoned its use" (1).

Clearly this enterprise was only just struggling along and in 1869, of the seven blast furnaces at Oakley, only one was in blast and it went out of blast in that year (2). Efforts were made to locate

---

(1) S R O, GD 58/12/52/9. The spelling and punctuation are the reporters'.

(2) 'United Kingdom Coal Commissioners, 1871 Report' (Parliamentary Papers 1871, XVIII), 1234

other ore bodies in the county, as in 1874 when copies of bores made at Bandrum, near Saline, were obtained (1), but to no purpose - although, of eight bores put down at North Steelend in 1849, four showed an average of nine feet of blackband (2). The population of Carnock parish, in which were the Oakley Ironworks, fell from 2925 in 1861 to 1764 in 1871 and 1055 in 1881 (3).

Near Cowdenbeath, at Lochgelly and Lumphinnans, a 2-foot seam of second class blackband provided the basis for two iron-making enterprises (4). At Lochgelly blast furnaces were set up in 1847, the Lochgelly Iron Company was incorporated in 1851, while the change of name to Lochgelly Iron and Coal Co Ltd in 1872 reflected a changing emphasis confirmed when the last furnace was damped down in 1875 (5).

The same anonymous reporter visited Lochgelly on 13th September 1870 when he found only one furnace in blast out of four but "to all appearance it is not for want of material for they have plenty on there Bank .... On the Bank I saw the St Andrews Black Band mine it appears to me to be first-rate quality they have used none of it for some time past. They use what is called the Bulldog brought from some of the malleable Iron works in the west country and laid down at 9/=2 per ton. The charge consists of Coal 11 c, Mine 6½ c, Bulldog 1½ c, Limestone 3 c. Number of charges 40. Produce 7 ton. Price of material laid down at the furnaces Coal 6/=3, Mine 12/=, Bulldog 9/=2, Limestone 5/=6. None of the Ironstone around Lochgelly is of the best quality. The Coal is not good for blast Furnaces purposes the Wellwood is the best I have seen in Fife". £2:16/= was the cost per ton of iron manufacture at Lochgelly (6).

The Lochgelly Iron Company worked the Bogside Ironstone, a blackband up to 2 feet thick, from 1851 to 1857, although it had first been

---

(1) S R O, GD 1/42/38

(2) S R O, RHP 2954

(3) Ordnance Gazetteer of Scotland, ed T Groome, (Edinburgh 1882), v 1 240

(4) Geikie, Central and Western Fife, 202

(5) P W Brown and A Westwater, History of the early Lochgelly Coalfield (Lochgelly 1954), 6 - 7

(6) S R O, GD 58/18/52/9

noticed in 1839. Andrew Landale, the managing partner, commented in 1876 that there was enough iron ore at Lochgelly but "we want something to mix with it" -it was too lean. The blast furnaces were standing idle "owing to the depressed state of the iron trade and the high rate of carriage which we have as compared with our competitors in the west". Cumberland haematite could be obtained at some of the ironworks in the west for 7/=6 per ton but at Lochgelly it was 10/=2, following a rail journey broken by the Granton - Burntisland ferry passage. Landale reckoned 30000 tons of pig iron per annum could be turned out with the enrichment of local ore with at least 25% of haematite. With Cumberland ore priced out Spanish haematite would have to be used, yet even with that the carriage from Burntisland to Lochgelly was 1/=8 per ton (1).

At Lumphinnans in 1860 only one of the two furnaces was in blast. "The work appear to me not to be well set down. There is a good deal of up hill work about the place. Women work about the bank. The Coal and Ironstone is something the same as at Lochgelly", with a cost of production of £2:19/=2½d per ton (2).

In 1869 there were in Scotland 158 blast furnaces of which 129 were in blast. Compared with Lanarkshire (92) and Ayrshire (48), the 13 blast furnaces in Fife were but a small contribution to Scotland's iron industry, and of these only 4 were in blast, putting Fife in fifth place after Lanark, Ayr, Stirling and West Lothian (3). This minor ranking in the great growth industry of the nineteenth century clearly stemmed from several factors, some alluded to above. None of the coal mined in the county was of good coking quality. Much of the ore early exploited along the coast was the less valuable clayband ore, "but as I have already stated, since the discovery of the black-band, common clay-ironstone is seldom of any value" (4). None of the ironworks involved showed any evidence of efficient or enterprising management. In terms of space relationships, the siting of ironworks

---

(1) S R O, BR/PYB(S)/1/50

(2) S R O, GD 58/18/52/9

(3) Parliamentary Papers 1871, XVIII, 1234

(4) J Milne, Reply to the Observations .... Mr Thomas Grainger .... on the proposed Railways through Fife (Edinburgh 1841), 17

in proximity to blackband ores of less than top class meant that imports of rich ore from outside the county were made unnecessarily expensive. Finally, the small number of major iron-using outlets - relative to the west of Scotland and deriving also in part from the poor supply position - resulted in a sluggish local demand for iron.

Sandstone

"There is an inexhaustible supply of good building-stone in the county of Fife .... new openings may be made in almost any part of that ground", says Geikie (1). Igneous rocks have provided material for rough building work over the centuries but sandstone was the basic building material in most of the county, and was used for fine work in the remainder. St Regulus' Tower at St Andrews was built of local sandstone in the eleventh century. Balmerino Abbey was given the grant of the whole quarry at Nydie, near Strathkinness, and established a road between the two localities in the thirteenth century (2). From these early documented beginnings freestone has been extensively worked in the county for centuries, so much so that a complete description would extend to a quite disproportionate length. Instead, an examination of some of the quarries near Aberdour and Burntisland will serve as samples typical of quarrying activity before the collapse of the freestone market about the time of the First World War.

Seldom did a landowner work his own stone. Thus, Aytoun of Inchdairnie leased the Grange Stone Quarry, Burntisland for 19 years from Martinmas 1893, with an extension of 19 years from Martinmas 1900, to Messrs William, Hugh, James, William Junior and Alexander Stevenson, trading under the name of Baird and Stevenson of Glasgow. The fixed rent of the quarry was £450, increased to £500 in 1901, with royalties of £12 per pole or part of a pole, of freestone rock and 6d per ton of raw limestone quarried and removed from the ground (3).

---

(1) Geikie, Central and Western Fife, 206

(2) R F Smith and N M Johnson, 'Quarry to Abbey: an ancient Fife route', Proc. Soc. Ants. Scot. v 83 (1948-49), 162-167

(3) Foster and Cranfield, Particulars, Plans, Views and Conditions of Sale of the very valuable Freehold .... Estates and Mining Properties in Fifeshire (London 1901), 26

The Grange Sandstone lies on top of the Burdiehouse Limestone and is a top-class building stone, having been used extensively in Glasgow and Edinburgh, where its most prominent utilisation is in the University dome. The quarry working face was 1000 feet long and 200 feet deep and, with greater depth, the beds became more solid and more free from joints. The quarry was connected to the North British main line by means of gravitation inclines which carried the stone down to a loading wharf by the railway, the tenants having to pay £2:10/= per acre for the inclines and railway and £60 per acre for the ground severed in consequence of the construction of the railway (1).

Westwards, above the Burdiehouse Limestone worked by Carron Company, William Chalmers operated the Newbigging freestone quarry from 1886, again based on the Grange Sandstone which is 150 feet thick here. Initially the sandstone was moved away by road but a waggonway was constructed downhill to the top of the Carron Company's inclined plane, from which the quarry lessee had his own line to a quarry siding by the railway (2). Here the rough blocks were finished before being transported out of the area. By 1914 fully 3 acres of stone to a depth of 150 feet had been extracted from Newbigging (3).

Balmule Quarry nearby (203882) was also a sandstone quarry producing hewing stones for building in Kirkcaldy and Kinghorn, and for bridge construction. In addition, a speciality was made of millstones, varying in price from 16/= to £1:15/= in 1817 and going to markets on either side of the Forth, such as Alloa, Edinburgh, Cannonmills and Bonnington, Kinghorn, Kirkton (Burntisland) and Strathmiglo. The Halbeath Company had three grindstones for 12/=, presumably for sharpening tools, while Messrs Denavon of Leith had 23 for £3 for their commission agency (4).

Minor Minerals

Few other minerals were worked as separate entities and even these gave rise only to short-lived enterprises. From 1836 to 1860 a four-foot seam of ochre, used as a pigment for house decoration, was worked near

---

(1) Ibid, 26

(2) Vide infra, Fig. 4.1

(3) S R O, RHP, 1288

(4) S R O, GD 150/Box 115

Leven by means of a day-level and also a pit (1). The ochre was ground at Leven by a water-mill driving edge-runners and shipped to Leith. The mill employed three and had a value of £500 (2). The vestigial remains of the mill are at present being investigated by the Largo Field Studies Society. A similar enterprise at Wemyss produced an ochre of insufficient depth of colour (3). In Kennoway Den about 1870 a haematite 9 - 12 inches thick was worked by an "ingaun' e'e". Of a good red colour, it was shipped to England as keel for marking sheep (4).

Some attempts were made to mine lead and silver in the county, but again these were only sporadic. At Myreton of Blebo (Kemback) large masses of lead ore, ten to twenty four stones in weight, were found lying on the ground. A vein about two feet thick was opened out but speedily abandoned because of the hardness of the rock (5). Operations resumed once more under Captain William Thynne but failed, as did others, as a result of faults and igneous intrusions (6). On the south side of the East Lomond Stewart of East Conland worked a mine for galena and silver from 1780 (7). The ore was smelted on the spot while six tons of ore was sent to Perth for shipment (8). Although the enterprise had failed by 1845 it is still possible to pick out on the hillside the workings, day-level and mill-lade of the little smelting complex.

Limestone

Coal apart, the mineral associated with most materials remains, the best documented and the most influential on the pattern of life in other parts of Scotland, is limestone. From the major demand for agricultural lime beginning in the early eighteenth century and the slightly later need for lime as a cementing agent for urban building many local entrepreneurs were inspired to commence lime-working and lime-burning as a

---

(1) N S A, v 9, 266

(2) Ibid, 272

(3) Geikie, Central and Western Fife, 203

(4) Ibid, 204

(5) N S A, v 9, 722

(6) O S A, v 14, 305

(7) N S A, v 9, 922-923

(8) Geikie, Central and Western Fife, 204

means of using unwanted small coal and adding to their cash income, a further fillip to the industry being given by the demand for limestone as a flux for iron smelting, particularly by the Carron Company. In these developments Fife was at an advantage in having supplies of coal, often developed in conjunction with the limestone, and in having so many small harbours for the shipment of lime to the less well-endowed parts of Scotland. With the continued rationalisation of the lime industry into the hands of a few giant concerns, mainly based on the chalk of south-east England and the Carboniferous Limestone of northern England but including Oxwell Mains (Dunbar), and using bulk carriage by rail and road tanker, the number of local working concerns has been reduced to one (1). To quote the Geological Survey, "there are comparatively few places where the limestone is both thick enough and accessible enough to be of value at the present day" (2).

It is fortunate that documentary evidence exists for a number of lime-producing enterprises in different locations and of different scales within the county. The lime quarries at Ladeddie (440137) exploited the Hurlet Limestone from the 1780s until about 1880. A thin seam of coal was also worked, making it possible to burn lime on the spot. George Henderson of Ladeddie engaged John Swinly, limeworker, to supervise the enterprise, which had a turnover of only £43:10/=4 in 1781 and £78:17/=2½ in 1782. 2067 bolls of lime were won and burnt in 1781, at 4½d per boll, and 721 bolls of small lime or redd at ½d were produced. 20 pounds of gunpowder were used in the course of the year.

1782 was the year in which the enterprise was reorganised. "1743 Solid Ells of Earth" were cleared off the limestone, Swinly receiving 4d. per Ell, or £29:1/= for this. Two lime kilns were built, and others maintained for £5. One of Swinly's men was detached for lime-selling. The concentration on tirring (3) meant that production of burnt lime was down to 1589 bolls, worth £29:7/=6½, 667 bolls of limestone were quarried but not

---

(1) B C Skinner, The Lime Industry in the Lothians (Edinburgh 1969), 9

(2) T Robertson, J B Simpson and J G C Anderson, Special Reports on the Mineral Resources of Great Britain, vol. XXXV - The Limestones of Scotland (Edinburgh 1949), 97

(3) Removal of the overburden

burnt and for this Swinly was credited with £8:6/=9 (3d per boll). 434 bolls of redd lime were valued at 18/=1d. Swinly left the enterprise owing Henderson £8:8/=2½d, which was not paid till 11th March 1784. At the same time he was being pursued for a debt of £3:10/= incurred when he was a miner atnearby Denhead in 1778. Despite taking refuge at Auchterderran in the other half of the county Swinly was put to the horn in May 1783 before discharging the debt, interest and expenses. The illiterate and incompetent Swinly was clearly of no great value as a quarry manager but his appointment pinpoints the difficulty of a small enterprise in obtaining skilled direction (1).

On a much larger scale was the Earl of Morton's development at Dalachy, near Aberdour (209862). Having already developed a successful lime enterprise at Raw Camps, Midlothian. probably by 1765 and certainly by 1780 (2) the Earl turned to his Aberdour estates where limestone was to be found within 500 yards of the sea, and where there was already the small harbour of Starley Burn with salt pans, girnels, buckets, pots, folds and salter houses.

In 1792 there were three clamp kilns at the harbour and two at the quarry (3). The programme carried out by the Earl's factor, John Anderson, included the deepening of the harbour, the construction of two draw kilns on the shore and the installation of a "spout" for handling the stones, an innovation apparently antedating the use of the spout on Tyneside (4).

Starley Burn was dug out to a depth of ten feet along the face of the east pier and a further pier was built across the head of the harbour. The new pier was 50 feet long, 16 feet high and 8 feet in thickness, with 3 feet of face stones and 5 feet of packing (5). Unfortunately most of this harbour was built over by the Burntisland-Inverkeithing railway of

---

(1) Howie of Grange papers.

(2) Skinner, Lime Industry, 47

(3) Skinner, Lime Industry, 12-15, gives a concise account of the lime-burning process and kiln design.

(4) D J Rowe 'The Victoria Tunnel', Ind. Arch. v 7 (1970), 41

(5) S R O, GD 150/Box 115

1890.

Anderson sought one Gordon of Inverkeithing to build the kilns, but he had gone to Copenhagen to build kilns there. In late May one Garvie began to build the kilns and by 12th July they were to stand for eight days before firing. Meanwhile a supply of raw limestone was being made ready for burning in the new kilns. On 5th September one of the kilns was set going by an experienced man recommended by Garvie, and for the first load the burning took 10 or 12 days.

Garvie received £47:o/=1d for building the kilns - indicating that the Ladeddie kilns were the humbler clamp kilns - and his men were paid at 21d per day. Initially the lime produced was unsatisfactory, but this was corrected by giving more coal. By April 1794 the kiln in operation was using 3 or 4 barrowfulls of coal less at each coaling as compared with the previous year and by July demand had increased sufficiently for both kilns to be kept busy (1).

The year to 7th May 1794 saw 7226 tons of stone burnt into lime to give 23463 bolls of shells. 2698 bolls of slack (slaked) lime were produced and in all 1880 tons of coal were used at a cost of £547:19/=10d including freight and land carriage from Cuttlehill. A variety of coals was tried, on 2nd July 1792 a cargo of coals was brought from Dysart, using a sloop returning from Methil "by that means saving the half of the freight". As vessels came into Starley Burn harbour their berths were retained for them and the masters could, if they chose, use the waiting time to make the short voyage to Limekilns for coal at a freight of 1/= per ton. Anderson reckoned in 1793 that coal was being delivered to Starley Kiln head at 6/=6d per ton, enough to burn 4 tons of limestone and give 14 to 16 bolls of shells (quicklime) - but he made it quite clear that this was little more than guesswork.

The extraction of limestone was initially done by opencast means but by 1802 the limestone was being mined and the rubbish stowed "in the old Workings so as not to break or disfigure the surface without absolute necessity". Drainage was by horse gin (2). Anderson has nothing to say on labour but on the Fife-Kinross boundary Captain and Jean Park of

---

(1) S R O, GD 150/Box 110

(2) Ibid

Lochore recorded their labour problems in 1793. David Nicol of the neighbouring Bin Quarry bribed away the Park's quarriers by advancing the "enormous wages of 20d. per day" in 1793 (1). In turn William Finlay was sent to Falkland "to endeavour to obtain Quarriers amongst his old acquaintance, hands are very scarce, but if William can get them he will" (2). Quarrying soon restarted, with the lowest rate the quarriers would accept being 7/= per rood for limestone and 17½d per foot for hewing stones (3). In July Captain Park was reporting that the lime quarriers had lately been in a state of mutiny and, although again at work, they still required careful watching as three had deserted (4).

Two products were shipped from Starley Burn, lime shells and limestone. Raw stone was shipped to Carron, the Carse of Falkirk, St David's, Leven, Leith and, by way of Leith, to London. 200 bolls of shells went to Aislabie, Neilson and Company's manufactory at Kirkland and cargoes of lime went along the east coast to Durie (Leven), Crail, Dundee, Perth and Aberdeen (5).

The pacemaker of the industry was "Lord Elgin's mammoth establishment at Charlestown and Limekilns in Fife "(6) with an output of 80000 to 90000 tons of limestone in the 1790s (7), and in a series of letters written to the Earl of Morton in 1793 Francis Farquharson attempts to analyse the factors involved in the competition between Dalachy and Charlestown lime (8). It was essential that Lord Morton must reduce the cost of working his limestone as Lord Elgin with much inferior lime at a low price had for many years reaped immense profits. Lord Morton's lime was 3d per boll dearer than Lord Elgin's and it was clear that any great rise in price in Dalachy would mean great difficulty in disposing of the lime by a distant sea sale, while the profit per boll was only about 1½d.

---

(1) S R O, GD 29/2063/35-36

(2) S R O, GD 29/2063/37

(3) S R O, GD 29/2063/39 and /47

(4) S R O, GD 29/2063/55

(5) S R O, GD 150/Box 110

(6) Skinner, Lime Industry, 24

(7) O S A, v 13, 467

(8) S R O, GD 150 / Box 110

Farquharson was able to give statistics for Lord Elgin's enterprise, where the cost of tirring - laying bare the lime rock, at that time 10 to 12 feet below the ground - gunpowder, quarrying and filling the wagons was 1/=4¾d for 2½ tons. The proprietor provided the tools initially while the workmen were responsible for their maintenance. There was specialisation in that the stones were broken and the kilns worked by workers other than the quarriers. The importance of transport is shown by the fact that cartage from Dalachy Quarry to the kilnhead - down a very steep slope - involved 6½ loads to the ton of 2240 lbs with nine rakes (or journeys) in the day. Lord Elgin's stone was moved along a wagonway of six or seven hundred yards down a gentle slope. Single horse wagons of over three tons each (Lord Elgin's ton was 2000 lbs) were moved, making 24 rakes per day. Farquharson's suggested reply to this was to make a moveable wagonway within the quarry and to slide the stone down a causeway of hard sea stone, in so doing saving the expense of breaking the stones and bringing the profits up to 3d per boll. In fact, it is difficult to see how Lord Morton could expect a large share of the market when the Earl of Elgin had the benefits of lime and coal resources, economies of scale in mining, processing and shipping, and an established trade (1).

Literally just over the hedge from Dalachy was the estate of Newbigging and in 1802 Lord Morton attempted to lease the lime rock there from Sir John Henderson of Fordell. Wishing to work the two quarries as one, Lord Morton would shift workmen from one to another "as water or other circumstances may require". The rent offered was to be £200 per annum, or £25 per quarrier (the sales from the efforts of 8 quarriers would be at least £2000), or one-tenth of sales. Henderson wished a rock barrier left between the workings - as there is today - separate accounting and a proportional share of the gross produce but on Hogmanay 1802 Lord Morton declined to subject himself to such an option.

The Carron Company, as noted above, were already drawing supplies of limestone for flux from southern Fife and purchased Newbigging for £45000 in 1808 (2). The limestone was worked at the outcrop at 211863 and, as

---

(1) Ibid

(2) R H Campbell, Carron Company (Edinburgh 1961), 203, 206

supplies became exhausted, mining was resorted to. Dipping northwards at an angle varying between 5° and 15°, the Burdiehouse Limestone here is a high-grade stone well-suited for fluxing and was mined by the stoop-and-room method. The average height of the roof is 20 feet, with each pillar approximately 10 feet square and the rooms 15 feet across. The entrance at Newbigging was the main entrance between 1808 and 1828, the stone being taken up the dip to the surface and then run downhill by a wagonway towards Nine Lums and the sea.

In 1817 the Company opened a new entrance at Nine Lums (215861), running a little west of north to tap the area entered by the Newbigging mine, and in due course this became the main outlet for the workings. For some considerable period the loaded wagons would be worked down to the cross-cut mine and then down a gently falling gradient to the exit to Nine Lums.

Before closure in February 1951 the workings had gone well below the level of the cross-cut mine, reputedly to below sea level, requiring three pumps to keep them dry. In the recent past, output was only of the order of 75 to 92 tons per week, with up to 30 men employed in teams of one faceman and two loaders. The men were housed at the hamlet of nine single-roomed houses - "Nine Lums" - rented as 1/=6 per week before another room and scullery were added. Two horses were used underground to move the wagons along the 3ft 6 inches gauge waggonway to the weighing machines at Nine Lums.

300 yards east of the Earl of Morton's Starley Burn harbour the Carron Company built their own harbour to handle the limstone traffic. From Nine Lums down to Carron Harbour is a steep descent, and an incline haulage gear was used to control the descent of the loaded wagons which, at the same time, pulled up empty waggons. With the completion of the railway linking Burntisland and Inverkeithing, and so with the Forth Bridge, a railway loading bank was constructed on a short diversion line and a new horizontal wheel with an endless chain was installed to control the movement of loaded and empty wagons at a total cost of £1200 (1).

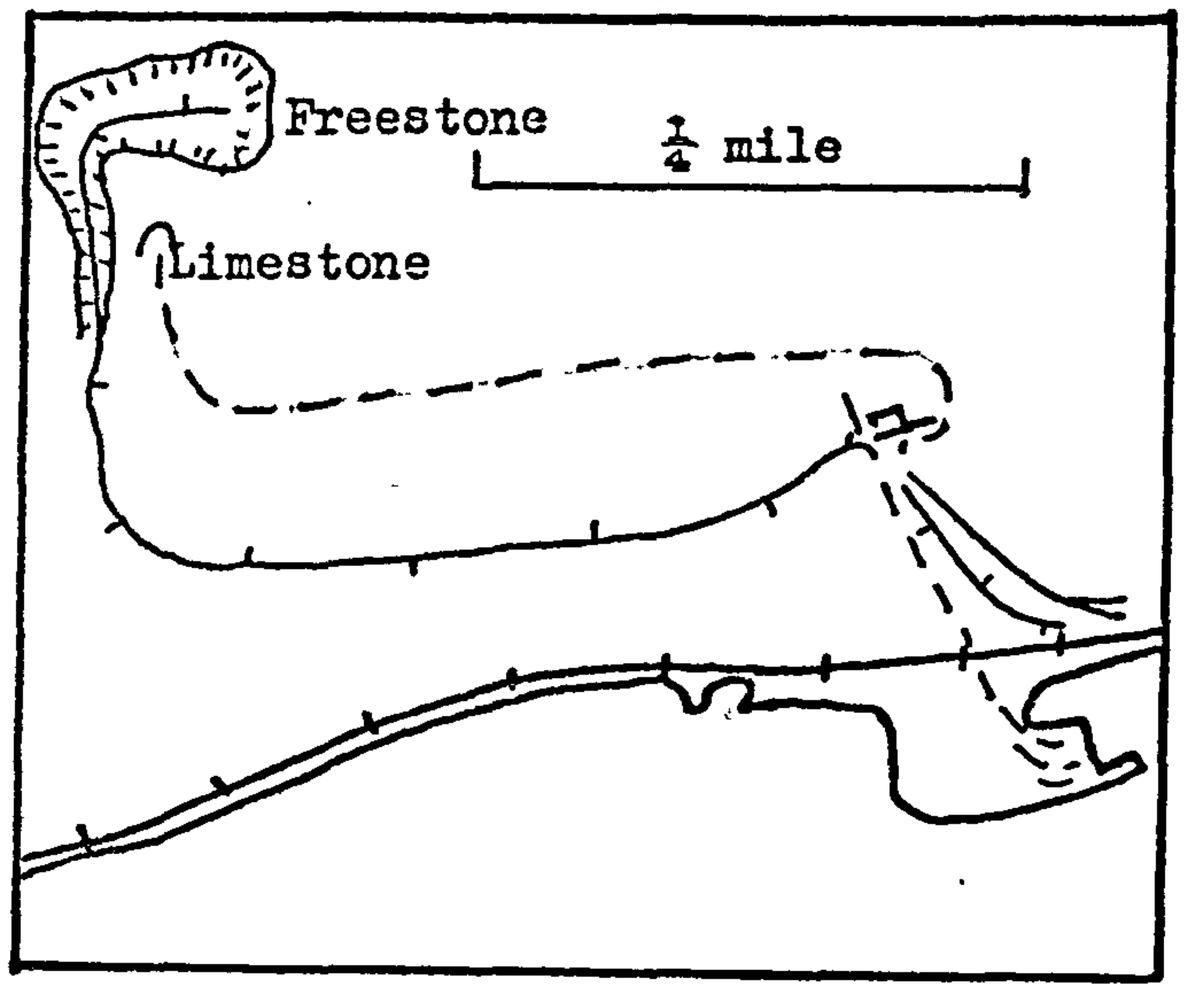
As a result of its recent closure the Newbigging mine, with engine housings,

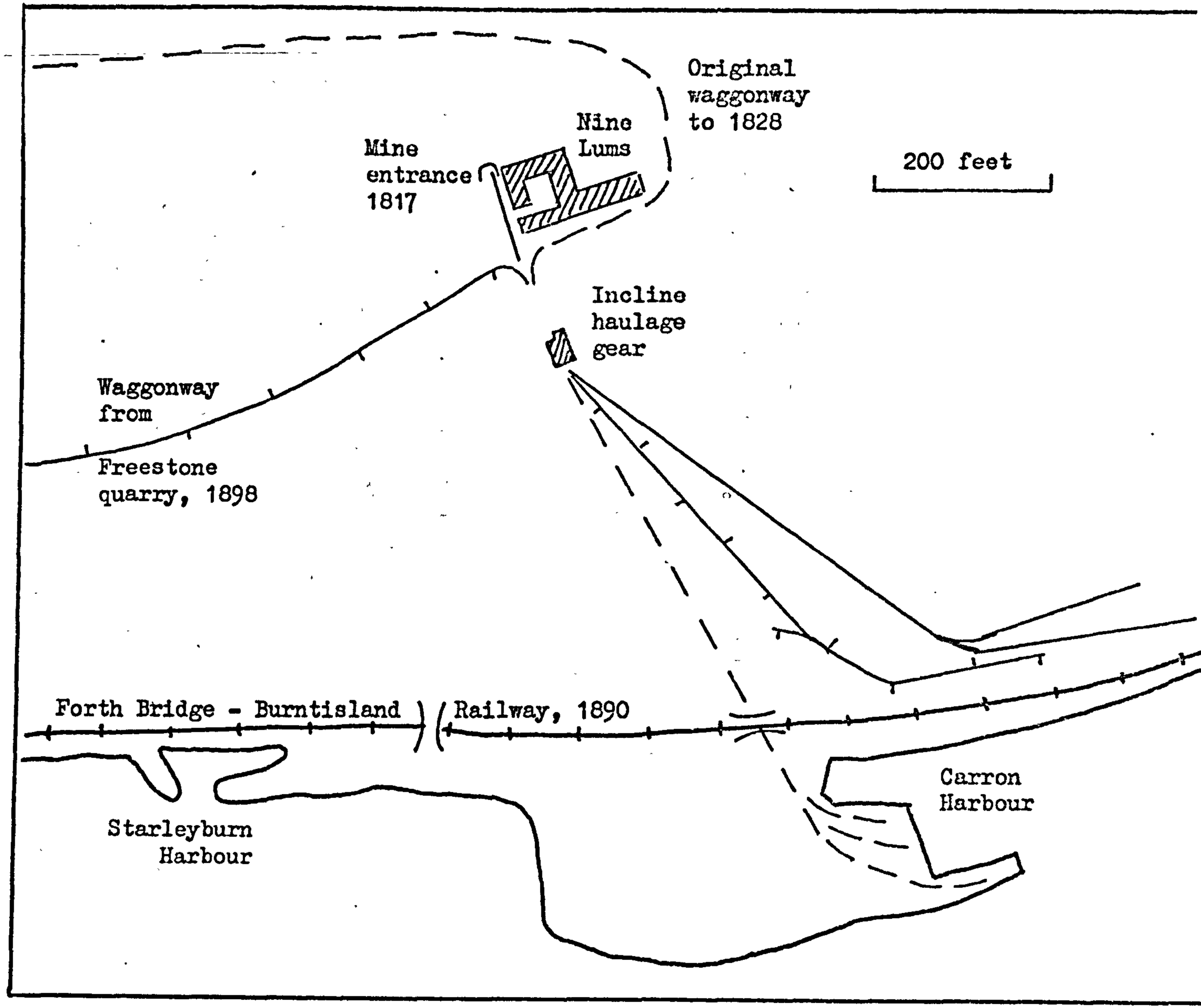
---

(1) Fife Free Press, 29 Mar 1890

FIG. 4.3

AREA AROUND NEWBIGGING, BURNTISLAND





air shafts and sandstone roof in an entire condition, is still able to be inspected. The wages office, machinery building for inclined plane, the planes themselves, sidings and Carron Harbour remain to give a good picture of the complex. Immediately adjacent is one of the Earl of Morton's kilns and the remains of his Starley Burn harbour. At 210861 are the twin access roads leading to the two adjacent limestone quarries at Dalachy and Newbigging (Fig. 4.3).

At Charlestown limestone extraction was from open quarries laid bare by "tirring" until mining was begun about 1900 (1). The Charlestown Main Limestone varies in thickness from 6 to 60 feet and exists at or near the surface over large parts of central and southern Fife and has been extensively worked over that area. The Bruces bore an ancient title but were not great landowners so that in an era of rising expectations they turned to the mineral potential of their lands to give them the means to play their part in society. Fortunate in having great wealth of limestone a few yards from the sea, Charles Bruce, who succeeded as 5th Earl of Elgin and 9th Earl of Kincardine in 1740, began some time about 1756 to develop limestone-quarrying and lime-burning on his estate. Kilns were built, a new harbour created, the village of Charlestown planned and laid out in the shape of a letter "E" (for Elgin) and waggonways laid down to link quarries and harbours, involving an outlay of some £14000. A 2-foot seam of coal lay under the limestone, although drainage difficulties were encountered here and the collieries of Clune and Baldridge were purchased in 1797 to supply the kilns with coal and provide an export which came to be more significant than the lime (2).

Although increase in the scale of operations or in profitability was not continuous, the author of the Old Statistical Account for Dunfermline could claim that, in 1794, the Earl of Elgin's limeworks were the most extensive "in this parish, or even in Britain". 200 quarrymen produced quarried stone to the value of £10000 annually, requiring 12000 tons of coal to burn the lime which was shipped out in 1300 separate cargoes (3).

---

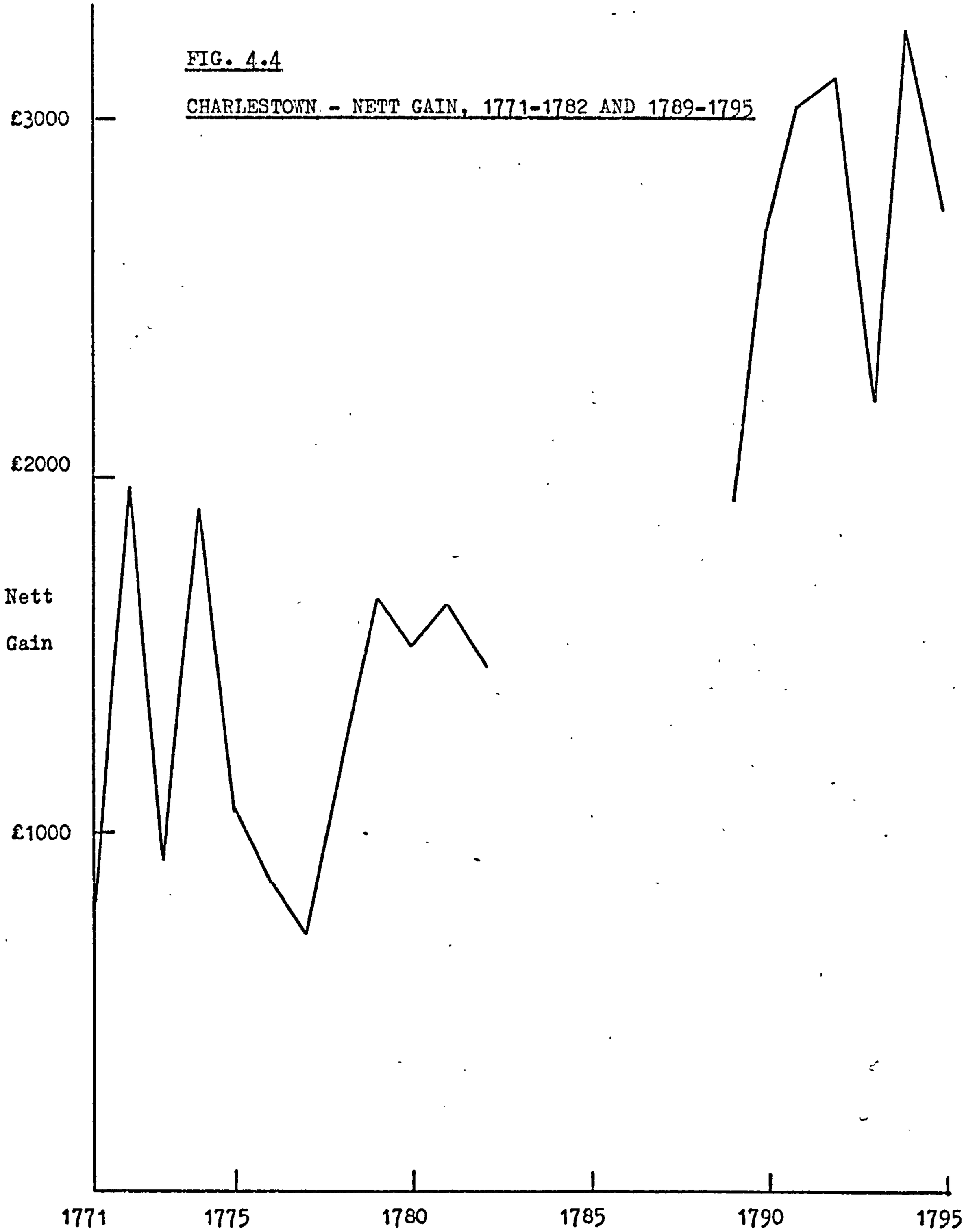
(1) A Reid, Limekilns and Charlestown (Dunfermline 1903), 73

(2) Earl of Elgin's papers, Broomhall (Landale's report 1805)

(3) O S A, v 13, 467-468

FIG. 4.4

CHARLESTOWN - NETT GAIN, 1771-1782 AND 1789-1795



Although the minister's local pride outstripped his statistical knowledge (Charles Landale found 8 kilns 33 feet deep at Chapel en le Frith and 36 or 40 along the Wear which he thought ought to produce three times the output of Charlestown (1)) his statement caught the spirit of the enterprise. In 1837 James Carmichael rated the Charlestown complex as five times as large as the next largest in Scotland. At that time there were still 200 at work in the quarries and the quarries were traversed by railways in every direction. 400000 bolls of lime were sold annually, as much as the total output of the Lothians (2), with 5000 tons of raw limestone rising to 15000 tons in 1844. A measure of the scale of the resources involved is given by the output of 12000 tons per annum up until 1935, two-thirds of it for burning in the last two operating kilns, with an output of 20 to 25 tons daily (3).

At the quarries the limestone was tirred to reveal a clear face, shot-holes were drilled and the rock blasted out with gunpowder to be loaded into 3-ton trucks for movement down the waggonway to the harbour. Charlestown limestone was really too impure for use as a flux in iron smelting, although some found its way to the Cramond Iron Works, where it would be used to purify reheating iron, and to Leith Sugar Refinery Company where "if the whitest colour were picked for them they will pay any reasonable addition of price for so doing as it is to be applied in the process of refining sugar". For building also its use was limited, although Peterhead and Leith Docks and Dunrobin Castle all employed Charlestown lime. Almost all of the output was used for agricultural improvement, either as raw limestone or as limeshells. Raw stone was sent to Ward of Cruden (Aberdeenshire) for burning there and part-cargoes of coal from Carronhall were completed with raw stone for delivery to coastal customers (4).

The limestone was thrown as stones of large size into the kilns which, while giving the impression that it might be easily burnt, resulted in the

---

(1) Earl of Elgin's papers (Landale's Commonplace book, 1807)

(2) J Carmichael, 'Account of the Principal Limestone Quarries of Scotland', Trans. High. Agric. Soc. Scot, series 2, v 5 (1837), 79

(3) Reid, Limekilns and Charlestown, 72

(4) Bruce-Jones papers, Camsie House; N L S, MS 9629-9631

production of large quantities of unburnt stone. This was slaked and riddled as far as possible and the refuse thrown into the harbour in order to form a breakwater (1). The kilns were, eventually, nine in number, with another two serving as coke ovens producing two tons a day. Together they form a most impressive battery. Although they vary slightly in size, their height is 29 to 30 feet, 16 feet in diameter at the top and 10 to 16 feet diameter at the bottoms. The charges varied from 170 tons of limestone and 28 tons of coal to 213 tons and 34 tons respectively (2). Coal was bought in from Halbeath via the Halbeath Railway and ship from Inverkeithing (3) - a commentary on the state of the roads - but the great reorganisation of 1797 meant that all the raw materials were now in the hands of the Bruces.

The manager's report of 1805 highlights two of the problems besetting the limeworks. "Our Lime Trade is put in competition with the Sunderland and other Scots limeworks and in the first place it must be admitted that of all these works the Charlestown lime is that containing the greatest quantity of impurities and the smallest of pure calcareous matter. Of course we go to market under great disadvantages and if we don't undersell our Rivals need not go to market at all except in a season of great Trade when Lime of all kinds is eagerly bought up at any price". The rock itself is very hard, while that of Sunderland is "soft, purely calcareous and easily reduced to small pieces. Ours require the strongest exertions of strength with heavy hammers to reduce them and many pieces are not properly calcined (4)". There was a constant stream of complaints about quality -"I hope you will be of attention as possible in preventing unburned stones from being loaded as that is the greatest complaint against your lime which a little attention in a great Measure may prevent (5)" - "large lumps of mere earth appear like Mole hills in size, thick studded on the heap" - 1 boll of shells gave 1½ bolls of lime plus 5 pecks of stones and rubbish (6). Gascoigne of Carron Company advised the Tutors of the Earl to employ old people and children to turn over every stone and pick out the blaes and informed them that he would send "a proper Person to inspect the

---

(1) J Wallace, 'Account of the Method of Calcining Limestone in some of the limestone quarries in Scotland', Trans. High. Agric. Soc. Scot., series 2, v 5 (1837), 448

(2) Earl of Elgin's papers (presentation booklet 1782, notes, 1796)

(3) Bruce-Jones papers.

(4) Earl of Elgin's papers (Landale's report 1805)

(5) N L S, MS 5319

(6) N L S, MS 9625

FIG. 4.5

CHARLESTOWN: - COAL AND LIME SALES

FEBRUARY 1830 - JULY 1833

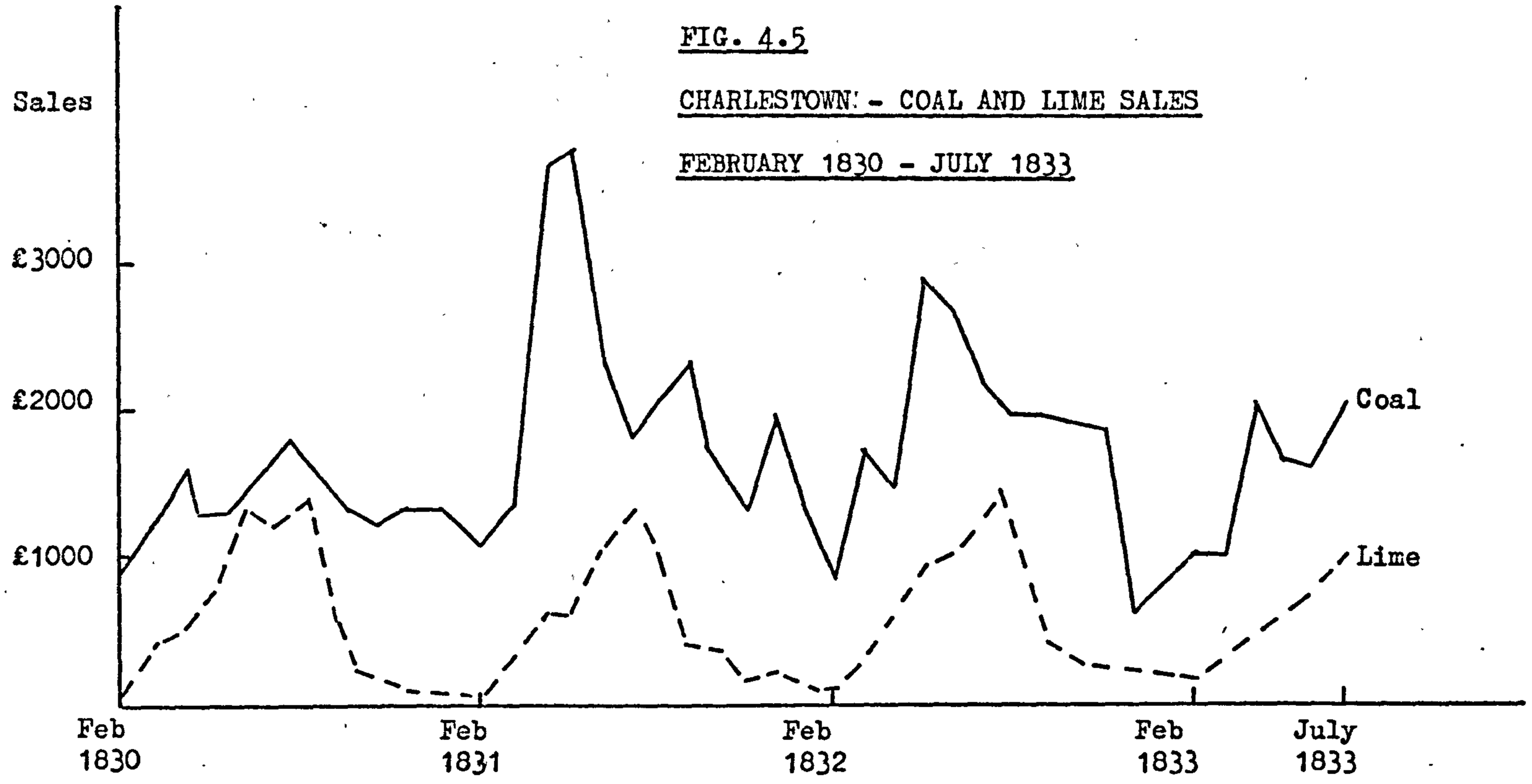
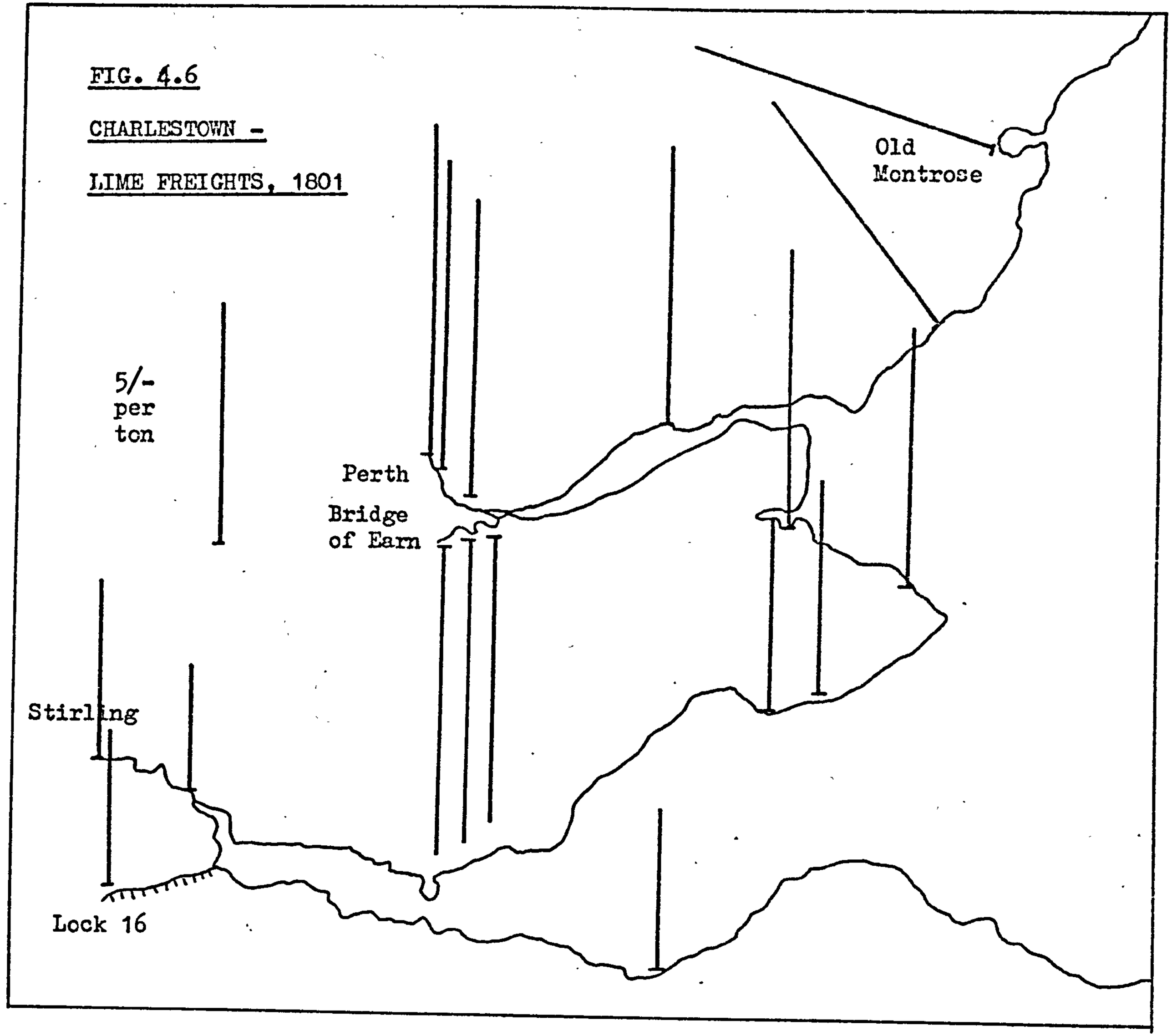


FIG. 4.6

CHARLESTOWN -

LIME FREIGHTS, 1801



stone (1)". The competitive position of Charlestown could be upset by such factors as the price of gunpowder, which rose by 30/= the barrel in 1805 alone.

Charlestown lime was at the cheap end of the lime industry, necessitating an efficient, large-scale enterprise, but lime itself is a commodity of very low value per unit weight. In the matter of undercutting the small local limeworks with a good end-product and the protection of distance another complicating factor was the seasonal nature of the lime trade.

"Farmers insist on getting lime between barley seed time and harvest and if you can't supply them within that period another will". In early summer the roads were at their best for moving heavy loads and this was reflected in the value of coal and lime shipped (Fig. 4.5). The pressure on the lime works and on the shippers was considerable, especially as vessels trying to minimise land distances could only go right up the estuaries on spring tides. Hence the complaint of Peter Kinnear, Inchmartin, that his 480-boll cargo had been given to one Geekie when the latter lost the stream. Alex Innes of Old Montrose booked a cargo for the stream in 12 days, "if John Clark is in the way the size of his vessel would answer very well". The Earl's agent in Montrose, John Ogilvie, reported that an accident had befallen Clark's sloop the Countess of Elgin. "No part of the cause ascribed to Mr Clark or his crew or the insufficiency of the vessel's ropes, but merely to the violence of the current which made the anchor lose its hold as the ground was stony". The delays and difficulties involved in navigating well up the estuaries and rivers are reflected in freight rates (Fig. 4.6). The busy summer spell could end abruptly, and thus the early harvest of 1800 resulted in the total collapse of the market around Perth. Yet the following summer cargoes at Perth were being sold more quickly than they could be brought in (2).

Another result of seasonal demand was the problem of keeping the labour force busy. In spring and summer they worked pell-mell, often unable to

---

(1) Bruce-Jones papers.

(2) N L S, MS 9625

keep up and yet there was little to do between harvest and March. Stock-piling of lime was not generally practised because of the relatively high cost of double handling.

The question arises as to the development of such resources as the Bruces had, how far was this done by the proprietor himself, how much was deputed to managers or was leased to developers? Charles, 5th Earl, was responsible for the great expansion of activity just before his death in 1771. The new Earl's tutors discovered in the repositories no "states of his Lordship's affairs" but did discover that "the debts are very high and that it will be absolutely necessary not only to conduct the present Earl's affairs with great attention and economy but likewise to procure a warrant from the Court of Session to sell part of the land estate".

The tutors began keeping new lime works books from the date of the Earl's death, they called in outstanding debts (93 debtors) and ordered the shedmasters in Perth, Dundee and Montrose to clear their stocks and then cut off their supplies of lime. This retrenchment might have been complete if the offer by Messrs Keir and Swinton to lease the lime quarry and kilns for £1100 for each of the first two years and £1150 for 14 years thereafter had been accepted. The agreement broke down on terms rather than on principle and instead Mr John Grant was made manager of the lime works and estate at £50 for the land estate and 7% of the free profits of the lime-works, out of which he was to pay his own clerk. The tutors agreed to build an extra storey on Grant's home and enclose a piece of land for him rent-free.

In 1773 it appeared from the accounts that the profits in the lime works had been very considerable, and the Tutors resolved to take a further trial on their Pupil's risk without selling or leasing the works. From this time on direction was maintained by factors under the supervision of tutors or the Earls themselves and there was no more question of allowing lessees to work the estate. It was only with the sale of the Elgin Railway and Charlestown Harbour to the North British Railway in 1859 that the Bruces' control began to be minimised. (1).

The relative involvement of Earl and factor in the daily affairs of the limeworks is well worth examining. Thomas, 7th Earl, was at Harrow till he

(1) Earl of Elgin's papers (Sederunts of Tutors of William Robert, Earl of Elgin)

was 17; at 25 he was Envoy Extraordinary in Vienna and then Brussels, where he spent £32:12/= on newspapers in three months (1), before spending three years in Berlin as British Minister Plentipotentiary. At this period Lord and Lady Elgin were spending £8000 per annum on an income of £4000 and in addition £30000 went on finishing the work on the family home at Broomhall. At 32 he became Ambassador to Turkey, in his first fortnight incurring expenses to the tune of £7000 (2). Elgin engaged a team of artists to sketch and model the ancient sculptures in Athens (3). At a time when the lime works were making about £3000 annually the artists' salaries were costing £625 and as the years went on and the marbles were removed to be shipped home the expenses went up until, eventually, £74240 was spent, of which Elgin subsequently regained less than half (4). Paradoxically, the workers at Charlestown were hewing and burning one form of limestone to pay for the rescue of other pieces of limestone in danger of being broken up and used for cement. From 1803 to 1806 Elgin was detained in France and after 1816 spent most of his life abroad (5).

Thomas's son, James, was born in London, educated at Eton and Christ Church, where his first was the best in a year which included Canning, Gladstone and the future Lord Dalhousie (6). At 30 he was Governor of Jamaica (7), at 35 Governor-General of British North America (8), and in 1857 headed a British Mission to China which concluded the first British trade treaty with Japan in 1858 (9). A Second Mission to China in 1860-61 (10) included the burning of the Emperor's Summer Palace at Peking and he had been back at Broomhall only a month (11), when he was offered the Viceroyalty of India (12), in which office he died.

---

(1) Bruce-Jones Papers

(2) W St Clair, Lord Elgin and the marbles (London 1967) 1 - 12

(3) British Museum, An Historical Guide to the Sculptures of the Parthenon (London 1962), 9 - 13

(4) 'Select Committee on the Elgin Marbles Report', (Parliamentary Papers, 1816, 111)

(5) M Lewis, Napoleon and his British captives (London 1962), 75

(6) T Walrond, Memoir of James, Eighth Earl of Elgin (London 1872), 2, 6

(7) Ibid, 11

(8) Ibid, 31

(9) Ibid, 178, 274

(10) Ibid, 315, 373

(11) G M Wrong, The Earl of Elgin (London 1905), 281

(12) Walrond, Earl of Elgin, 395

In 92 years father and son were scarcely at Charlestown, for as James's biographer says, "it is one of the sad consequences of a statesman's

> life spent like his in the constant service of his country on arduous foreign missions, that in his own land, in his own circle, almost in his own house, his place is occupied by others, his very face is forgotten, he can maintain no permanent ties with those who rule the opinion, or obtain the mastery of the day; he had identified himself with no existing party, he had made himself felt in none of those domestic and personal struggles which attract the attention and fix the interest of the many who contribute in large measure to form the public opinion of the time. For twenty years the few intervals of Lord Elgin's residence in these islands were to be counted not by years but by months; and the majority of those who might be reckoned amongst his friends and acquaintances, remembered him chiefly as the eager and accomplished Oxford student" (1).

Yet he was not completely removed. On visiting Shanghai he saw a limeworks, to comment "they sell their lime at about 17/= per ton (200 cash a picul), and buy the small coal which they employ in their kilns at about 25/=. I wish I could do as well at Broomhall!" (2).

Quite clearly the Earls could exercise no close supervision over the estate affairs; communication with the managers was maintained by letter and could, by its very nature, be little more than commendation or remonstrance. However, in 1805, while Lord Elgin was detained in France, Charles Landale did pass to him the responsibility for deciding whether to advance further Easter Rock Quarry No 8 - an indication of at least some consultation with the proprietor on major policy matters.

The manager was therefore of crucial importance and each imposed his own character on the conduct of the works. Charles Landale is of considerable interest in taking over at the opening of the collieries and at a period when the lime quarries were facing several problems (1797). He found no regular plan of working with the easiest rock taken first and roads zig-zagging up the waste heaps. The Ball Iron which could have been sold for 10/= a ton to Carron Company and so have partly paid for improvements was lost in the middle of the accompanying blaes. Landale's first concern was

---

(1) Ibid, v

(2) Ibid, 298

with the drainage, now beginning to be a problem as the rock was followed down the dip.

Material alterations were made in the working system at the quarries.

> "The practice in this respect for many years and perhaps from the very beginning of the work had been to allot a portion of ground to a squad of 6 quarriers which they were to tirr and uncover and work the Rock lying underneath at so much a Wagon in full of everything. And this squad was in the habit of engaging as many labourers as they found necessary to enable them to supply the demand of the work. Of these squads there were 7 and accounts were settled with them once a year. Their bargains were generally for 2 years while through the currency of the year they drew subsistence money for themselves and their men. If the year was one of good trade they did very well and saved money at the end of their Bargains. If it was a bad year then they ran in debt by their subsistence money and it became always necessary to make them an advance of price the following year to enable them to redeem the debt of the past. In this way the working prices were constantly increasing tho' not in proportion to the increase of the quarriers' debts, till they at last came to consider themselves as no otherwise than days' wage men .... In these circumstances the stimulus to exertion arising from the view of increased profit was entirely lost and so long as they got their subsistence money they cared very little whether they made or lost on their bargains. 1799 and 1800 were two very bad years of trade and tended very much to increase their debts and the evils resulting from them. It was besides perfectly evident that altho' in a year of great demand there was business to do sufficient to keep them very busily employed thro' 4 or 5 of the summer months yet for the rest of the year they had very little to do as the Tirring of their Rocks and preparing for the summer's trade by no means gave them sufficient business - they became to the last degree insolent and unmanageable" (1)

Landale recognised the need for a change of system and the irretrievable nature of the debts, these were struck off and the men put on piece rates.

---

(1) Earl of Elgin's papers (Landale's report 1805)

FIG. 4.7

CHARLESTOWN - LIME CARGOES, 1779-1780

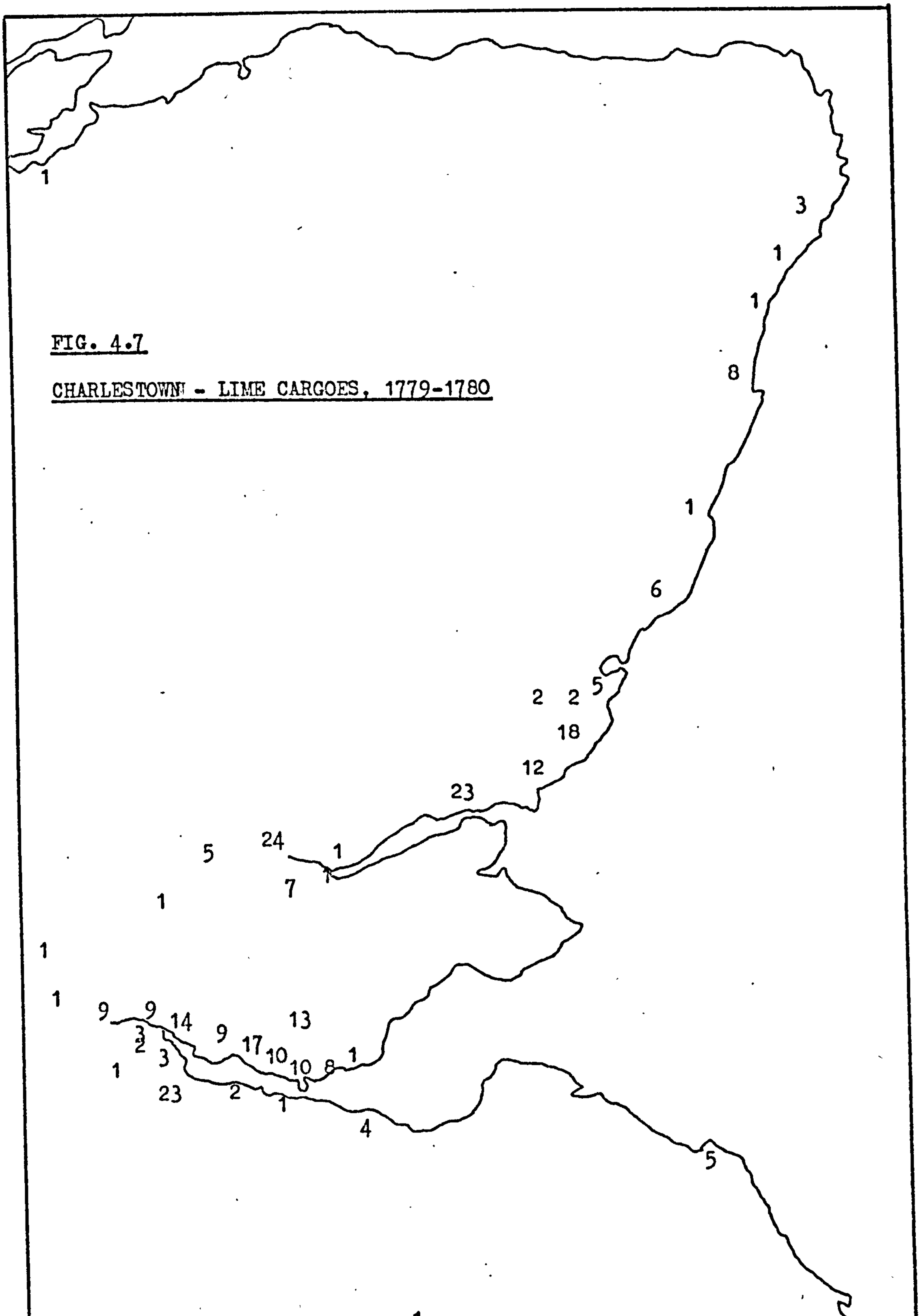


FIG. 4.8 CHARLESTOWN HARBOUR - 1836

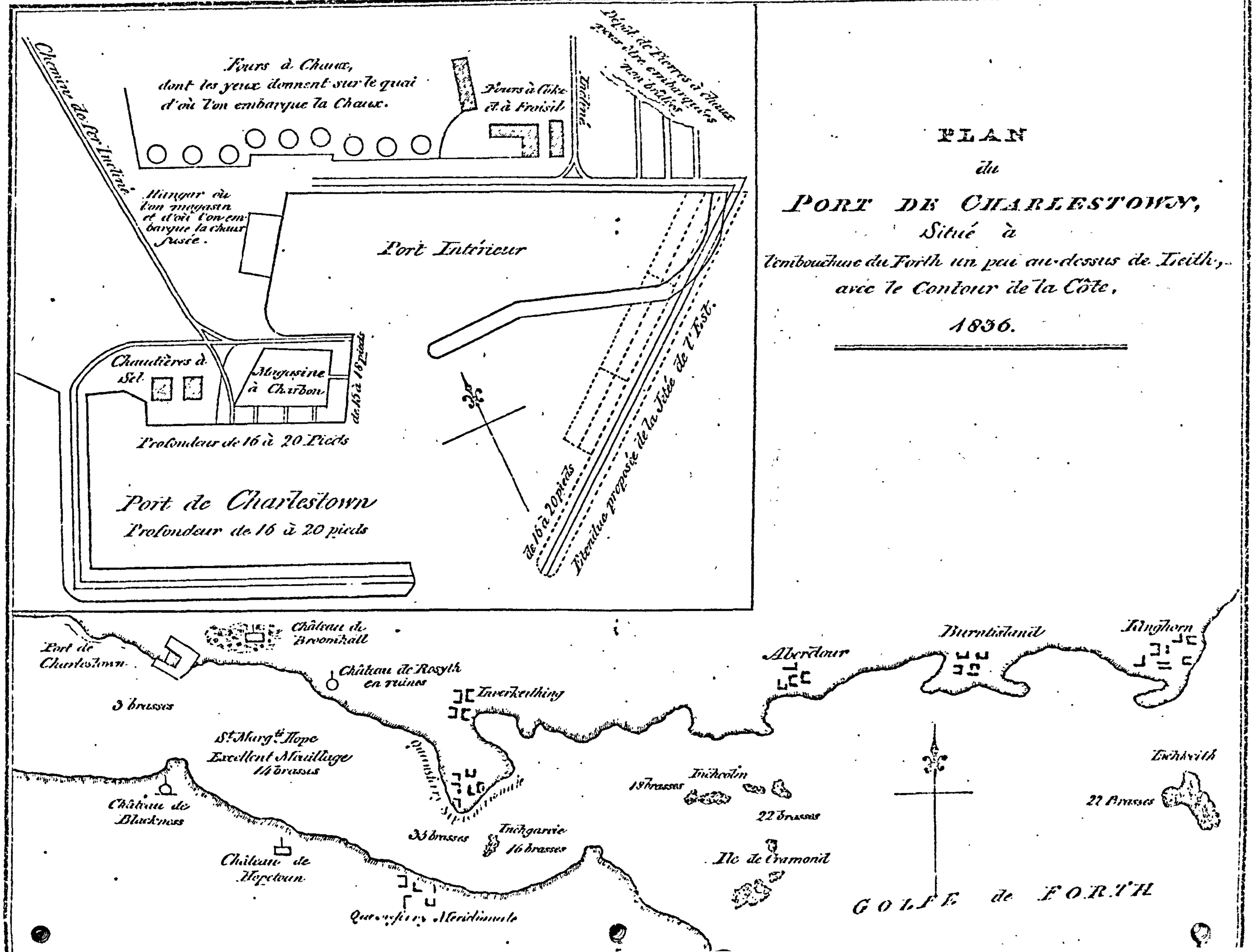


PLATE 4.a

CHARLESTOWN - PART OF KILN RANGE (064834)

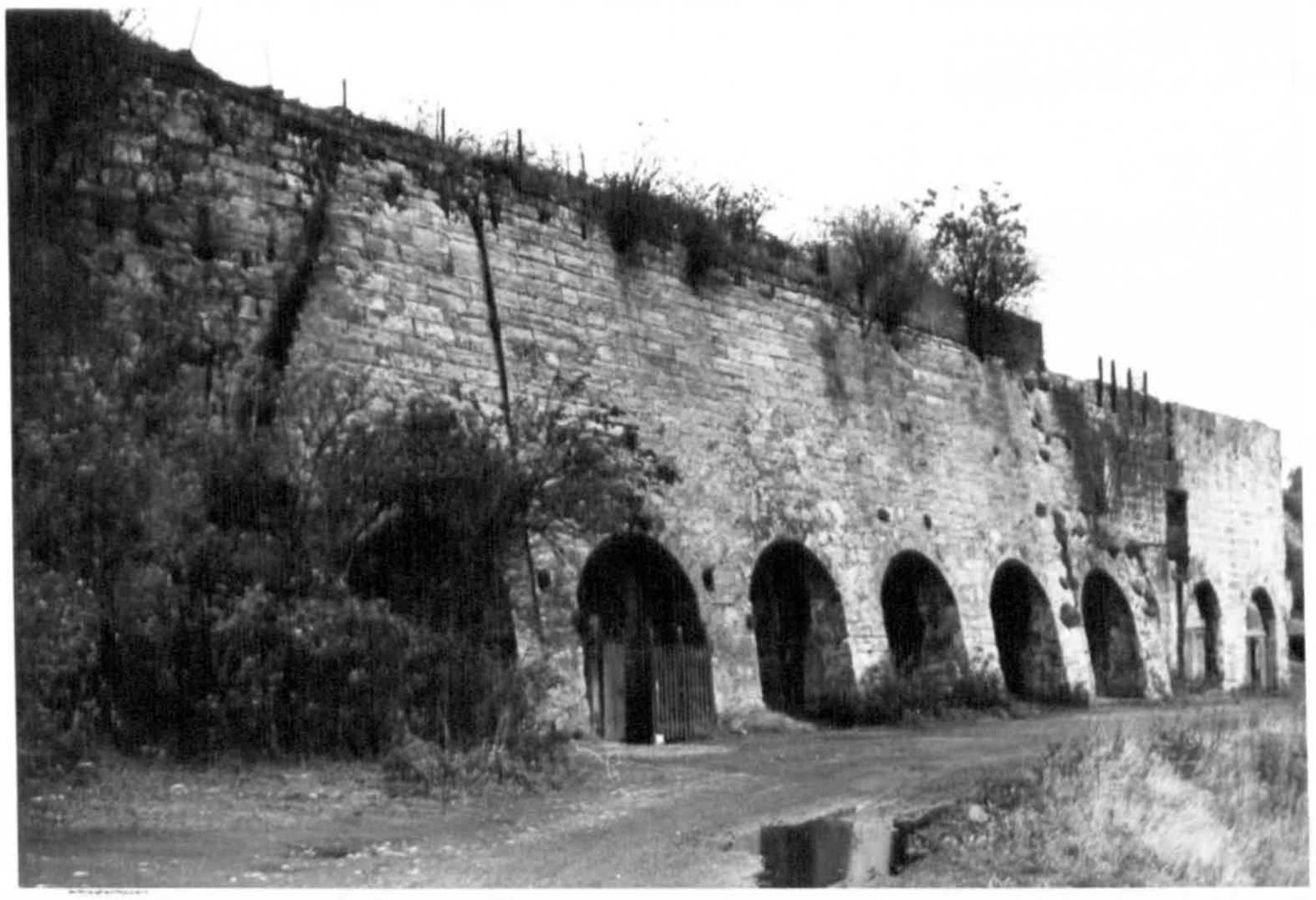
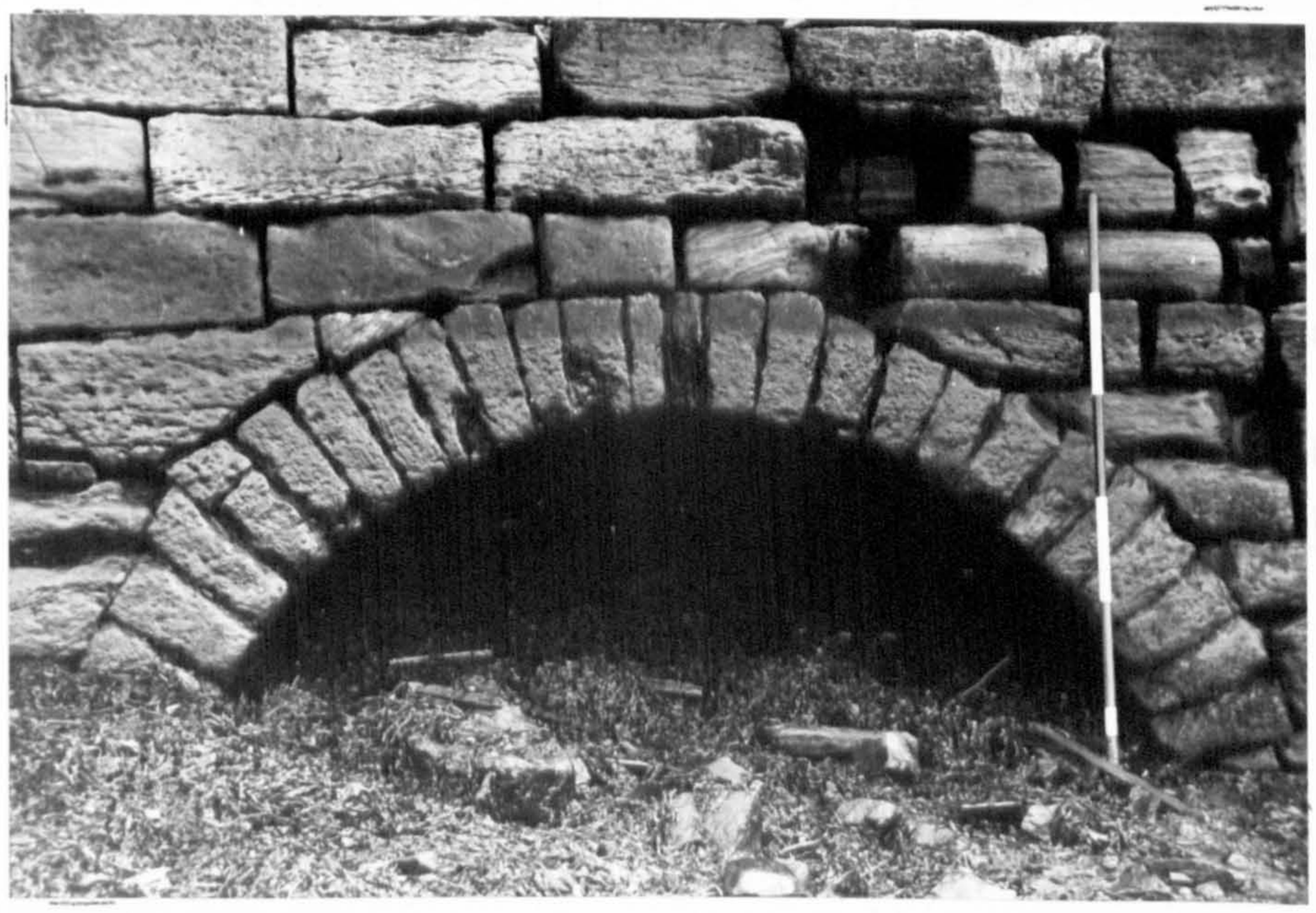


PLATE 4.b

CHARLESTOWN - HARBOUR SLUICE (065834)



"This revitalised them - under the old system they would have been running into debt, I found they were making a great deal of money, indeed much more than I conceived proper or reasonable". From Martinmas 1805 he instituted the practice of taking the tirring into his own hands and contracting the work. Thus it was done more regularly and he was able to use the overburden for plantations - an early example of conservation comparable to the concern of the Dalachy factor for his environment (1).

Annual bargains were made, at first with the quarriers and subsequently with the drawers and slackers. The cost of quarrying was fixed at 20d. per 3 ton wagon and in 1707 the prices fixed for drawers were 3/=6 per 100 bolls (formerly 3/=) and for slackers 1/=2 per Chalder (formerly 1/=1). Tirring was fixed at 1/= per cubic yard and subsistence money was fixed at 20d per day and 2/= if they worked with spirit.

Financial problems were prominent in Landale's mind. Although the prime cost of lime might be kept constant the cost to the consumer depended also on freight rates and these varied with demand, not only for lime but also for coal, and with the availabability of return cargoes (2). In this connection cargoes of butter and oats were brought back for the sutlery and at least one cargo of oats was accepted as part payment of a lime bill. When cargoes were plentiful, captains could be high-handed. Thus James Weir of Stirling "I was rather disappointed by the Master of the Cleveland discharging his last cargo of Shells at Cambus when he had plenty of water to bring up his vessle to this Shore". Debts and dishonesty bedevilled him - "many cargoes are resold upon pretences of leakage, damage and the rest, which we have no opportunity or power to investigate" (3). One year's sales were regularly paid "in the currency of next season", for example, John Ogilvie, the Dundee agent wrote "I think Mr Baird should have paid the last year's lime before taking any more .... I am really vexed that the outstanding debts are not coming

---

(1) Earl of Elgin's papers (Landale's Commonplace book, 1807)

(2) J Robertson, General View of the Agriculture in the Southern Districts of the County of Perth (London 1794), 25

(3) Earl of Elgin's papers (Letter books)

in better. I am constantly writing them" (1).

At the same time there were suspicions of matters at the Charlestown end and Alex White of Stirling complained of a cargo being light and said he has "suspected this for some time". Something of the sort is indicated in the letter of John Rose, factor at Wemyss Castle - "you will please send him (Mr Baird) one of your barrows charging him for it and order the shipmaster to show him how it is filled" (2).

Among Landale's other problems were the annual repair of the kilns and the difficulty of lining them properly, 80000 bricks being needed per annum. A brickworks was set up, but the bricks made there hardly lasted a season. The dumping of rubbish in the sea had resulted in silting and Landale instituted an annual clearing out of the harbour with carts. In addition, the pier was extended and turned west and a sluicing canal was dug from the Lyne Burn to the harbour. An old quarry was used to store the water till low tide when the water was released to wash silt out of the harbour. An iron mill was set up on the Lyne Burn, and Landale also set up a machine to break stone for road metal, although it was pulled down "from the fear of the old men being deprived of work".

He designed a wagon with a drag on all wheels for use in the quarries - "this is the first drag of the kind ever made" - and was involved in the construction of the wagonway (later to become the Elgin Railway) from the collieries to the coast. Visits were made to Newcastle, Sunderland and Derbyshire in order to assess the competition and study and sketch their techniques. Understandably, perhaps, Landale commented that too many days were being lost through Church holidays (3).

The village at Charlestown also absorbed some of Landale's energies and he saw the north street completed and the "covering of the whole of the village with blue Tyle except the houses last tyled with red the old Roofs having been entirely worn out" (4).

---

(1) N L S, MS 9625

(2) N L S, MS 9625

(3) Earl of Elgin's papers (Landale's Rough Book)

(4) Earl of Elgin's papers (Landale's Commonplace Book)

In the southern part of Dunfermline parish the three villages of Pattiesmuir, Limekilns and Charlestown were, respectively, old established country village, old established seafaring village and planned industrial village. These characteristics were brought out in Table 4.A.

Table 4.A

Census Statistics - 1841

	Pattiesmuir	Limekilns	Charlestown
Houses	23	256	150
Males	62	379	380
Females	69	570	392
Total Population	131	949	772
Born in Fife	131	851	730
Sleeping on boats in harbour	-	5	118
Males (15 - 64)	32	169	194
Females (15 - 64)	34	343	201
Leading occupations	Weaver (20)	Merchant	Labourer (agricultural) (42)
	Labourer (agricultural) (11)	Seaman (43)	
		Shipwright (28)	Labourer (limeworks) (41)
	Shipwright (2)	Farm servant (24)	Labourer (common) (28)
		Independent (21)	Ship's Carpenter (21)
		Tailor (10)	Flax Mill Worker (21)
		Sawyer (9)	Independent (19)
		Labourer (agricultural) (9)	Labourer (coal) (18)
			Quarrier (limestone) (11)

(Source - Census Enumerator's Schedules , 1841)

The above statistics do not include the 99 people enumerated at the Earl's home at Broomhall or at Ironmill. Very marked are the differences between the remarkable stability and balance at Pattiesmuir, and Limekilns with its large non-local element and marked deficiency of males of working

age - presumably mostly at sea. Nevertheless, the evidence points to Charlestown having by far the busier harbour with 73 Scots and 45 foreigners in port on census night. The occupations of Limekilns are as one would expect in a small seaport, while the majority of Charlestown's working population were engaged in or about quarries, kilns and harbour. A nearby flax mill at Mid Mill provided the only substantial female employment in either village. Charlestown provided the core of the lime-works' labour force and also provided an outlet for the produce of the surrounding areas. At the same time care was exercised for those at the end of their active lives, as when the Earls' tutors recommended that a new smith replace Colin Johnston, who had become incapable, but that "a house should be built for him on the end of the Wright's house at Charlestown" and that they should "dismiss the said Colin Johnston after being provided"(1).

Central to the village was, and still is, the sutlery, and it is fortunate that the sutlery purchases for 1824 can still be examined. Unfortunately, it has not been possible to discover what the retail prices were or whether the goods purchased were later sold or lay unwanted on the shelves. Assuming that the sutlery manager knew his clientele, a picture can be built up of a community's demands, varied and surprisingly sophisticated. One must wonder whether the customers came from the village only, whether it was a truck shop and whether visiting seamen used purchases. Only negative evidence has been found although at a later date there was a ship-chandler's at the harbour (2). No goods were bought in which would be required specifically by mariners, no ropes, pulleys, shackles, sail canvas or rum; again, no reference was found in correspond-ence and managers' reports to any retail dealings and Landale's activities were so varied that his not mentioning the sutlery must mean he was not involved in its operation. Again, he would have had something to say of the truck system, one imagines, if it had been operating, and operating in such a way as to demoralise the labour force.

---

(1) Earl of Elgin's papers (Sederunts of Tutors of William Robert, Earl of Elgin)

(2) J Geddie, The Fringes of Fife (London 1927), 37

In the course of 1824, then, a great variety of goods passed into the sutlery. Oatmeal, pease meal and pot barley to the value of £864:11/=6¼ provided the bulk of the diet, to this was added over 70 hundredweights of cheese and 65 hundredweights of butter. Other items of food included sugar loaves and molasses, tobacco and snuff, tea and coffee, muscatel raisins, pulled figs, almonds, corianders and carraways. Appropriately in time for Christmas, barley sugar, orange peel, ground ginger and liquorice was bought in, as also were castor oil and flowers of sulphur. 1517 gallons of whisky were bought not counting 289 gallons for the colliery which arrived just in time for New Year (1).

Over 800 gallons of whale oil were purchased, presumably for illumination, as well as tapers, candles, candle moulds and soap. Boiled linseed oil, rape oil, yellow ochre and white paint were for house decoration. A wide variety of cloths and clothing was consumed; 26 dozen pairs of gloves, 144 pairs of shoes, 48 silk hats, 8 gross plain gilt coat buttons, 9 dozen shoe buckles, 30 umbrellas and 4 silk umbrellas give an impression of Sunday finery. 48 watches were purchased, silk stocks and hair stocks besides more workaday garments ("20 pairs of men's cordies"), thread from Mid Mill, silk Triple Cockades, superior Toilinette, cottons, poplins, ribbons, satins, flannel and the inevitable black crape.

No mention is made of beer, although Lord Elgin had a brewery utilising his agricultural rents in Limekilns , paying his brewer, Robert Balmain, a free house, coals and grazing for a cow, 2 pecks of meal and twelve shillings a week. Beer was a part of the men's wages, necessary because of the great heat and dust at the kilns, thus when an experiment was being tried to break the stone smaller and throw out the flint the incentive was

> "instead of 5 shillings and 2 pints of ale for 100 Bolls of shells the men on that kiln to be allowed 2 pints of ale extra. And if any of these 6 Kilns at the end of a month shall one day with another have run 100 bolls of shells per day then the men on that kiln to be allowed 20 shillings Sterling extra at the end of the month" (2)

The great interest of Charlestown lies in two respects. It occupied a key role at the centre of most of the developments of late eighteenth and early nineteenth century Scotland, contributing lime to the improvement of the Carse of Gourie and Strathmore, Aberdeenshire and - via the

---

(1) Earl of Elgin's papers (Sutlery records, 1823-27)

(2) Earl of Elgin's papers (Instructions to kiln men)

Caledonian Canal - the Great Glen (1). By the Forth and Clyde Canal coal was shipped to Paisley and Greenock and by return came iron products from Glasgow. Timber from Tynninghame, paper from mills in Aberdeen, bars, wheels and rails from Carron (2), iron windows, balusters and a pedestal pump from Shotts Iron Works, wagon rails from John Anderson's Leith Walk Foundry (3), the lime enterprise touched on and was touched by most of the vital aspects of the Scots economy.

Thanks to the continuity of ownership and interest of successive Earls of Elgin there is still to be observed at Charlestown a very fine assemblage of visible remains of a major industrial enterprise. Most impressive is undoubtedly the Gellet Rock, a cube of limestone 60 feet high whose top surface represents the original land surface of the hundreds of acres around which have been quarried and are now forested by the trees planted by Landale. Large extents of quarry face are exposed, with areas which have been mined with stoop and room methods. Wagonway vestiges, ramps and cuttings lead down to harbour and kiln heads and at the harbour there remains the great range of nine massive kilns, with evidence of the Elgin Railway and the loading machinery for the coal export trade. In the older part of the harbour is still the arch used as part of the sluicing arrangement and on either side is the ballast bank formed when incoming light vessels cleared out their holds prior to loading with coal or lime (4). The salt pans have disappeared and we have no means of knowing whether James Landers of Craigrie was successful in using the waste heat for "making Salt, upon the top of Lime Kills" (5) but the finest memorial is probably the village itself, the neat little rows, usually improved without destroying amenity, the patches of garden ground, the bleaching green, sutlery, stores, Hygienic Steam Laundry and school for 215; all forming a remarkable coherent reminder of the hectic summer days when all energies in the village would be turned to keeping the vessels moving along the east coast.

---

(1) N L S, MS 5319, MS 9625

(2) Bruce-Jones papers, Camsie House

(3) N L S, MS 9626

(4) G H Ballantyne, ' Ballast Aliens in South Fife 1820-1919', Trans. Bot. Soc, Edin, v 41 (1971), 125-137

(5) N L S, MS 9625

CHAPTER 5

Coal Mining

The topic of coal mining is one that has generated a great deal of writing, at technical, national and regional level. An overall view of the social and industrial history before 1815 is given by Duckham (1), Goodwin (2), traces the factors underlying the changing distribution of pits in the mining landscape, from Durland (3) and Holman (4) we have glimpses of working and leisure activities among the mining community. Muir (5) and Cunningham (6) provide the details of company developments. Chapters 1 and 2 outlined the special nature of the ways in which coal-mining developed in Fife, the great emphasis on exports, the integration of small estates, colliery, wagonway, harbour and ancillary industries using small coal, the concentration on the production of great coal, the minimal influence of the iron industry. In this chapter, it is proposed to look at some of the issues that emerge from this general consideration, in the expectation that some fuller understanding will be obtained of certain aspects, at least, of a vast subject.

Drainage

In Chapter 2 it was established that, at the close of the eighteenth century, coal mining had reached a hiatus. Seams easily accessible from the surface were approaching exhaustion and the lowering of the water table consequent on the driving of day-levels, although giving workings an extra lease of life, was also coming towards the limits of effectiveness of the method. At the time the means of drainage available were day-level, horse gin, water wheel or pump, windmill and steam engine. For environmental reasons drainage by water and

---

(1) B F Duckham, A History of the Scottish Coal Industry, Volume 1 1700-1815, (Newton Abbot, 1970)

(2) R Goodwin, 'Some physical and social factors in the evolution of a mining landscape', Scot. Geog. Mag. v 75 (1959), 3 - 17

(3) K Durland, Among the Fife Miners (London 1904)

(4) R Holman, Character studies of the miners of West Fife (Dunfermline 1909); R Holman, Behind the Diamond Panes (Cowdenbeath 1952)

(5) A Muir, The Fife Coal Company Limited, a short history (Leven 1953)

(6) A S Cunningham Mining in the "Kingdom" of Fife, (2nd edition, Dunfermline 1913); A S Cunningham, The Fife Coal Company Limited, (Leven 1922)

wind were restricted and at the turn of the century the main forms of drainage were the day-level, by itself or as an outlet for the other two, the horse gin and the steam engine (1).

Duckham has pointed out the very great problems associated with any attempt to arrive at any figure for the total cost of draining the Scottish coalfields, particularly the difficulties implied in any assessment of the cost of gin and adit systems. Because of their comparative novelty and conspicuousness, steam engines attracted notice and it was possible for Duckham to arrive at a figure of 17 or 18 of these for Fife (including the three at that time in Perthshire, in Culross and Tulliallan) in 1800 (2). Accepting his figure of £1300 per engine, covering both pumps and engine house, an investment of £23000 in drainage by steam engine for the county becomes reasonable.

Of the three modes of drainage the horse gin was indubitably the cheapest and least permanent. In cost it might range from £52, for a gin 20 feet in diameter with ropes to go to a depth of 30 fathoms, to £78 for a 26-foot gin to go to 40 fathoms. A "water machine .... for drawing the water" by comparison might cost £250 (3). Because of the flexibility of the horse gin it is almost impossible to arrive at any figure for its numbers. The use of "gin" as a place-name is not particularly helpful as the gin pit remained in use at some of the smaller enterprises until late in the nineteenth century. Goodwin's seven known gin-pits in the eastern part of the coalfield almost certainly greatly under-represents this form of drainage (4). With water engines we are on stronger ground because their permanence increased their chances of being recorded (5) - sometimes even by the non-specialist traveller. Along the Leven there were four, there was one on the Durie Burn (6) and another at Kincardine (7), giving a possible figure of £1500 for water power.

---

(1) S R O, GD 172/874

(2) Duckham, Scottish Coal Industry, 85-87

(3) S R O, GD 26/V/352

(4) Goodwin, Mining Landscape, 12, 13

(5) Anon, Notes of a tour through the shires of Fife, Forfar, Perth and Stirling in 1800 (private circulation 1898), 8

(6) S R O, RHP 615

(7) S R O, RHP 853

Although almost completely hidden from view the day-level represented a considerable investment; thus it was discussed between the Earl of Moray, Mr Wemyss and Sir Robert Henderson of Fordell that the Fordell day level might be extended to drain the workings of the first two, Sir Robert to be paid 1500 guineas (1). This was to have been paid in three equal instalments when, respectively, the old level reached the Earl's Splint Coal, the deep level reached the Wemyss mark, and the deep level reached Lord Moray's property. For Henderson, his level was an existing facility which could be made to serve other proprietors, saving them the need for considerable engineering works and giving him a useful return. The cost of construction of a day-level would vary with regard to a number of factors intrinsic to the work, particularly its cross-sectional area, the amount of lining undertaken and the hardness of the rock. Depth below the surface was also important as many day-levels were constructed by working out from shafts sunk vertically from the surface. The driving of a day-level was usually carried out by a gang of "six good and sufficient miners" paid by the yard or fathom (2). Thus in 1773 Alexander Anderson and partners drove four yards of the Pitfirrane Day Level for £7 while Janet Burns carried away the broken stone for 6/= (3). In the absence of further evidence of the kind an initial cost of £3000 per mile might be a reasonable approximation. This takes no account of the expense involved in sinking the vertical shafts.

Henry Bethune, in 1790, requested Henry Renwick to examine and report on his coal at Cassingry and Belliston, where an existing level drained the Belliston coal to a depth of 10 fathoms. Bethune proposed driving a second level from 400 yards downhill of the existing one, which would reach the Belliston coal at a depth of 20 fathoms. His estimate for workmanship and timber was £1000 for "nigh one English mile", a steam engine of 10-inch bore to empty the lower level into the upper would cost £500 - £600. This latter figure is only about half of

---

(1) S R O, GD 172/833

(2) S R O, GD 172/851

(3) Bruce - Jones papers, Camsie House

the cost generally allotted to a pumping engine at the period (1) and raises doubts as to the accuracy of Renwick's figures. Renwick may have been totally unreliable, his estimates may have been consistently about half of the actual cost or, which is least likely, he may have had knowledge of an engine cheaper than those whose cost is known to us. Nevertheless, his estimate of the cost of driving a mile of day-level is of the same order of magnitude as that at Pitfirrane and gives some sort of basis for calculation. (2)

The length of some of the longer day-levels is known; although these were dug through different rocks, at different periods and sometimes to varying standards this does provide an approximate measure of the underground drainage involved. From east to west lengths are given in hundreds of yards - Pittenweem (8), Kilmux (7), Methil (12), Dysart (44), Kirkcaldy (22), Fordell (97), Halbeath (26), Urquhart (24), Pitfirrane (54), giving a total of 29400 yards or, approximately, 17 miles.

Although there can be nothing approaching certainty, this mileage probably represents well over half of the total day-level mileage in the county since the areas unrepresented in which there were day-levels of unknown length are in the minority - the dens of east Fife, the Leven, the coast between Methil and Dysart, the area west of Dunfermline. If we assume a minimum number of 40 horse gins - almost certainly a gross underestimate - then we have the following very tentative estimate of the total investment in drainage.

Table 5.A

Estimated investment in drainage, 1800

Steam engine	£23000		
Water engine	1500		
Horse gin	2400		
Day-level	17000 (a)	34000 (b)	51000 (c)
Total(s)	£43900	£60900	£77900

(a) Renwick's estimate

(b) Based on assumption that Renwick underestimated

(c) Pitfirrane figure

---

(1) Duckham, Scottish Coal Industry, 86

(2) S R O, GD 203/11/40

While it is recognised that these figures are very approximate indeed, as a result of our very fragmentary and very limited information; nevertheless, they do indicate, at the very least, something of the scale of investment in mining drainage - around 1800 the most crucial factor limiting the exploitation of Fife's admittedly rich coal resources. While a great deal of further investigation would be required to bring greater certainty to the figures, it is worthy of note that the figure for steam engine investment was spread over 20 years at the very most while that for the driving of day-levels represents at least a century of activity. In this sense, therefore, crude though they may be, the figures do point to an acceleration in drainage investment consistent with the impressionistic view obtained from the reading of contemporary writers.

Social and Working Conditions

Bald's account of the hardships pertaining to the use of women bearers (1), quoted in Chapter 2, has become a classic, as have certain fragments of evidence from the 1842 Royal Commission. Nevertheless, Bald's description is not firmly located and it seems legitimate to question whether his bearers were the heaviest worked of many similar or merely a spectacular minority. Again, the Mines Commissioners were severe in their criticism of the employment of women and children - "In Scotland the employment of girls and women in the ordinary underground work of the coal pits is even more extensive than in any part of England; but this practice is confined chiefly to the Collieries in the East of Scotland" (2); "the hardships endured by the Young People in the pits in the East of Scotland are such as to preclude the idea of any especial care of them on the part of the employer" (3), but a closer examination is necessary to see whether conditions were uniform on a regional scale and within the county.

Table 5.B indicates the numbers employed in the mines of eastern Scotland, as stated in the 1842 Report. In terms of total employment Fife was almost exactly equal to Mid- and East Lothian combined (2777) and

---

(1) R Bald, A General View of the coal trade of Scotland (Edinburgh 1808) 128-145

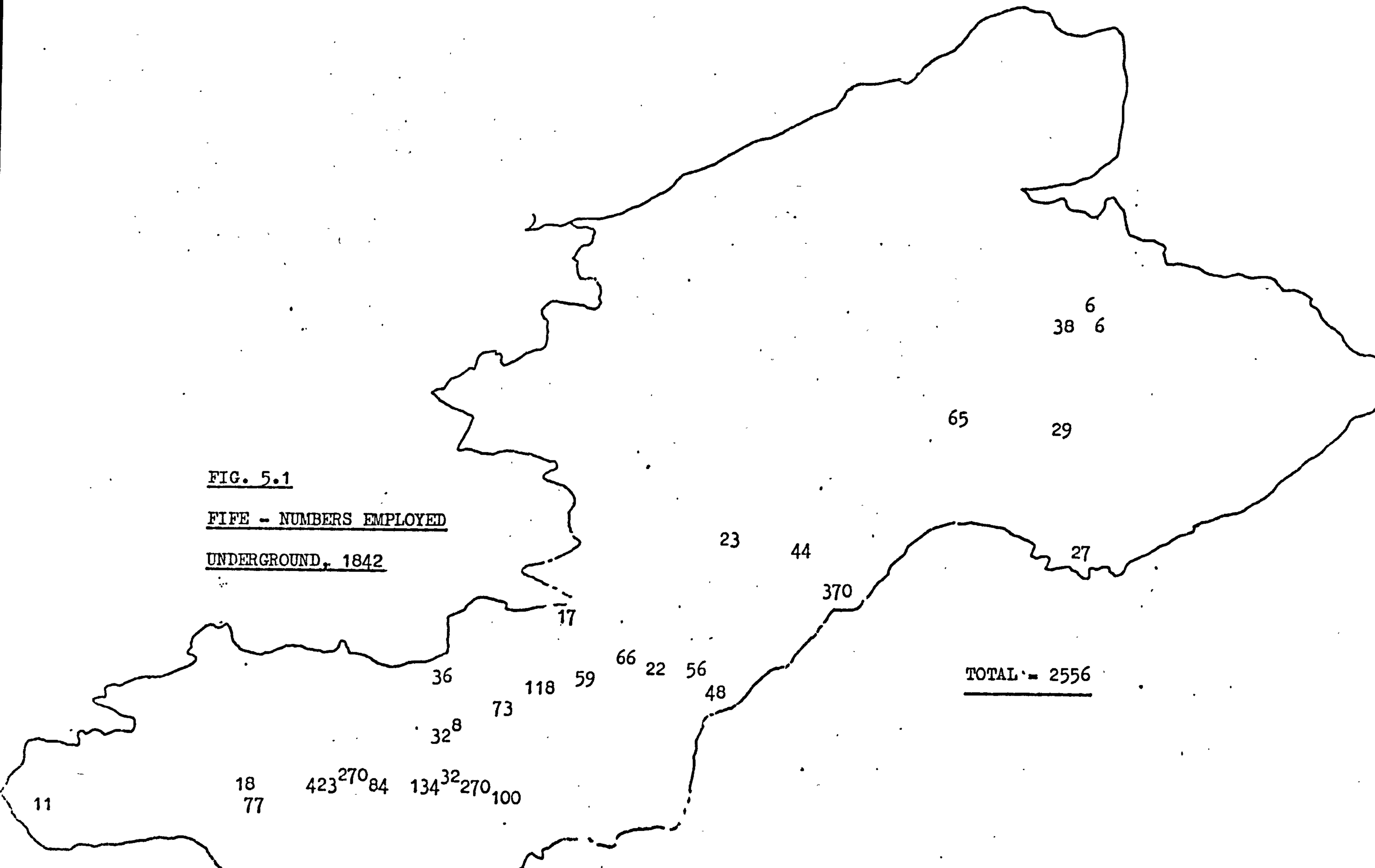
(2) 'Children's Employment Commission. First Report of the Commissioners (Mines)' (Parliamentary papers, 1842, XV) 28-29

(3) Ibid, 133

FIG. 5.1

FIFE - NUMBERS EMPLOYED

UNDERGROUND, 1842



TOTAL = 2556

comparable in total to the three Lothian counties, yet fewer women were employed than in Midlothian alone. When the four counties are considered separately, Midlothian had women making up 29% of the mining labour force, East Lothian had 33%, West Lothian 24% and Fife 20% (1).

In the employment of persons below the age of thirteen Fife had a significantly lower proportion than either of East or West Lothian and had 1% fewer than Midlothian. From the table it is clear, then, that the four eastern counties had substantial numbers of women and children at work in collieries and that while Fife had a smaller proportion of women and children than the Lothians, the proportion of the two vulnerable groups at work there was still substantial.

Table 5.B

Employment in Mines, East Scotland, 1842

	Fife	Lothians
Males	2238	2451
Females	543	977
Females (%)	20	29
Children under 13	223	375
Children under 13 (%)	8	11
Total miners	2781	3428

(Source:- Children's Employment Commission. Appendix to First Report of Commissioners (Mines) (Parliamentary Papers, 1842, XVI) 379-381)

Fig. 5.1 shows the distribution of miners in 1842 and at once it becomes apparent that there were vast differences in the scale of enterprises, from the Earl of Elgin's 423, the 370 of Captain Wemyss, and the 270 at Wellwood and Fordell, to the 8 at Beath and 6 at Winthank and Greigston (2). Between the different enterprises were considerable differences in working conditions and social provision as well as in scale, in fact, rather than uniformity, the overall impression is that of considerable variety.

Elgin Colliery was representative of the larger unit with 420, 105 of

---

(1) 'Children's Employment Commission. Appendix to First Report of Commissioners (Mines) (Parliamentary Papers, 1842, XVI), 379-381

(2) Ibid, 381

whom were female, working below ground. The youngest children were nine years old, the girls working as putters and the boys as hewers. Thomas Morris (10) was learning to hew coal with his father and worked from 3.00 am till 1.00 or 2.00 pm, although the manager's account of the working day was of two shifts from 4.00 am to 12 noon or 2.00 pm and from 12 noon to 8.00 pm or 10.00 pm, each with a half hour break for porridge. At Elgin some children were trappers but most girls were putters, helping to move the corves of 4 - 5 hundredweights for a distance of 100 - 150 yards along railed roads 5 feet high. The colliers descended and ascended in cages, unlike Donibristle where Helen Bowman was fatally injured in a fall from near the top of the shaft as she was being dragged up on the rope (1).

Attached to the colliery was a school with two teachers, endowed with free houses and coal, and maintained by a contribution of 1d weekly from each person receiving full men's wages, plus 1d per week for any child attending evening school and 1½d per week for the instruction of every child aged between 5 and 10. During the day 230 attended on an average, with 50 in the evening. The Earl of Elgin paid doctor's fees, the miners contributing 2d weekly to the sick fund.

The school was considered the best-conducted colliery school in the East of Scotland and was credited with a considerable influence. "Education has wrought in this colliery the most beneficial changes; 25 years since the conduct of the collier people here was of that nature that few persons thought themselves safe near the spot after dusk, now a more sober set of workmen are not to be found in Scotland". Despite this, few females attended the school "as they employ themselves in tambouring, and parents have an objection to the over-instruction of girls (as they term it)". Elgin Colliery was a good colliery; as Isabella Burt said "the work is sore for females but not so much here as at others, the hours being much shorter, and we have more time for sewing". The sewing money was used to buy new dresses - one hears the note of disapproval in John Weir's "girls are very fond of showy clothing here" (2).

---

(1) Ibid, 496-498, 503

(2) Ibid, 497-498

Colliers were often paid for the coal they deposited at the pit-bottom or on the coal-hill and the employment of women and children is to be thought of in the context of the family labour team, with father and elder sons hewing the coal, younger sons assisting with hewing and drawing so that their share might be added to the family earnings and the unmarried daughters moving the coal to the pit-bottom. By 1842 there seem to have been few instances, in Fife, of married women working below ground and, indeed, specific mention is often made of the undesirability of their being allowed to work in the mines. As regards the children and girls, the pressure to employ them came from the miners but proprietors, managers and lessees appear to have acquiesced in the custom, with but few exceptions. Thus, at Dunnikier "the young people are under their natural guardians, and we never interfere with them; it would be desirable not to allow children to go below before 10 years of age" (1). At Tough "many young children are taken into the mines as soon as they can lift coal, which practice ought to be discontinued".

Janet Neilson was at service but left her place as her father persuaded her to go below; she much preferred being in service but she supposed her father needed her assistance (2). At Halbeath the masters exercised "no control over parents in the labour of their children; they have been accustomed to take them down when they needed them, and they do so now". Here there was a labour surplus and so the women worked day about, knitting stockings on the "free" days. The high mortality rate among both men and women created special problems on occasion. Helen Spowart would have liked other work "but canna gang as my step-mother would be put out of the house". Mary Morgan worked with her two sisters on her mother's account, who presumably had her former husband's daily output allotted to her(3).

Although 10 was the usual age of entry to underground work this was by no means universal. At Fordell girls began to "draw with the chain" from the age of 6 and between 6 and 12 worked from 6.00 pm to 6.00 am pumping and carrying water (4). At Crossgates colliers often started

---

(1) Ibid, 507

(2) Ibid, 506

(3) Ibid, 500

(4) Ibid, 501

boys before nine years old "as they appear to render good assistance" (1). Even when 10 was the normal age of entry for mining work children might be taken early if their parents were destitute. Women in Wemyss carried coal on their backs till 1840, when it was forbidden - "small hutchies could have been used, but it was cheaper to carry" - and by a rule of the colliery no boy should have been taken below until he was 10 years old, nevertheless "on special occasions this rule is relaxed by the men themselves, to meet the wishes of men with large families, or to assist the widow of a collier" (2).

However, nothing like all the women were working for the heads of their families. At Donibristle the men contracted to do their own putting and they in turn employed those who were able to do the work most quickly. In such a competitive arrangement pressures were understandably great - "we are sorely worked by contractors, but obliged to do so, as work is uncertain hereabouts" (3). Within one enterprise there could be a variety of arrangements. At Wemyss Janet Welch worked "on the master's account", receiving 1/= per day with which she was well content since she did not like contract work "as the work is made o'ersair". Also at Wemyss Elizabeth Litster worked 12 hours a day for a contractor, making 14 races before porridge-time, each race being 600 yards from an incline to the pit-bottom, 14 or 15 races between porridge time and the time they took their pieces of bread and 14 - 16 races afterwards. For this she received 1/=3 per day but was only employed for 9, or occasionally 10 days in the fortnight. Elizabeth formerly worked on day's wages for Captain Wemyss, when she was not so hard worked. The contractors drove the girls harder "for they do the work cheap". One result of this was that many girls had left to work in the fields. Isabel Hugh, also at Wemyss, was a self-employed putter who liked the work well enough - "it is guid sair sweating work". She and Janet Adamson took on a putting contract for a road 200 yards long. She seldom worked less than 12 to 14 hours, and the pair frequently ran 50 races between them, being paid 14d per score, plus 1/= per week for "clearing the pit-bottom and working the pump" (4).

---

(1) Ibid, 502

(2) Ibid, 509

(3) Ibid, 502-503

(4) Ibid, 509-510

In addition to the arrangements outlined above, there were collieries where no women and children were employed below ground. Such a place was Clunie, where the manager, Alexander Goodall, saw this as a means of breaking down the colliers' traditional insularity and inferiority - "I consider the keeping of females out of the mines one of the most important points towards the improvement of the collier population, as it forces them to self dependence, and as they are obliged to send their daughters into the fields, or to service, so they are compelled to seek wives from other trades than their own". Unlike so many in his situation Goodall carried his wishes into action and one of his collier's wives provides a cosy domestic note in the Report. Mrs Blair was a miller's daughter and her daughter was married to a miller. Collier's wives are usually castigated for "incapacity for managing household affairs", but Mrs Blair was not of that breed - "when they are working they require good wholesome food sent down. I have five sons working with my man and they have porridge and meat sent down and get it as regular as when at home"(1).

In other collieries, however, it was for practical reasons that women were not required. The Dysart Main Seam is 22 feet thick and at Dysart the coal was quarried out and hauled to the pit-bottom on main roads laid with iron rails, the lowest horseway being six feet high. At Balbirnie the same coal was handled by horses, the horse-boys being at least 11 years old (2). In the east of Fife, at Largoward, the men hauled their own coal to the pit-bottom. Although the work was hard - a 2½ hundredweight cart was drawn with rope and chain along a 3 foot unrailed road - the main limiting factor to developing output was gas. At Drumcarro also there was no female labour. Again this was a gassy pit with many interruptions, and it is possible that the practice of the hewer's putting his own coal developed from the difficulty of spending continuous periods at the coal face (3).

Without question the work done by women and children in the mines was

---

(1) Ibid, 503-504

(2) Ibid, 510

(3) Ibid, 510 - 512

laborious and unpleasant; in many cases they would be bound to it - not by the formal ties of the eighteenth century - but by the ties of family, by ignorance of any other possible way of life and by the suspicion with which the collier population was regarded by potential employers outside the mining community. Janet Neilson regretted the change from service to work underground (1); admittedly unattractive, had the collier's life anything to recommend it?

As we have seen, many of the Wemyss girls left the colliery and went to work in the fields when they were driven too hard (2). The minister of Auchterderran clearly thought that, so far as non-material factors were concerned, agriculture was a better activity in which to be engaged - "young persons employed in agriculture are in better condition than those employed in the coal-mines; the former being more cared for by their parents, and the farmers in whose service they are" (3). Andrew Ferres first began to work at Drumcarro when he was 14, before that having been a farm servant. He found farm service preferable but was only paid 4/=1 a year out of which he had to clothe himself. When his father became afflicted with "bad breath" (dust in the lungs), he had to become the wage earner for his three sisters and brother, who became a trapper at 12. When he was 17, Ferres was earning 2/=6 to 3/= a day and working, on average, eight days a fortnight. Although the two rates of pay are three years apart, the earnings scales are so markedly different that Ferres could have had no option but to turn to work in the colliery (4).

For the young woman factory work was a possibility. Elizabeth Duncan was 11 when questioned and had been working at Dunnikier for two months. She did not like it "but father taks the lassies wi' him". She had worked at a spinning-mill for a month but had been discharged as being too young for the work. Having sampled both occupations, and with a sister still at the mill, she "liked the mill-work best, as do most lassies" (5). On the other hand, Helen Weir (16) was a putter at the Elgin Colliery and had worked for three years in a factory and four in the mines. She left

---

(1) Ibid, 506
(2) Ibid, 510
(3) Ibid, 505
(4) Ibid, 512
(5) Ibid, 507

the factory work "as the stour made me hoarse, and my legs swelled with the long standing". Her sister worked below with her and had also tried working in the mill, to leave for the same reason. At the pit they worked 8 and 9 hours daily for 10 to 11 days in the fortnight, getting paid 1/=2 per day, out of which they had to pay their oil and cotton, costing 2d; "but the factory masters made us work the whole 12 and paid us 11d a day". For Helen Weir conditions underground were preferable to those in the mill; at the same time, while the cash rewards of the two jobs were almost equal, the shorter working day at the colliery gave her the opportunity to add to her income by knitting or tambouring (1).

In summing up, it is apparent that the generalised view gained from the statistics examined in Table 5.B is one which must be qualified to give a mosaic of separate practices. Examples were present of relatively enlightened means by which the problems of haulage and drainage could be overcome without the necessity of relying on the limited muscle power of women and young children. The underground use of horses, as at Dysart, Wellwood and Fordell, could be extended, above all the steam engine could be adapted to serve the larger pits. Given the desirability of the exclusion of young children and women from below ground the attitude of Hopper, manager of Dunfermline Coal Company - "I do not think children can be done without" (2) - had to become that of Thomas Goodall, manager of Capledrae - "I have not the slightest doubt but that the employment of some very simple machines might entirely supersede the necessity of employing them, although I have not turned my attention sufficiently to be able to give any definite plan". (3)

At Fordell in 1795 the average value of coal sold from three gin pits was £2327 and from three bearing pits £605, substantiating the qualitative view that pits in which human labour was employed were smaller than those with some addition of mechanisation (4). The proscription of women and young children had the effect of making coal owners and lessees look

---

(1) Ibid, 497-498

(2) Ibid, 499

(3) Ibid, 505

(4) Duckham, Scottish Coal Industry, 99; S R O GD 172/835/2

more closely at their enterprises and compelling them to invest or close down.

The survival of human porterage in the east of Scotland is linked with the trade in great coal and with the seemingly illogical need to preserve at great expense the large blocks of coal too large to burn in any domestic hearth. The extravagant precautions undertaken were, in all probability, due to two causes, the almost unsaleable nature of small coal and the need to assure the customer that there had been no adulteration of the coal delivered to him. With the passage of the nineteenth century, improvements in the design of hearths and stoves meant that a wider range of coals could be burnt, industrial markets could be found for small coal and better commercial organisation, involving coal company, coal shippers and coal merchants, could guarantee continuity in the supply of any particular grade of coal. Although Fordell continued to keep a separate stock of great coal till 1875 at least (1) and Lord Elgin received complaints about the mixture of small some of his customers were receiving (2), it is true to say that the need for the involvement of women and children underground was not pressing after 1842. All the technical ability to cope without them was available; it only required the application and the capital to achieve this.

Late Nineteenth Century Development

Earlier it was established (3) that mining in Fife grew slowly until the high prices of 1872-73, after that time growing at an exponential rate until 1914. That much of the nineteenth century was spent in stagnation - relative to the western areas of Scotland and to many of the English coalfields - was due to a number of factors. Industrialisation within the county was slow - the iron industry had but a tenuous hold while the

---

(1) S R O, CD 172/924

(2) N L S, MS 9629, MS 9630

(3) Vide supra, Chapter 1

linen industry was very late in mechanising the weaving sector of its operations - and overland movement of coal and coal products was made difficult by the ferry barriers. Much of the output was shipped coastwise, thus the Earl of Elgin had his coal wharf at Leith and in addition supplied Edinburgh gasworks and breweries, as the Edinburgh and Leith Glass Works (1). While there was a vast amount of lore and experience gained in the working of shallow coals over the centuries there was no knowledge of the valuable coals to be found at great depth in the Cowdenbeath-Auchterderran area. Above all, there was a lack of specialised managerial thinking; until well into the second half of the century the basic production unit was still the small estate with its restricted mineral rights exploited for the uncomplicated export market by the laird's manager or lessee. Henrietta Keddie's father was illustrative of the less able entrepreneur. A lawyer, he "turned instinctively to mining .... at the same time he had no practical knowledge to fall back upon. He had never been down a coal pit in his life, and he had made no scientific study of the subject" (2). Keddie's father was an underground manager at Wemyss and he superintended the work at Elie while the lessee "only went down to the coast once a week to look into matters and pay the colliers' wages", except in summer when the whole family moved to enjoy the sea-bathing (3). Keddie's involvement only brought about financial entanglement; after his death his son took over the lease of Grange and became bankrupt (4). Keddie may have been more of a dilettante than most of those engaged in the industry, but the problems he encountered - faults and water - could only be surmounted by strong financial backing and for this, and for access to large areas of coalfield, only the largest coalowners and coal companies were able to acquire the capital. Certain developments went hand-in-hand, the formation of large coal companies, with their policy of amalgamations, new sinkings and closures of old collieries, the construction of railways and docks geared to export (5), and the increasing world-wide demand for coal for railways, ships' bunkers and

---

(1) N L S, MS 9626, MS 9627

(2) H Keddie, Three Generations, (London 1911), 100

(3) Ibid, 66, 102

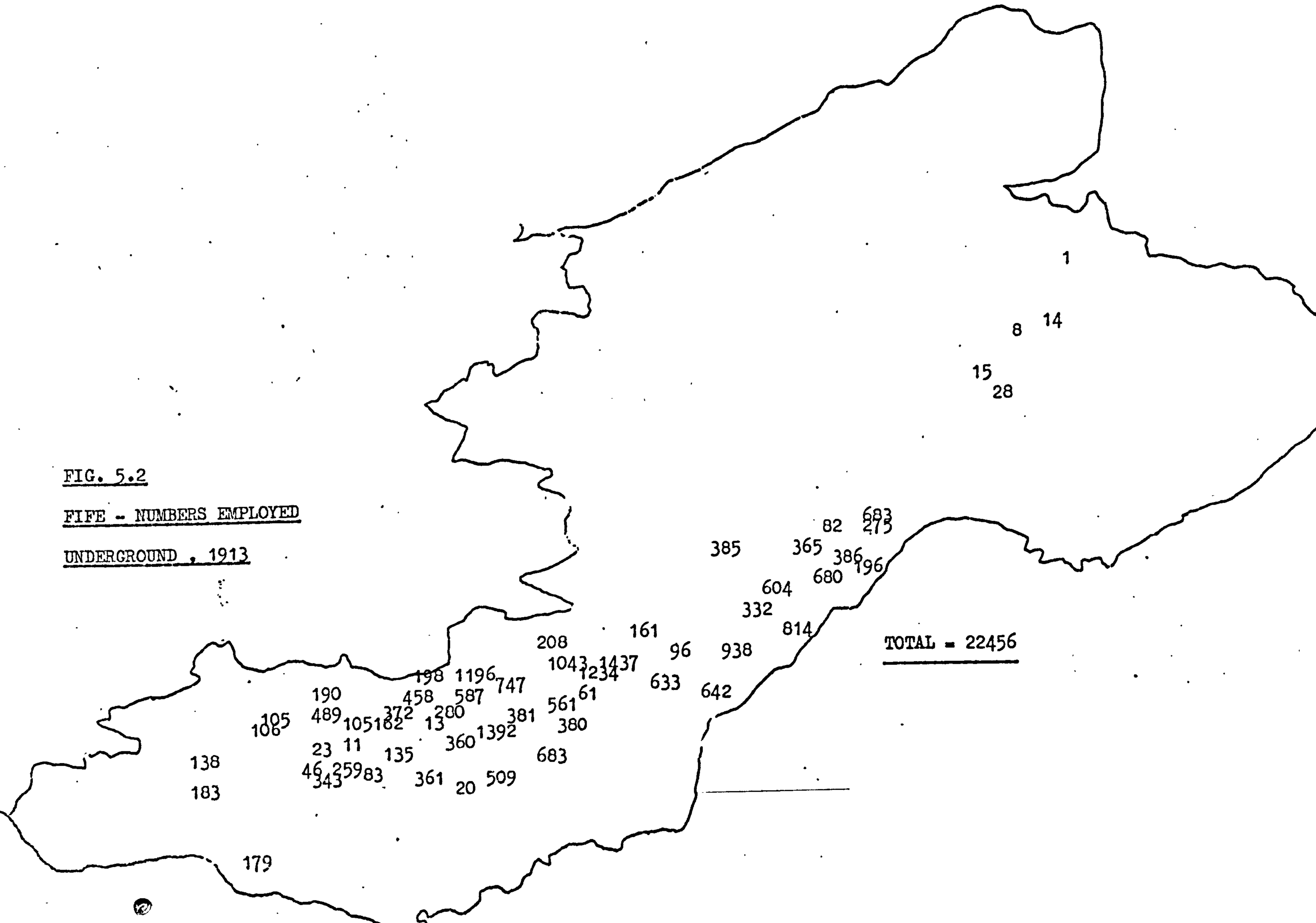
(4) Ibid, 258

(5) Vide infra, Chapters 8 and 9

FIG. 5.2

FIFE - NUMBERS EMPLOYED

UNDERGROUND , 1913



industrialisation. Technical progress in the county was marked; in 1839 the Elgin Wallsend Pit was the deepest in Scotland at 105 fathoms (1) whereas the Mary shaft begun in 1902 went down to more than 2000 feet (2). In 1842, 420 worked below ground at the Elgin Colliery (3), the Fife Coal Company's Bowhill Colliery had 1437 below ground (4). Donibristle, sunk 1833, cost £10000 to £15000 while one of the Wemyss pits cost £320000 to sink in 1913 (5).

Fig. 5.1 showed the numbers engaged below ground and locations of pits in 1842, Fig. 5.2 shows the corresponding picture for 1913. As well as the almost ten-fold increase in numbers the latter year shows quite clearly the shift in the centre of gravity of the industry, from the Fordell-Dunfermline area to the area around Lochore.

While the general picture is clear, it would be of advantage to follow through the establishment of one colliery in order to see how the various elements in its successful operation - management, labour, capital equipment, transport and marketing - were assembled. One of the smaller enterprises to be set going was the Fifeshire Main Collieries Ltd of Kinneddar and Blair (0291), formed in April 1891. It became Oakley Collieries Ltd on running into difficulties in 1895 and in turn passed to the Fife Coal Company Ltd in 1925, the mines being closed in 1933 (6).

The first task the new company undertook was the appointment of a consulting engineer and a colliery manager. For the former, F H Cheesewright was appointed at an annual salary of £300 plus all railway expenses. Robert Calderwood, with over twenty years experience in colliery management in England and Scotland and considerable experience in the manufacture of bricks, was appointed colliery manager with a salary of £350 guaranteed for two years. After advertising for tenders for the supply of pithead gear the next step

---

(1) N S A, v 9, 831

(2) Muir, Fife Coal Company, 16-17

(3) Parliamentary Papers, 1842, XVI, 496

(4) Muir, Fife Coal Company, 16 - 17

(5) Cunningham, Mining in Fife, 69-70

(6) Muir, Fife Coal Company, 125; Smith, County of Fife, 391

was to reach agreement with the North British for the provision of a rail link to the Stirling - Dunfermline line at Oakley Station, 2¾ miles away (1).

The company undertook to sink at least three pits, including one already sunk and a second in course of being sunk. Apart from local consumption the whole output was to go via the North British, and the company undertook not to support any other railway scheme in the district which might prove inimical to the interests of the North British for ten years after the completion of the branch railway. The cost of the railway was not to exceed £12000 and the rent to be 5% of the cost if nett freight rates failed to achieve this.

By August 1891 negotiations with the railway had been finalised, and the company could turn to the question of selling the small quantities of coal produced initially in such a way as to ensure later demand. In September the contract was placed for sinking an air shaft at Pit No. 1 for £50 and for sinking Shaft No. 2 to 37 fathoms at £21 per fathom in six months' time, with a bonus of £100 per month for earlier completion.

At this stage No. 1 was working in a 5-foot seam of very good quality. It had not been expected to be of much value but turned out to be of good quality and it was also anticipated that a good deal could be made from briquettes, using blaes from fireclay, which had not been reckoned on. By November 1891 everything was progressing satisfactorily, with the exception of the railway. 2500 tons were in stock, at a pithead cost of 7/=3 per ton and the coal was being sold as a rough steam coal to factories, mills and breweries in such places at Dundee, Hawick and Galashiels. An account worth £500 per annum had been obtained from an Edinburgh brewery.

In 1892 60 cottages at Oakley were acquired and put into habitable condition at a cost of about £1000. As Middleton Lewis, the chairman said "I need not tell you how important it is to have our workmen confortably housed in close proximity to their work. By this means

---

(1) S R O, GD 58/25 (Minute Book, Fife Collieries, 1891-95)

only can regular work at the colliery be ensured". In May a clerk was taken on for an Edinburgh office at £45, and in June 50 waggons of 8 tons, built to North British specification, were delivered by the British Wagon Co at a cost for each of £9:11/=3 per annum for seven years.

Before the railway was opened, coal was carted at great expense in order to make the colliery known: in June 1892 almost 39 tons were carted and in July 44 tons before the railway was opened and 687 tons moved by rail before the end of the month.

In October No. 2 Shaft - well behind time - had reached 40 fathoms, three deeper than at first allowed for. The shaft revealed, however, that the strata dipped at a gradient of 1 in 5 and another 35 to 40 fathoms of depth would be necessary. As a result, the pithead gear and buildings able to handle 500 to 600 tons per day were built well in advance of any production from the main supplier of the enterprise. At 41 fathoms in No. 2 a coarse spongy rock 30 feet thick was bored into, yielding a very large amount of water which quite outran the pump's capacity and an ancillary engine had to be installed.

In 1893 another 58 houses were obtained at a rental of £50 per annum but on this occasion repairs were deferred. A great deal of capital had been laid out and more would still be required before any substantial returns could be made, but the chairman was in no two minds about pressing forward - "Gentlemen, we are not going to let the grass grow under our feet. Having had a long experience of colliery enterprises I know that leases are none too long and if we do not push on with the work of development we might just as well leave it alone".

By March 1894 60 - 80 tons per day were coming out of No. 2 although it could only be worked under special regulations until No. 3 was completed. Nevertheless, the latter was going well, being sunk to 40 fathoms and with another 12 to go. The coal from No. 1 was soft and only suitable for bunker purposes but No. 2 was harder and fetched a better price when shipped as a cargo coal. In November an additional salesman was appointed, and the managing director and a few of his friends contemplated setting up a brickworks near the colliery to make

50000 bricks a week from the fireclay, involving an outlay of £5000 and £2000 for working capital.

In December 1894 problems were encountered in the lower seam of 1892. The blaes forming the roof were so broken as to make longwall working difficult and stoop and room was resorted to. 1895 was a difficult year which saw the company going under. In 1894 a strike in England had meant a boom for Scottish collieries but a shortage of wagons meant that Kinneddar missed that opportunity; over 3000 tons of first quality Oakley steam coal sat in the bings, unsold. Over £1500 was required to complete the miners' houses and add to the plant. No. 2 could not be worked properly till No. 3 was complete - in March it had reached 65 fathoms and on 31 May it went on fire causing damage to the shaft framing and headgear costing £400 - £500 and a month's work to make good. June saw the beginning of a four month strike and on 7 June it was revealed that the company had assets amounting to only a quarter of the liabilities (1).

Although one of the smaller new sinkings of the time, Kinneddar shows some of the problems associated with the kind of development taking place in Fife towards the end of the nineteenth century, particularly the need for close liaison with transport and markets. Above all there was the need for sound financial backing to carry a young enterprise through the long difficult period from cutting the first sod at a new sinking to its full exploitation - the Lindsay at Kelty was begun in 1873 and the Dunfermline Splint Coal reached only in 1884 (2) - and every advantage came to lie with the three major companies, the Fife Coal Company, the Wemyss Coal Company and the Lochgelly Iron and Coal Company, who were producing five-sixth of Fife's output in 1939 (3).

There appears to have been little thought given to mechanisation at Kinneddar, but in this respect the big companies were more forward-looking, and by 1911, the Fife Coal Company had 116 coal-cutters in operation (4). In 1866, Landale, manager at Lochgelly, was establish-

---

(1) S R O, GD 58/25

(2) Muir, Fife Coal Company, 2, 7

(3) Smith, County of Fife, 237

(4) Ibid, 241

ing details of a rotary coal cutter driven by compressed air with Thomas Harrison of a Tyneside iron works, giving a saving of 27% over hand labour (1). At Dundonald H M Thomson, the manager, introduced an air-pressure engine and a coal-cutter by Gillot and Copley of Barnsley. The Mynheer was a strong hard coal of excellent quality for household purposes but only 33 - 36 inches in thickness so that the men could only manage 1 - 1½ tons daily - "because of its hardness and thinness, a man would be pretty busy during an 8-hour shift if he produced 1¼ tons. In timessuch as those experienced in 1900 and 1901, when coals were selling at ransom prices, a coalmaster might make two ends meet with an output of 1¼ tons per man; but it would be difficult to achieve this and pay the workmen the current rates in ordinary times" (2).

Under the coal was a three inch layer of tough "dalk" and the machine drove holes a yard apart into this from 2.00 to 10.00 pm. Each hole would have taken two men a shift to drive, the machine took six minutes. During the night the coal settled down and in the morning the hewers were able to start filling the trucks. In the course of three months output rose from 50 tons daily to 250 (3).

As well as introducing coal-cutting machinery in 1903 Thomson installed electric light underground and a screening and picking plant at the surface (4). In describing the way in which Thomson went to study at the Heriot-Watt College and the Andersonian and set Dundonald on its feet (5), Cunningham has paying tribute to the professionalism of the manager trained for his profession in a way which was not possible for Keddie's contemporaries - "Mr Thomson .... has learned a great deal since I first met him as manager of Lumphinans Colliery, and he now knows as much about mechanics as he does about actual coal working"(6). Cunningham went on to promise "to return after he has stripped the day-mine of its old-world machinery and has quickened the puffing and the pulses of the engines in the same manner as he has changed things at the pit" (7).

---

(1) S R O, CB 2/479

(2) Cunningham, Dundonald Collieries and their Development (Dunfermline 1903), 7,9

(3) Ibid, 8, 10

(4) Ibid, 8

(5) Ibid, 7

(6) Ibid, 11

(7) Ibid, 13

Population Influx

The great expansion in output from 1871 to 1913 was obtained partly as a result of greater efficiency in the deployment of resources, enabling even greater amounts of coal to be marketed, but mainly as a result of a greatly expanded labour force, since production per head did not vary much from 360 tons per annum between 1899 and 1908, after which it tended to fall (1). From 4967 in 1871, to 6121 in 1881, 11004 in 1891, 16914 in 1901 and 28509 in 1911, those engaged in coal mining increased rapidly. Locally, the impact was even greater, Coaltown of Wemyss almost doubled in population in a decade, from 381 in 1891 to 731 in 1901 (2), at Dalbeath 270 houses were built between 1904 and 1908 (3), the population of the whole of the parish of Wemyss increased from 10534 to 23104 between 1891 and 1911 (4). With the opening of Bowhill Colliery in 1895 19 rows of houses were constructed, 523 houses in all, by the Bowhill Coal Company (5). Whole new communities sprang up, Lochore around the Mary Colliery, Glencraig around the colliery of the same name; in Lochgelly the Lochgelly Iron and Coal Company built or bought 420 houses in 1876, by 1900 the figure was 464 and a further 423 were added in 1910 (6). Buckhaven, Methil and Innerleven increased by 75.7% from 1901 to 1911, Cowdenbeath by 68.4% Inverkeithing by 67.5% and Lochgelly by 67.2%. Outside Fife only two burghs - Clydebank with 79.7% and Queensferry with 89.7% - had inter-censal increases of over 60% and of Queensferry's increase the crews of two naval vessels accounted for 1510. This mushroom growth has had quite devastating effects on the Fife landscape from which it can only now be said to have partially recovered. In the 1870s the collier population in the county was still to a very great extent separate from the rest of the population and imbued with a sense of inferiority and a desire for peace and quiet. Bryson in 1872 was probably mixing

---

(1) Cunningham, Mining in Fife, 35-36

(2) A S Cunningham Rambles in the parishes of Scoonie and Wemyss (Leven 1905), 240

(3) Smith, County of Fife, 563

(4) Ibid, 542

(5) Ibid, 425

(6) P W Brown and A Westwater, History of the early Lochgelly Coalfield (Lochgelly 1954), 8

conviction with prejudice in saying - "the miners in Fife are almost without exception Scotsmen, whose forefathers have pursued the same avocation in the same locality for generations; while in Lanarkshire and the west of Scotland a great proportion of the miners are Irishmen, who are generally very ignorant and of a remarkable tough type" (1). Any examination of documents relating to mining in Fife shows the remarkable persistence of some surnames - at Fordell in 1814 were 16 families named Muir, 12 named Beveridge and 6 named Penman (2), in 1860 there were 3 Muirs, 16 Beveridges and 4 Penmans (3), in 1884 there were still households of Muirs (3), Beveridges (9), and Penmans (5), indicating a fair degree of permanence in the composition of the population (4). The Census Enumerators' Schedules for 1871 show that every member of the mining families studied in Coaltown of Wemyss was born in the parish of Wemyss and even in 1891 the furthest away any collier at Rosie Colliery, Wemyss had been born was Dunfermline.

Fordell may not have been a typical settlement with its strongly paternalistic atmosphere, annual parade and flags provided by the estate (5), but in other areas it was customary to try to keep out new-comers by insisting that entrance money be exacted from all entering the pits. At Lochgelly the coal boom resulted in this payment soaring from 10/= to £5 (6).

Nevertheless, workers did come into the mines from other occupations; at Drumcarro in east Fife agriculture was the main source. Here the colliers were called "grass-colliers" (7). At Torry a strike took place in 1839 when the strikers were replaced by weavers, "and those who were young got their hands in as well as the old workers" (8). At Grange, Elie, Henrietta Keddie's father suffered yet again as the young and able-bodied forsook their hewing, when coal should have been

---

(1) J Bryson, Industries of Kirkcaldy and District (Kirkcaldy 1872) 117

(2) S R O, GD 172/848

(3) S R O, GD 172/901

(4) S R O, GD 173/942

(5) Holman, Diamond Panes, 75

(6) 'Select Committee on Coal 1873 Report' (Parliamentary Papers 1873 X) 6612

(7) Parliamentary Papers, 1842, XVI, 512

(8) Ibid, 496

stocked and transported for winter needs, to go with the herring boats to the north (1).

As well as the stability of the native Fife population there was also a floating population who might be attracted if wages were high enough or housing were provided. The Fife Coal Company suffered a labour shortage in 1874 as many of their workers, attracted by high wages of 8/= per day during the boom, drifted back to their former occupations as wages were cut (2). At Lochgelly Andrew Landale found the principal difficulty in increasing output was also shortage of labour - "we require more men, more pits to hold these men, more houses to hold these men. In our own works we have had within these last 18 months 100 new houses built .... In 1871 it (production of our colliers) reached the lowest point and by building new houses, and doing everything we could to get the output increased, we are gradually working it up again" (3). By providing houses Landale was able to attract to Lochgelly agricultural labourers, tradesmen, wrights, smiths and sailors (4), and reckoned to be able to convert an alert able-bodied labourer into a collier in 18 months to 2 years (5).

For the early part of the great expansion then the labour force would appear to have been the solid nucleus of the traditional mining communities supplemented by such others as would be attracted by the opportunity of living in a new house for 2/=6 per fortnight (6). For the latter part of the expansion the emphasis was on building up the labour force rapidly and to this end colliers from other areas were brought in. For example, Charles Carlow brought over Lothians men for one of the Kelty pits and, although, when tried initially they were frozen out, this became the later pattern (7). Rorie, in describing the "huge influx after 1894 of a lower class of workman from the

---

(1) Keddie, Three Generations, 129

(2) Cunningham, Mining in Fife, 26; Muir Fife Coal Company, 4

(3) Parliamentary Papers 1873, X, 6611

(4) Ibid, 6613

(5) Ibid, 6705

(6) Ibid, 6623

(7) Muir, Fife Coal Company, 10

Lothians and the West county (involving an Irish element)", quotes an old Auchterderran miner as follows:- "Ay, this is no' the place it used tae be: ye canna lie fou' at the roadside noo wi'oot gettin' your pooches ripit" (1).

Unfortunately, the unavailability of the Census Enumerators Schedules after 1891 makes it difficult to assess just how much of the labour force for the great expansion came from inside and how much from outside the county. Even in 1891 there were quite marked differences within the county. In the traditional colliery villages of East Wemyss and Coaltown of Wemyss there was very little sign of immigration at all, with only the occasional family from Ireland, the Highlands, Midlothian, Lanarkshire, or even west Fife. At Rosie, a Wemyss Coal Company pit, all the colliers were Fifers and of these only a handful came from the west of the county. Yet the Fife Coal Company's new sinking at Wellsgreen, in the same parish, had a wider spread of Fife miners plus a coal pit sinker from Coatbridge, an oversman from Hurlford and a stationary engine keeper from Bo'ness.

At Kelty the pattern was similar, although almost a seventh of the coal workers had been born in West Lothian and Lanarkshire. At Cowdenbeath a large part of the labour force was native to Fife, with sizeable contingents from Beath, Ballingry, Dunfermline, Dalgety and Aberdour, suggesting that the area was proving to be a focus of those displaced from small, obsolescent, workings. 30% of the labour force came from outside the county, with the Lothians contributing 15% and Stirlingshire 5%. Stirling and Clackmannan together made up another 5% and Ireland, Wales and England were occasionally represented. In the west at Torryburn, 60% of the coal workers were native to the county and no-one came from further east than Lochgelly. Most inward movement came from Clackmannan, also represented being West Lothian, Lanarkshire and Ireland, although the age and families of the Irish suggested that they had come to Scotland in the 'forties and 'sixties

---

(1) D Rorie, 'The Mining Folk of Fife', County Folk Lore, v VII (1912), 386

and had been in the west before moving to Fife in a way similar to the movements of the workers assembled at Binnend (1).

After 1891 we are confined to the county figures in trying to assess the amount and origins of the immigrant mining population. Table 5.C shows that, although the total number of those born within the county was rising, it was rising less rapidly than the total population so that the proportion of non-native residents was increasing.

Table 5.C

Percentage of Fife population born in county, 1871 - 1911

	Total population (000s)	Born in Fife (000s)	% of total born in Fife
1871	161	135	84
1881	172	140	82
1891	190	146	77
1901	219	161	73
1911	267	181	68

(Source:- Census)

Table 5.D picks out four of the main source areas for the mass immigration and this indicates their relative importance as feeders of the great expansion in coal-mining at the turn of the century and in the years following. Although the great tide of Irish immigrants had slackened by the time of Fife's greatest expansion, it is more than likely that many of those born in the Lothians and Lanarkshire were but one generation removed from Ireland.

Table 5.D

Proportions of Fife population born outside county, 1871 - 1911

	Midlothian		Lanarkshire		Ireland		West Lothian	
	A	B	A	B	A	B	A	B
1871	38	2.34	17	1.05	16	1.02	5	0.32
1881	47	2.74	27	1.57	15	0.85	7	0.41
1891	65	3.39	43	2.27	17	0.92	12	0.62
1901	94	4.30	64	2.92	21	1.19	18	0.83
1911	136	5.10	125	4.69	43	1.59	31	1.17

A - population in hundreds; B - % of Fife population.
(Source ; Census)

---

(1) W M Stephen, The Binnend Oilworks and the Binn Village (Kirkcaldy 1969) 37-39

While it would be wrong to assume that all those who entered the county from; say, Midlothian between 1901 and 1911 were miners and their dependents, it should be remembered that the period under consideration was one of net decline in rural areas and in the small towns and that the ultimate destination of those who moved into the county was likely to be the growth areas, and of these the mining areas were the most dynamic.

Archaeology

The long continuance of coal-mining in the county and the extensive nature of much of the early developments mean that there is scarcely a parish south of a line through Falkland and St Andrews without some evidence of former coal workings. Goodwin has given a lead with regard to the Thornton-Wemyss area (1). Bowman has fully described the remains associated with Culross Colliery (2) while Brister has pleasantly recalled many of the little - long-disused - workings in East Fife (3). This section does not attempt a full record of all that is to be seen in Fife, relative to mining between 1790 and 1914. In itself, that would be a suitable subject for research. Instead, outstanding examples of different kinds of evidence for former mining activity will be outlined.

It is a truism to state that most of the evidence for former mining is to be found underground and only the merest fraction of this past activity can be induced from a surface inspection (4). Former workings may be the cause of subsidence, with consequent cracking and occasional disappearance of buildings. Such subsidence has given rise to sizeable hollows or "plumps" north of Donibristle (170897), and in the General's

---

(1) Goodwin, Mining Landscape, 3 - 17

(2) A I Bowman, 'Culross Colliery: a sixteenth-century mine', Ind. Arch. v 7 (1970), 353-372

(3) D K Brister, 'The Little Pits of Long Ago', Scots. Mag. v 84 (1965), 115 - 122

(4) A R Griffin "Bell-pits and soughs: some East Midlands examples', Ind. Arch. v 6 (1969) 392-397; T A Henson and R S Smith, "Detecting early coal workings from the air' Coll. Eng. v 32 (1955), 256-258

Plantation (291959) comparatively recent undermining from the Randolph Colliery re-exposed workings dating from at least the seventeenth century.

In 1968 construction workers in the Back Causeway of Culross (986859) broke into and then exposed an area with two major items of note. One was a filled mine-shaft, shaped in plan like a trapezium with rounded corners. The parallel sides were 15 feet apart and were about 9 feet and 8 feet 9 inches in length. The shaft attained its greatest breadth 3 feet from its longer end, where it measured 15 feet across. The sides of the shaft were cut vertically through the solid sandstone; the feather marks on the side were still very clear and showed that one of the original sinkers must have been left-handed. Possible traces of another shaft were found 10 yards to the north-west.

40 yards to the south-east old workings in the Jenny Pate coal were to be seen. Originally almost four feet in thickness, pressure from the surface rocks had forced the voids down to about 18 inches or 2 feet, although pillars of coal had been left to support the roof. The evidence would suggest that these workings - now filled with grouting and supporting a block of flats - date from the late sixteenth or early seventeenth centuries when Culross was being vigorously developed by Sir George Bruce of Carnock (1).

Day-levels, although representing major investments and major works of engineering, show practically nothing on the surface to indicate their existence. A trickle of water in Dysart Harbour must still represent a vestige of the drainage provided by the level driven in 1749 to Little Dysart (291967) while about 1960 the Leven which had had its outlet in Kirkcaldy Harbour burst through on the surface at Fish Wynd. Maintenance of the level was always a problem and the Urquhart Day Level has burst out about 150 yards north of its outfall, a modest arch of span 18 inches, sunk a little in the middle. Day-levels were driven from vertical shafts and these were surrounded by circular stone parapets in order to keep out animals. The course of a former day-level is often marked on the surface by the line of sunk

---

(1) J W H Ross and Company, Report relative to the mineral position under and adjacent to a site at McDonald's Buildings, Culross (Glasgow 1968), 1 - 9

shafts, varying in distance according to the nature of the rock encountered underground. The shafts were sometimes used as coal-pits where coal was encountered and are often described as such, but their main function was in the construction and maintenance of the level. The line of circular walls of the Urquhart level is still a prominent feature of the land west of Dunfermline.

Fordell Day level, as the longest in the county and the only one still fulfilling an economic function, deserves some special attention. Discharging at 180 feet a.s.l. at 148852; the Level extends northwards to the former Alice Pit for approximately 3½ miles, with branches to Calais Hill, Vengence (sic) Pit, Crossgates, Lady Anne, William and Anson Pits making up another 2 miles. The Level did not follow a straight course but served to link up existing and proposed workings by taking what happened to be the easiest route. When mining was carried on at greater depths the Level had still a value as pumps did not require to lift the water so far - at the Venerable Pit in 1831 a beam-engine was pumping from the Dunfermline Splint at 49 fathoms to the Level at 25 while in 1950 the Level was used as a main outlet for three pumping stations in the Alice Pit bottom, William Pit bottom and in the South Mine.

On the main artery were 21 shafts, varying in their distance apart from 66 to 572 yards. Basically the Level is coffin-shaped in section, to allow for the passage of the maintenance men, who were engaged in it full-time - emphasising its great importance to the enterprise. Much of the Level is cut through stone, sometimes the roof being suuported with wood supports or arched with brick or stone flags, while 600 yards of it are in the Dunfermline Splint Coal and about 200 yards are in Five Foot Coal.

Last traversed fully in 1943-44, the Level then was in surprisingly good condition. Today it still serves to drain about 3000 gallons per minute from the old Fordell workings and provides the Inverkeithing paper mill with its water supply (1).

---

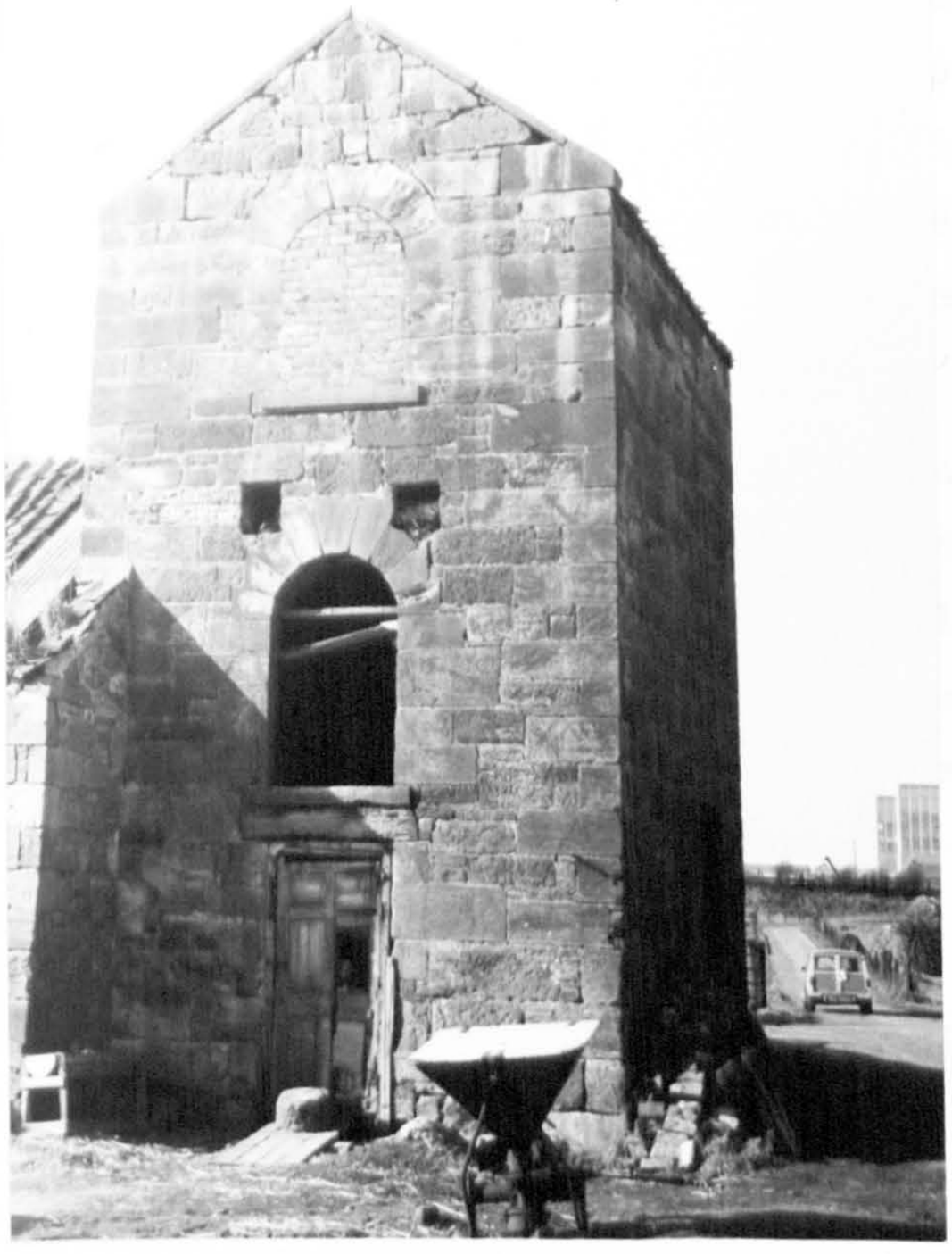
(1) National Coal Board (Central Fife Sub Area), Memorandum on the Fordell Day Level (1950), 1 - 6

PLATE 5.a

URQUHART DAY-LEVEL OUTFALL (081868)

PLATE 5.b

THORNTON ENGINE HOUSE (293973)



On the ground the evidence of former drainage mechanisms is scanty. At Dysart (300935) there remains the masonry stump of a windmill, still used for mine drainage in 1864, but with all trace of machinery now gone. The top has been battlemented and corbelled with brickwork and the voids have been filled, making inspection of the interior impossible. At two places there are beam engine houses similar to that being preserved at Prestongrange. At Thornton (293973) is the one illustrated in Goodwin's article (1), presently used for storing straw by the farmer who uses the buildings. At Kilmux (364043), the building for the engine of 47 horse power draining the pit sunk to 54 fathoms stands (2), well preserved, by the roadside. Of the late nineteenth century pithead surprisingly few examples remain. At Frances one is still to be seen at work but their high scrap value has meant that most surface installations were removed shortly after a pit was closed.

The area around Lochore in central Fife is the scene of a very large area blighted by the robber economy of the late nineteenth and twentieth centuries. Subsidence hollows have been filled in, streams regraded, coal bings flattened, landscaped and planted. What was, till recently, a passing imitation of Dante's "Inferno" has become inoffensive grazing land around a loch. In this new setting only one memento of the mining industry remains. When the Mary Colliery No. 2 shaft was sunk in 1923, a new pithead structure by the Trussed Steel Company was built and encased in concrete. Too expensive to demolish, this stands to remind viewers on the placid surface of today of the hectic activity which went on in the area above and below ground only a few years ago.

Although the provision of housing was one of the ways in which the companies attracted labour, that housing was little better than the standard available at the time. Colliers were notoriously badly housed. Dundonald said they were "put like swine into miserable hovels" (3), while Landale's evidence to the 1873 Select Committee

---

(1) Goodwin, Mining Landscape, 5-6

(2) N S A, v 9, 385

(3) 9th Earl of Dundonald, Description of the Estate ... at Culross (Edinburgh 1793), 68

would seem to indicate the existence of a vicious circle. The Lochgelly Iron and Coal Company were building two-roomed houses with rooms of 225 and 180-200 square feet at a rent of 2/=6 fortnightly, costing £80. Each house had its own ash-pit and garden but no backyard; both rooms were used as sleeping rooms. The larger room had the parents and young children in two beds, the smaller had the older children in one bed.

At the same time, the colliers were accustomed to low rents, nobody but the coal company would build for such low rents and when they tried building a row of houses with rooms upstairs at 3/=9 per fortnight these were not popular (1).

In Kelty it was "practically the rule for from eight to ten persons to occupy the two-roomed houses, and the three-roomed houses were generally filled proportionally" (2). Built for £100 - £135 the newer houses rented for £7 and the best for £10 per annum (3). A building society built houses for men who could put up a deposit of 15-20%. Interest at 4% was charged in 1904 and 23 years was the maximum allowed for payment (4). At Kelty the Fife Coal Company provided a library and baths for the village (5). Yet with the overcrowding and lack of facilities demands for company houses exceeded the supply.

Perhaps understandably, the associations of overcrowding and squalor which Moffat recounts with such bitterness (6) have meant that miners' rows have been almost uniformly swept away - often to be replaced by roomier but almost equally monotonous local authority housing. Consequently, there are few areas in the county where one can see nineteenth century collier housing, and where this can be seen, it is often untypical.

In some of the semi-rural areas where small collieries operated, Largoward for example (4607), miner's houses are still to be seen

---

(1) Parliamentary Papers 1873, X, 6625

(2) Durland, Fife Miners, 106

(3) Ibid, 185

(4) Ibid, 120

(5) Ibid, 106, 133

(6) A Moffat, My Life with the Miners (London 1965), 10-12

CHAPTER 6

Coal-based Industries

Associated with the production of large quantities of good quality steam and household coals was the development of associated industries. Some of these were developed by the coal owners as a means of using small coal which was unsaleable in large quantities until factories began to use it in the latter part of the nineteenth century, others like ceramics and shale processing, used large quantities of a low-cost, bulky raw material which necessitated a large heat input.

Salt

The heyday of salt-panning in the Forth basic was almost over at the beginning of the period which is the subject of this study, as a result of competition from Cheshire salt increasingly being made available by better transport, and assisted by the repeal of salt duty in 1825. Salted provisions were no longer essential for the survival of winter in the nineteenth century, and alternatives were beginning to be developed for the use of panwood, or small coal. In his definitive study of the salt industry of the Forth basin, Adams outlines the processes and locations involved (1). Here it is proposed principally to summarise the nineteenth century decline and to make some assessment of the financial importance of salt manufacture to the coalowner.

Methil and West Wemyss had 16 pans in 1790 and only two in 1838, one of which was not working; Buckhaven had salt pans shown on a map of 1806, but the windmills and seawater pumps were derelict by 1830. At Inverkeithing the salt industry, earliest noted in 1286, ended about 1835 at one place and at the same time there ended a magnesia works, established in 1813 to process the salt further. Examples of decline could be multiplied but two instances of attempted revival did occur, at Inverkeithing where Robert White made salt from 1870 to the close of the century, and at Leven. Here a shoreside windmill, old salt pans and salt girnel were taken over in 1857 by Alexander Clark from Prestonpans. Clark, and his related successor Gerret, built a new salt works on the former "bucket pat", or reservoir for sea water,

---

(1) J N Adams, 'The Salt Industry of the Forth Basin'. Sc Geog. Mag., 81,3 (1965) 153-162

using steam power to raise sea water and drive machinery to render the coarse Scotch salt finer. As a local poet described it, Mr Gerret.

".... makes saut wi' steam
And now can grind as much within an hour
As they could do before in twenty-four". (1)

We are fortunate in having two sets of figures from the early nineteenth century which convey something of the scale of operations at a sizeable enterprise of that period. William McLean, the Earl of Rosslyn's factor, established the cost of making three bushels of salt in fine weather as 3/=3, of which almost half (1/=6) was the cost of a cart-load of good small coal, "on the hill", 10d was carriage of the coal, 10½d was salters' wages and ½d was warehousing. The maintenance of salt pans, necessary repairs in wood, stone and iron, weighing and carriage to ships and the provision of salt bags and mats brought the total cost of three bushels to just over 4/=7d.

In the period of over two years from February 1818 to May 1820 the sales of salt were about one fifth of those of coal, but expenditure was only about one sixth. As a result £354 of a loss was made on the coal and £210 profit on the salt, in this instance the salt helping the coal enterprise to minimise its losses.

Over the six years from 1820 to 1826 coal receipts averaged £5370 per annum and profits £657; for the same period average annual salt receipts were £1558 and profits £408. For the period May-December 1826 salt receipts were about one tenth of those for coal, £330 as opposed to £3498, but profit was almost a half, £104 as compared to £217. This enterprise is atypical in its exact accountancy but the evidence would appear to suggest that, in a well-conducted enterprise, salt-boiling would contribute about 20% of turnover but could provide as much as 40% of the profits of the enterprise. It may not, however, be without significance to note that, in the two periods immediately after the repeal of the salt duty for which we have figures, receipts for salt sold fell dramatically, although the profit margin appeared unimpaired (2).

---

(1) A S Cunningham, Rambles in the parishes of Scoonie and Wemyss, (Leven 1905), 62-63, 150, 158; RHP 39; RHP 358; W Stephen, The Story of Inverkeithing and Rosyth (Edinburgh 1938) 91-92, 99-100

(2) SRO; GD 164/348

FIG. 6.1

FIFE - CERAMICS INDUSTRY

Brick and Tile Works - BB

Pottery - P

At Fordell we have only the returns from the colliery and salt enterprises, recorded separately from 1823 to 1843. Over this period earnings from coal tended to fall from a peak in 1826 with a subsidiary summit in 1837. Over the entire period sales of salt were 5.8% of total sales but 1825 saw a decisive break. For the two years 1823-24 salt formed 12.2% of total sales but for 1826-43 it was only 5.1%.

In 1824 salt to the value of £951 was sold, the best years after 1825 were 1831 (£433) and 1840 (£520). The Fordell figures serve to corroborate those from Dysart and confirm the swift response to the repeal of the salt duty as well as the far from negligible importance of salt to the colliery enterprise (1).

Ceramics and Glass

In Fife the ceramics industry has taken two forms, the bulk manufacture of low-cost goods - bricks, roofing tiles and drainage tiles mainly - and the manufacture of earthenware for domestic use. Fig. 6.1 shows the distribution of brick and tile works in the county, and the close correlation is clear between the distribution of brickworks and of coal deposits. Only in the Eden Valley were brickworks situated distant from coal, and here there are heavy clays which justified the establishment of fairly short-lived enterprises. On the coalfields brickworks had the advantage of utilising products from coal mines already sunk. As well as large amounts of small coal, fine firing fireclay was often found, and for common bricks blaes or waste shaly material could be used. Thus brickworks were a useful outlet for colliery waste and since the collieries were themselves important users of bricks for shaft linings, proppings and walls, many coal companies established brickworks for internal needs, putting the surplus on the market. The Charlestown Tile and Brick Works were started to provide kiln linings for the limekilns at Charlestown, and as an outlet for the Elgin small coal, but we find, for example, "600 common drain tiles" being despatched to the Pentland Firth on 7 March 1846 (2)). Some brickworks had a very long life; in 1783 William Douglas was sending roofing tiles by sea to Pilmuir, near St Andrews, and it was only in 1880 that the Leven brick and tile works was closed (3).

---

(1) SRO; GD 172/862

(2) NLS 9629

(3) Cunningham: Scoonie and Wemyss, 76-77; Howie of Grange papers.

More typical, however, was the brickworks established for a comparatively short time during a building boom or the tileworks - like those in the Howe of Fife - set up during a period of improvements. Many stretches of temporary railway line were set out, like that just north of Inverkeithing which served the brickworks once the initial resource on which it stood had been exhausted. An arch under the main Edinburgh - Aberdeen railway line at 273903 marks the site of the former feeder from the clay hole to Methven's pottery, successfully defended in the Court of Session against Edinburgh and Northern pressure (1). W Arrol and Company established a brickwork in 1880 on the south side of Inverkeithing Bay, providing 60000 bricks for Bouch's second Forth Bridge before work was stopped. Tancred, Arrol and Company restarted it, the bricks being used for temporary houses. Arrol removed the machinery in 1890, but Street Brothers used the premises for about 12 years afterwards when the works - now a large shipbreaking establishment - were acquired by the Admiralty (2).

Much attention has for long been paid to the working condition of miners and factory workers. Durland (3) gives a telling description of the long hours, the heavy work, the monotony and the terrifying heat to be met in a brickworks in the early years of this century.

If we except the teapot maker from the Caledonian Pottery, Rutherglen, who introduced Rockingham ware into production at Inverkeithing about 1890, the finer side of the Fife ceramics industry was confined to Kirkcaldy, where 834 were employed in four potteries in 1911. "Amidst splendid coalfields" was an abundance of good fireclay suited to the manufacture of bricks, tiles and saggars, as well as a rich bed of fireclay. In addition, flint and china clay were easily imported via the harbours of Dysart and Kirkcaldy.

On the 8 of May 1714 William Robertson of Gladney and William Adam, mason - father of the famous architect - took a lease of clay from Andrew Ramsay of Abbotshall for 50 merks Scots rent and 500 "good and sufficient pan tiles yearly". In the eighteenth century tiles, bricks, teapots, flower pots and chimney cans were made, but from about 1840 new methods and machinery were introduced, and the Links Pottery began

---

(1) J T Davidson, The Linktown of Abbotshall (Kirkcaldy 1951) 84

(2) Stephen: Inverkeithing and Rosyth, 99

(3) K Durland, Among the Fife Miners (London, 1904) 81-104

to move into the trade in teapots, crocks and pans for the farming population. Andrew Ramsay Young became manager in 1872, and under his influence the works moved into new lines of white earthenware. The works was rebuilt in 1878 and again in 1897 and until after the First World War the Links, or Kirkcaldy Pottery was very successful in selling its brightly coloured wares at home, in Ireland and in the United States.

The Fife or Gallatown Pottery was established in 1817 but only grew rapidly when it came under control of the Herons, father and son. In 1883 Robert Heron invited potters and designers from Bohemia to come to Fife and of these Karel Nekola remained, to make a considerable contribution through the Wemyss Ware. Dora Kittina Wemyss patronised the Fife Pottery and through the Wemyss family the freshness of decoration of Nekola's work acquired a cachet which still attaches to it. From Nekola developed a school of imitators in the other potteries, helped by the fact that many potters and decorators worked in one pottery by day and then went on to another in the evening for the purpose of working overtime.

The remaining two potteries, Laurence Buist and Sons and Morrison and Crawford, produced domestic ware, teapots and "penny banks". Fleming noted the lack of specialisation of the Kirkcaldy potteries and this was one of the factors contributing to their demise in the 1920s. Most of the ware was coarse and crude and unsuited to growing sophistication, the cost of assembly of all raw materials except coal was high, enamel ware was a strong competitor and, isolated in its own corner of Fife as it was, the industry suffered from the lack of fresh blood. The 1926 strike speeded up the almost inevitable; starved of fuel, the potteries did not reopen afterwards (1).

A mile south-east of the Links Pottery, at 264902, are to be found an interesting pair of survivals in the form of two water-powered flint mills in the Tiel Burn. In order to give strength and whiteness to the body and to prevent cracking of the glaze, large amounts of finely ground flint were required in the potteries. The Links Pottery utilised water power to grind the calcined flints while the water from

---

(1) Davidson, Linktown of Abbotshall, 80-88; J A Fleming, Scottish Pottery (Glasgow 1923), 193-200; Smith, County of Fife, 547

the burn was used to wash out the finely ground flint after the requisite amount of grinding. Fuller details of the mills and the ancillary activities surrounding them are to be found elsewhere, but it should be noted here that the two mills complement each other most interestingly in their situation, that at the time of building - about 1840 for Balwearie Mill and 1868 for Hole Mill - they were probably less effective than the ball mills used at other potteries, and that the coarse nature of the ground flint was one of the factors making it difficult for the Links Pottery to compete with ware from outside the district. (1)

Related to pottery in requiring large amounts of fuel is glass-making but, despite attempts at various periods, only one successful glass-making venture has been established in the county, and that after several false starts. At Wemyss the Glass Cave has exerted a curious fascination for would-be industrialists. In 1610 Sir George Hay, Lord Clerk Register, established a manufactory for glass there, to be followed in 1698, by David, third Earl of Wemyss. Sir George Hay found that a year's income from his glass would not cover a month's bill at the works. In 1730 a tacksman attempted to set the enterprise going again and went bankrupt in the attempt. At Kirkcaldy Glasswork Street is a reminder of a short-lived venture of the early nineteenth century.

At Pettycur a steep little branch line from the main line served a site which had been formerly used for coke ovens and salt pans. In 1902 a Mr Donaldson of Dublin used the existing buildings to establish a small pot furnace for hand blowing glass, but this ceased after two years. In 1908 a Mr Steadman restarted the pot furnace, then on 3 October 1909 Sir James Calker re-equipped the place with semi-automatic machinery and a continuous tank furnace fired by producer gas. The works built up to about 100 of a labour force, mainly skilled operators from Alloa, Poland, Russia and Holland, bringing into the small town of Kinghorn a foreign, Roman Catholic, element. The fine sand of Pettycur beach was used in the glass-making process until 1960.

---

(1) N S A, 9, 157; W M Stephen, "Two Flint Mills near Kirkcaldy, Fife", Ind Arch, 3, 3 (1966) 170-176

The vitriol works at Lammerlaws, Burntisland was very large, measuring 210 by 170 feet and insured in 1796 for £1000. In addition, the stock and utensils were valued at £3000 and glass and earthenware for £100. Founded by John Alexander, Robert Pitcairn and David Low of Burntisland the works issued its own tokens in 1792. It was still in operation in 1812 but was wound up soon after and the site completely cleared. In connection with the bleachfields on Leven and Lochty a vitriol work was established at Thornton in 1839. After many thriving years it closed in 1894, to be superseded by one of the wagon works (1).

Shale

Fife saw nothing like the sustained involvement with the shale oil industry that characterised Midlothian and West Lothian. Correspondingly there is nothing in the contemporary landscape to match the great red bings that glow in the setting sun west of Edinburgh. Yet, Fife had its phase of involvement with the shale industry, or rather it had two phases, the second lasting longer and having some real impact. Butt has isolated the factors encouraging the search for minerals which could be retorted to provide crude oil and the Scottish Oil Mania of 1864-66 (2). These were the world shortage of oils in the mid-nineteenth century, the expiry of Young's patent of 1850, and the temporary exclusion of American mineral oil from British markets as a result of the Civil War.

In Fife most of the works set up to mine and process shale were started during the Mania and failed to survive the serious competition of American lamp oil after 1866, the unsuitability of their location, or the ineptitude of their entrepreneurs. Munro's Oilworks at Inverkeithing was started in the former distillery in 1864 and burnt down in 1868. Works in the east of Fife, at Kilrenny, Pitcorthie, Anstruther, Methil and Pathhead did not last beyond 1876. At Westfield two companies, Capeldrae Oil and Coal Company and Westfield Oil Company Ltd, survived, respectively from 1866 to 1881 and from 1883 to 1889, but the only works to make any

(1) Cunningham, Scoonie and Wemyss, 198-199; A S Cunningham, Markinch and its environs (Leven 1907), 112; Fife Free Press, 6 May 1893; GH 11937/17/663289; C Murray, St Marie's Parish (Kirkcaldy 1905), 17; RHP 1030

(2) J Butt, 'Technical Change and the growth of the British Shale-Oil Industry (1680-1870)', Econ Hist Rev 2nd series, 17, 2(1965), 511-521; J Butt, 'The Scottish Oil Mania of 1864-66', Sc J of Pol Econ, 12 (1965 195-209

real impact was just outside Burntisland, where three companies operated successively from 1878 to 1905 (1).

The oil works at Burntisland was an exotic growth in the way in which it grew rapidly to full flower, had its brief hectic life and then even more rapidly came to an end and also in the way that the main impetus and much of the labour came from outside the county. Table 6.A. shows quite clearly the rise and fall of the oilworks, in relation to the Census figures for the landward part of the parish of Burntisland.

Table 6.A

Census figures, 1871-1911 - Burntisland (landward)

	Houses Inhabited	Houses Uninhabited	Population Male	Population Female	Population Total
1871	89	16	177	256	433
1881	100	12	234	284	518
1891	221	12	616	565	1181
1901	158	78	353	400	753
1911	129	127	270	327	597

Although for most of its life the Binnend Oilworks was cut off from the Lothians by the unbridged Forth, much of the labour force had already been employed at such places as Uphall, Midcalder, Clippens and Pumpherston. The central figure in the latter days of the enterprise was the Edinburgh railway contractor, John Waddell, who made a speciality of snapping up ailing railway companies. His North British work included the building of the approaches to the first Tay Bridge and the Burntisland - Inverkeithing Railway, the northern link to the Forth Bridge. Perhaps symbolically, it was John Waddell who was in charge of the retrieval of the high girders and train after the collapse of Bouch's Tay Bridge. Ironmasters and coalowners from the Lothians provided the bulk of the shareholdings.

Probably due to its comparative isolation, the enterprise at Burntisland was fully integrated, with large shale mines, oil works, refinery and candleworks, the whole being connected to the main line at Kinghorn by a railway in 1887. The life and problems of the works have been fully described elsewhere; during its existence it was a major producer but it succumbed to various pressures in 1892. The problems were of two

---

(1) Sir A Geikie, The Geology of Eastern Fife (Glasgow 1902), 117, 119; Stephen, Inverkeithing and Rosyth, 93-94, 98; W M Stephen, The Binnend and the Binn Village (Kirkcaldy 1969), 4-5

kinds, national and local. Nationally, the Scottish oil shale industry was under siege from the products derived from American and Russian oil, and did not resort sufficiently to rationalisation and re-equipment. Locally, the Burntisland works had problems of water supply for the refinery, labour problems and a major underground fire, followed by a great "crush". It is ironic to note how the works gathered about it two villages, a post-runner, a reading room, school and church, how the raw settlement gradually developed into a viable community and then just when the community seemed complete, the works closed and the community fell apart. The men moved off in search of work, many to the developing coalfield east of Kirkcaldy, to be followed later by their wives and families. The houses, temporarily renovated by the Admiralty for World War One, served as holiday homes for a long time thereafter.

Now very little remains of this large enterprise. The houses at the High Binn Village stand up to the gables, but at the Low Binn scarcely the foundations remain. Small mounds mark the pit entrances and a few walls and flues in extremely heavy undergrowth are all that remain of the refinery. The railway lines can be traced and its former tunnel under Kinghorn High Street has been fitted out as a nuclear bomb shelter. The former candleworks at 263873, itself a reconstructed flax mill, is the only part of the enterprise to survive in anything like its previous form (1).

Iron and Iron-working

Superficially, with vast deposits of coal and sizeable resources of iron ore, it might have been realistic to anticipate the development of a major iron industry. Instead, as we have seen, the iron-smelting industry scarcely developed and iron-using activities were slow to evolve. The Balgonie Ironworks pursued a halting career before finally closing in 1815. The Forth Ironworks operated from 1846 to 1869 at Oakley while the Lochgelly Iron and Coal Company, although started with these dual products in mind, concentrated on coal rather than iron after comparatively few years (2).

---

(1) R Brodie, The reminiscences of a civil engineering contractor, (Bristol 1943), 7, 18, 27; Stephen, Binnend, 5, 30, 32, 39, 47; J Thomas The Tay Bridge Disaster (Newton Abbot 1972), 62, 145, 147, 166, 173

(2) H M Cadell, The Story of the Forth (Glasgow 1913), 192; B F Duckham, A History of the Scottish Coal Industry Volume 1, 1700-1815 (Newton Abbot 1970), 145-146; J Westwood, That Portion of Scotland (Dunfermline 1948), 192

Where good local ores existed these were soon exhausted, Chapter 4 reveals the problems of attempting to bring in from outside the county rich ores to blend with the local lean ores. Fife coal was of poor coking quality and was better adapted for such purposes as domestic heating, steam raising and gas-making.

With very limited local supplies, most of the iron used in Fife in the early nineteenth century came from Glasgow by the weekly steamer to Kirkcaldy. Thus, on 24 November 1832 the Myrtle brought 36 iron plates for Russell's foundry and 40 tons of pig iron for Brown's foundry. Many small local foundries and engineering workshops were established, some little larger than a blacksmith's shop. Thus David Blyth's St Andrews Foundry cast wayside markers and metal parts for blacksmith's forges. At Inverkeithing and Rosyth there were three foundries early in the nineteenth century, but only that founded by the millwright John Scott in 1820 lasted into the second half of the century. In the 1790s "beautiful chimney grates, wagon wheels and all kinds of cast iron work for machinery and house utensils" were made. The situation was "convenient and advantageous .... the metal can be brought by sea; it is near to coal; and the manufactured goods can be transported very cheap and in small quantities, by means of the coal ships to many ports in Scotland, and by the vicinity to Leith, to any foreign part" (1).

In Dunfermline, the East of Scotland Malleable Iron Company was formed by Alexander Allison, of Blair, Culross in 1846 and in August 1848 the directors were able to inspect the "three very large boilers", 80 h.p. engine and foundry for 150 tons weekly. In May 1850 the works ceased to operate and all hands were dismissed but in November the works were bought for £1525 by the Weardale Iron Works Company. A year's trial was enough to show the losses incurred, the works were closed, the machinery removed to Weardale and, in the latter part of December, the chimney was demolished so that only "a great mound of rubbish" remained to show where the works once stood (2).

Accessibility was an important factor in the success of iron-working concerns in the nineteenth century and it was partly due to the ease of

---

(1) Fife and Kinross Register (Cupar 1871); Kirkcaldy Harbour Records; O S A, 10, 508; Stephen, Inverkeithing and Rosyth, 93

(2) E Henderson, Annals of Dunfermline (Glasgow 1879) 656, 658, 663-664, 666, 674

import of pig iron that enabled works in Charlestown, Leven and Kirkcaldy to develop. The Earl of Elgin established a foundry on the Lyne Burn, immediately west of Charlestown, with a forced draught powered by a water wheel. Mining machinery was made and - possibly - replacements for cast-iron wheels and rails, although the original waggonway had used Carron and Cramond products. A water-driven hammer was also used for forging anchors. About 1850 the works was bought by a Mr Morton and in 1891 there were, living at the Ironworks, 6 iron moulders and an apprentice, an engine fitter and a foundry labourer. In Charlestown there lived 26 moulders, 6 foundry labourers, 3 iron dressers, 1 pattern maker and his apprentice - a total work force of 46 (1).

At Leven the small foundry begun by Russell, about 1808 passed into the hands of Henry Balfour and James Anderson. Under their ownership the works specialised in stoves, boilers and water pipes for Canada, made and stored in winter and shipped in spring and summer from Leven by the Urania and other sailing vessels to Quebec. From 48 in 1835 the labour increased to 240 in 1905, by which time Henry Balfour and Co Ltd had specialised in the manufacture of gasworks apparatus, concrete mixers, steel structures and colliery machinery (2).

Kirkcaldy had the advantages of regular steamer services to Newcastle, Leith and Glasgow, it was bounded by the railway and was well supplied with coal, and there were in the town actively developing textile works. Not surprisingly, it proved to be a local magnet for the man of initiative seeking to expand into bigger markets. For example, James Brown was an Auchtertool millwright who moved the four miles into Kirkcaldy in 1791. Robert Brown remained in Auchtertool with the family business which was insured for £350 in 1796, the thatched house and stable being valued at £80 and the thatched byre and wrights' shop at £40. In 1828 two new developments took place, the casting of iron and the manufacture and installation of a 6 h.p. steam engine in the foundry. Used to drive lathes and other machinery this was the first steam engine built in Kirkcaldy and was still in operation in 1872. A diversity of engineering work was carried out, pottery machinery, wheels for agricultural machines, printing

---

(1) Census Emunerator's Schedules; Westwood, That Portion, 138-139

(2) Cunningham, Scoonie and Wemyss, 65-67

machinery for newspaper offices and also for sacks. The Tiel Engineering Works of about 1871 is now the bus workshops, the business having closed in 1917 (1).

Alexander Russell converted the Durie Bleachfield at Leven into an iron foundry in 1808, producing goods for local requirements, including a small iron bridge. Russell moved to Kirkcaldy where he cast - probably out of a vast range of goods - milestones and plough socks. Although the greatest concentration of nailers in Scotland was in the Kirkcaldy district there is no evidence for transfer of skill from that activity to iron founding and engineering. Russell, in particular. seems to have incurred troubles of different kinds in the early years with absenteeism and strikes on the one hand, the alleged detention of one of his skilled men by the Earl of Elgin and running short of fuel. At a later date Russells' ran their own copper-bottomed clipper schooners of 150 tons, Gazelle and Aletta, before falling in 1850 (2).

Robert Douglas was born at the manse of Kilbarchan in 1822 and set up business in Cupar in 1846 or 1847. In 1855 he moved to Kirkcaldy. Beginning by manufacturing shot and shell for the Crimea, he branched into the construction of paper-mill machinery, steam engines and, by the early 'sixties, Corliss engines. Douglas travelled to Calcutta in connection with the installation of engines for jute mills and at the same time became interested in rice-milling machinery at a period when such machinery as existed was very heavy and cumbersome, with the working parts made of stone. Under the name of Lewis G Grant Ltd, Douglas's enterprise has survived till the present in Kirkcaldy and Dysart, with rice-milling machinery and grain dryers as its mainstays (3).

At the end of the nineteenth century Kirkcaldy's advantageous situation on the main line railway helped the establishment and expansion of such enterprises as John Key's engineering works, Townsend Boiler Works, Brycedale Boiler Works, the Kirkcaldy Steel Pipe Works, now Fife Forge, and smaller iron and brass foundries (4).

---

(1) D Bremner, The Industries of Scotland (Edinburgh 1809), 507; J Bryson, Industries of Kirkcaldy and district (Kirkcaldy 1872) 93-95; GH 11937/14/655143

(2) R H Campbell, Carron Company (Edinburgh 1961), 79-80; Cunningham, Scoonie and Wemyss, 65-66; NLS 5319/88; NLS 9626

(3) Fife Free Press, 19 Aug 1905; WM Stephen, 'Milestones and Wayside Markers of Fife', Proc Soc Ant Scot 100 (1967-68), 182-183

(4) Bremner, Industries, 78; Fife Free Press, 26 Mar 1892; NLS 9627

PLATE 6.a

TIEL ENGINEERING WORKS, KIRKCALDY (279904)

PLATE 6.b

ABDEN SHIPYARD, KINGHORN - SLIPWAY (272871)

The building of wooden ships was a considerable activity in many Fife ports in the early nineteenth century. At Kincardine, which had 45 shipowners in 1826, full-rigged ships were built until mid-century, the last being launched in September 1869 (1). Inverkeithing had two ship-building yards belonging to the Ross family in the eighteenth century and a third of the east side of the harbour was constructed by R and D Ross in 1853 (2). James Farnie in 1800 had a two-berth yard "on the seabeach" of Methil where the stock and utensils were insured for £200 and the Hannah and another ship for £600 and £1000 respectively. In 1836 30 were employed in building and repairing ships at Burntisland where the biggest ship ever built - at that time - was 443 tons, and the labour force had declined from 100 (3). In his yard at Dysart Andrew Stirling had stock and utensils to the value of £100 in 1794 and 1795 and the ship on the stocks was valued at £1900, suggesting a tonnage of about 380. The two Dysart shipyards employed about 75 men in the 1790s, producing vessels mainly in the 100 - 150 tons class, of which a third were of Dysart owners, a few for Greenock but the rest mainly for neighbouring ports (4).

Nothing reveals more strongly the over-dependence of the county's economy on coal and linen and its comparative isolation than the gradual extinction, as the nineteenth century passes, of the small shipyards while shipowners and ferrymasters replaced the stock of vessels built locally with vessels from the Clyde, Dundee and the Tyne, often second-hand. Shipbuilding in the sense of the large-scale shaping and assembly of iron parts was carried on successfully at only one place in Fife before 1914, at Kinghorn, and here in a most unusual fashion.

John Key had an engineering works at the foot of Heggie's Wynd in Kirkcaldy; in 1865 he set up new works beside the railway in Kirkcaldy and established a shipyard at Abden, Kinghorn on a very restricted site 50 yards from the parish church and 30 feet from the railway, from which shipyard and parent works both had sidings. 200 men were employed at the works and 350 at the shipyard, a special train being run from Kirkcaldy for them. Owing to the very restricted areas of the site, and the nature of the coast there could

---

(1) Westwood; That Portion, 180

(2) Stephen, Inverkeithing and Rosyth, 92-93, 96

(3) GH 11937/33/707020; NSA, 9, 418

(4) GH 11937/9/635790; GH 11937/11/648877; GH 11937/12/649330; OSA, 12, 513

be no fitting out basin, and small vessels might be launched and then towed to Kirkcaldy or Leith for fitting out. Various adaptations were made to the site, one being to build the engine shop on a higher level and use a travelling crane to lower the finished engine into position in the ship. Ships were often launched with full steam up and complete so that they could immediately proceed on their trials.

Key operated the shipyard from 1865 to 1884 when it was purchased by Messrs John Scott and Co. In 1917 Abden Shipyard was bought by John Fletcher who reconstructed the yard to build Standard Ships after World War One, when it proved another casuality of 1926.

A wide variety of vessels was built, some of them of outstanding endurance. The William Muir ran as the Granton-Burntisland ferry from 1879 until 1937, being reboilered in 1910, making 80000 crossings each way and steaming more than 800000 miles. The Fitzroy for P and O's Australia run was 260 feet long and 870 tons, the Mentmore was the largest of a fleet of seven steamships built for a New Zealand firm. Of 3400 tons and 340 feet long she was the biggest ship ever built on the Forth at the time of her launch in 1882. The River Tay, the first iron vessel designed for whaling, a steel screw steamer for Paris, ferries, trawlers, steel lighters, a steamer for the Kirkcaldy, Leith and Glasgow Steam Packet Company, two barges for the Burmah Gold Dredging Company - these were the smaller vessels in great variety to be built at Kinghorn (1).

But little remains of shipbuilding in Fife. The last of the old slips to be seen, that at Dysart, was converted in 1971 to make a yacht marina, although the pawl and capstan for controlling vessels when being launched are still in evidence. At Abden (272870) concrete platforms within the caravan site still point to the existence of some sort of major enterprise there and one can still see the two major levels at which construction took place. The two major slips running into deep water are still a reminder of the drama involved in the broadside launching of a fine steamer for the Australia run with steam up ready to go off on trials.

---

(1) G W Ballingall, Historical collections regarding the Royal Burgh and Parish of Kinghorn (Kirkcaldy 1893), 30; Bremner, Industries, 78-79; C L D Duckworth and G D Langmuir, West Highland Steamers, 3rd edition (Preston 1967), 88, 175; Fife Free Press, 6 Oct 1863; 13 Oct 1863; 25 Feb 1882; 12 Aug 1882; 26 Aug 1882; 3 Nov 1883; 15 Dec 1883; 25 Jan 1890; 8 Apr 1893; 22 Apr 1893; 19 Apr 1902; 24 May 1902; 21 June 1902; 12 Sept 1902; 26 Sept 1902; 20 Nov 1907; 3 Mar 1917; 15 Sept 1917

CHAPTER 7

Textiles

In earlier chapters the importance of textiles - and linen in particular - as one of the twin pillars of the economy of Fife in the nineteenth century has been established. This industry had a number of main features. There was the transition from organisation on a domestic basis to that of an urbanised factory affair, brought about by town-based merchants. The industry was separated into two sectors, geographically as well as technologically distinct. A time-lag existed between the application of power to productive processes in the cotton industry and in linen. There was a minimal involvement with cotton-processing. The linen industry was gradually eroded by jute at the coarse end of the range and by cotton at the finer. These themes have already been developed in this thesis (1) and at some length elsewhere (2).

The aims of this chapter are to examine particular points within the framework already established, the differences between the town and country spinning mills and between the working conditions in the mills and at the hand-loom, the marked expansion of the power-loom industry in the 'sixties and 'seventies, and the contrast between the textile activities and architecture of Kirkcaldy and Dunfermline.

The tenuous hold of cotton processing in the county has already been noted. In the west of Scotland linen might be the springboard from which the cotton industry developed; in Fife, as in much of the east of Scotland, cotton was an extraneous pacemaker technologically and in competitive terms. The early water-power sites at Kirkland and Prinlaws on the Leven and at Kinghorn were developed to spin cotton.

---

(1) Vide chapters 1 and 2 supra

(2) D Bremner, The Industries of Scotland (Edinburgh 1869), 231-232, 237-247, 253, 254; RH Campbell Scotland since 1707 (Oxford 1965) 62-63; W English, The Textile Industry (London 1969), 155-163; H Hamilton, An Economic History of Scotland in the Eighteenth Century (Oxford 1963), 156; W H K Turner, 'Some Eighteenth Century developments in the Textile Region of East Central Scotland', Sc Geog Mag 69, 1 (1953) 10-21; W H K Turner, 'The Textile Industry of Perth and District' Trans Inst Brit Geog (1957) 123-140; W H K Turner, 'The Textile Industries of Dunfermline and Kirkcaldy 1700-1900, Sc Geog Mag, 73, 7 (1957), 129-145;W H K Turner, 'The concentration of jute and heavy linen manufacture in East Central Scotland', Sc Geog Mag, 82, 1 (1966); A J Warden, the Linen Trade, Ancient and Modern (London 1864), 11-39, 486-567

The early entrepreneurs were often established Kirkcaldy or Dunfermline merchants seeking to enter this new field of operations, but this early concern with cotton lasted only a relatively short period before mechanised flax spinning took over. For flax the commercial organisation - shipping, initial processing, bleaching, finishing and sales - already was in existence while for cotton no enterprise in the east was large enough to move the centre of gravity of the Scottish industry any appreciable distance. Fife was remote in terms of raw material supply and of organisational links and within a few years flax-spinning had replaced cotton-spinning at the early sites (1).

Table 7.A

Flax-spinning in Fife and Forfar, 1839 and 1871

	Fife		Forfar	
	1839	1871	1839	1871
Flax-spinning mills	46	28	96	25
Total horse-power	1106	2082	2383	4781
Steam engines (hp)	438	1736	2072	4598
Water wheels (hp)	668	346	311	183
Number employed	3029	4147	9388	6531

(Sources - Mills and Factories, 1839 Return. Parl, P. 1839, LXII ; Manufacturing Establishments regulated by Act of Parliament, 1871. Return Parl P, 1871, LXII).

Table 7.A brings out the main features of the flax-spinning industry in the nineteenth century by placing the statistics for Fife adjacent to those for Forfarshire. Although the number of mills declined between 1839 and 1871 their average size - as measured in terms of power installed and numbers employed - increased. Steam became absolutely as well as relatively more important and the decline in water power in most cases represented the closure of mills whose owners were unable or unprepared to switch to steam.

Dunfermline and Kirkcaldy were deficient in water-power and attempts were made at each town to apply steam-power to the spinning of flax.

---

(1) In 1839 Scotland had 192 cotton-spinning mills, Fife had none. Scotland had 183 flax mills, of these, 46 were in Fife. "Mills and Factories 1839, Return" Parliamentary Papers 1839 XLII, 296-297, 302-303, 316-317

By the 1830s it could be said that spinning in the county fell into two categories, the country mills dependent on water power but occasionally supplemented by steam power, and the steam-driven town mills. Both kinds of mill suffered a steady attrition thereafter. The Dunfermline mills failed to produce fine enough thread for the damask industry, which was supplied from Belfast, Leeds and Preston.

In the country, the pattern was for an ageing mill to close in a period of trade depression.

The industry as a whole was in retreat for over a century. Water was scarcely a reliable source of power in a county like Fife with a low rainfall and few large rivers. Mills were generally small and often in difficult situations. Given these three factors it is scarcely surprising that only at Leslie did water-powered flax mills survive the First World War. Despite a resurgence in Kirkcaldy in 1865, when the temporary shortage of cotton engendered a boom in flax, the town mills shared the same kind of experience. Its most spectacular manifestation was the collapse in 1886 of Swan Brothers, employing 400 in Kinghorn, 300 in Kirkcaldy and 460 in Dundee with their own bleachfield and Baltic traders (1).

Much of our information on working conditions in the nineteenth century comes from the Factories Inquiry Commission of 1833. While, on the face of it, evidence taken on oath would appear to be highly reliable, certain reservations do arise. One is the desire of the millowner to impress or to conceal, another is the fear of victimisation which tends to play down assertions, a third is the vindictiveness of the former employee when he thinks himself free from reprisal. That the Commissioners themselves were conscious of these pressures is clear from the report of James Stuart from Kirkcaldy - "it may be proper that I should acquaint you, that although we have no positive evidence of such proceedings, it has appeared clearly to us in the course of our examinations, especially those of yesterday, that means have been taken to prevent the younger part of the workers from communicating with us freely and unreservedly,

---

(1) J Bryson, Industries of Kirkcaldy and District (Kirkcaldy 1872) 7 - 9, 30; L Macbean, Patrick Don Swan, Provost of Kirkcaldy, 1841-1886, (Kirkcaldy 1893), 29; Turner, Dunfermline and Kirkcaldy, 133-4; Warden, Linen Trade, 655

and even to lead them, after giving us special information in the work-rooms, to withhold it, when brought to the counting-room to have their evidence taken on oath and recorded. In such cases I have given up the testimony of the individuals, rather than proceed with an investigation which might induce a young person to say what was false or obviously incorrect on oath. The workers, especially the younger part of them, stand in great awe of their masters and overseers, and are much afraid of being dismissed from the work at which they are employed.

"Not one of the millowners whom we have seen had, previously to our visit, put up the queries from the Central Board, with his answers, in his mill, that the workers might, previously to our being on the spot, have read them, and commented on them to us".

As assessment of working conditions in town and country mills must, therefore, take some account of the fact that the evidence which has came down to us has tended to present a better picture of conditions than was in fact the case. This was also apparent to the Commissioners - "one of the overlookers .... informed me that .... preparations were made at this as well as at all the other mills, for our arrival, by cleaning etc. This of course was to have been expected .... it is not the worst side of things that we have seen here" (1).

Bearing in mind that Stuart was the irascible Tory duellist of 1822 (2) and was virtually accused of acting as the millowners' mouthpiece at a later date, we must regard his evidence as definitely erring on the side of favour towards the masters. "This view is supported by his later career as Factory Inspector during which he was at odds with his fellow-inspectors and administered an act intended to protect working class children in such a way as to indicate to their parents that in the dispute between capital and labour the government was entirely on the masters' side" (3).

What is very clear is the considerable variety in working conditions and in management attitudes. In the 1830s all mill-workers worked

---

(1) 'Factories Inquiry Commission - First Report', Parl P, 1833, XX A1, 11, A2, 5

(2) Vide Chapter 9 infra

(3) U R Q Henriques, 'An Early Factory Inspector: James Stuart of Dunearn', Sc Hist Rev 50, 1 (1971), 18-46

a week of over seventy hours - when even a partner could be "tired with waiting on for so long a number of hours" (1), and an overseer "could mony a time sleep himself even walking about on his feet, like to coup ower" (2). Yet even such a long working week covered a number of different practices. While water-power was cheaper than steam to establish and to operate (3), there were problems of irregularity to be coped with, the variations in the speed of machinery and interruptions as a result of frost or drought. Thus at Swan's Upper Mill, Kinghorn the water supply in winter was enough to produce 6 or 7 horse power but in summer could barely supply injection water for the 24 h p steam engine (4).

The worker might not find working in a water-powered mill such a high speed matter as his opposite number in the steam-powered mill but only rarely was there an employer who was prepared to demand less than he might of his workers. At Anderson's Tow-Mill, near Cupar, the day was 13 hours in winter and only 7 or 8 in summer and autumn, when water was scarce. Except for the reelers, the workers were paid as much in summer as in winter but this case was an isolated example (5). While in some mills - like Kirkland's Flax Wet-Spinning Mill, Dunfermline - the machinery was always in good order and time was not made up when the mill stopped (6), it was more common that stoppages of the machinery - on holidays other than New Year's Day and parish fast days - had to be made up (7). The machinery was cleaned at the end of the working day except where it was cleaned while in motion as at Swan's, Kinghorn (8).

Thomson has shown how this period was one in which the work-pattern of alternate bouts of intense labour and of idleness regulated by self-discipline was being replaced by a time-discipline imposed on the work-force by the industrialist. Hours of work and the recording of these

---

(1) 'Factories Inquiry Commission - First Report', Parl P, 1833, XX, A1, 7

(2) Ibid, A1, 13

(3) Ibid, 60

(4) 'Factories Enquiry Commission - Supplementary Report, Part II', Parl P, 1834, XX, 61

(5) Parl P, 1833, XX, A1, 20

(6) Ibid, A1, 5

(7) Ibid, A1, 14

(8) Ibid, A2, 5

became of the greatest importance as the millowner did his utmost to maximise production (1). In the Dundee district no watches were allowed in the mills but James Aytoun of Abbotshall - "the father of the flax-spinning industry" - had a timepiece in every room and in every engine so that "all parties see they get justice". His workers were able to say that they were never kept late for longer than an hour because of the mill stopping but in most cases this was about the limit of liberality (2).

In physical working conditions there was a considerable amount of variation, the worst examples being in the wet-spinning mills with stone floors continually wet with water from the frames and with half the spindles idle as a result of absenteeism. Standing on a wet floor with hot water splashing on them and with hands immersed in water at 43°C, the workers were subject to frequent colds and chapped hands. Ventilation was deficient in most mills, preparation rooms were excessively dusty and brutality was often used by overseers in order to keep the younger members of the workforce concentrating. Brutality was at its worst in "the small obscure mills belonging to the smallest proprietors" (3) and it would be true to say that, compared with the beginning of the century, where it was in decline it was for practical as well as moral reasons. Thus Walker of Blebo Mills dared not use corporal punishment for fear he should lose his workers (4). While not condoning brutality, mill-owners were not the most violent members of society, it being said, for example, that "country schoolmasters in Scotland are far more apt than mill-owners or overseers to exert their authority, by applying the taws with undue severity" (5).

The Commissioners' main concern was the employment of children, particularly parish apprentices and orphans. At Kirkland's Mill 9 was the minimum age (6), but only a few in the flax-mills were under twelve years of age. Although Aytoun believed that "children never become

---

(1) E P Thompson, 'Time Work - Discipline and Industrial Capitalism', Past and Present, 38 (1967), 56 - 97

(2) Parl P, 1833, XX, A1, 12

(3) Ibid, 20

(4) Parl P, 1834, XX, 58

(5) Parl P, 1833, XX, 23

(6) Parl P, 1833, XX, A1, 4

good spinners unless they start before 12" (1), John Williamson, overseer at Rutherford's, Dunfermline, would employ none below 14 at the machines, since "good work is never made by children" (2). Earlier in the century, children were started young: Isobel Goodall was 7 when she started at Brucefield (3), Cecilia Greig started at 8 and Jessie Mackenzie at 7 in 1805 (4). At Gateside, probably the worst mill in the county at the beginning of the century, Peter Smart was bound to Andrew Smith for six years by his mother, his age being five years and her payment 15/= (5).

Chapman has shown the unreliability of the evidence for some of the worst instances of exploitation of the young (6) and in Fife there appears to have been little of a trade in orphans and paupers. During Smart's time at Gateside there were 15 orphans from Edinburgh Poorhouse while a Mrs McVicar at Perth looked out for workers to serve Smith (7). Elsewhere, those few orphans who were employed were local in origin: at Cupar Mills the orphans were lodged with and attended by relations in Cupar (8); at Kinnel's in Dunfermline the solitary orphan employed was visited by the parish minister, no doubt in consequence of the responsibility of the Kirk Session for the well-being of the orphaned (9).

Hours were long, the work was monotonous, the regime might be brutal. On wages of 10d a day Christy Grundy was fined sixpence when so late that the engine was going (10). Peter Smith, overseer at Kirk's, Kirkcaldy could do nothing but attend the mill and sleep (11). From Chapter 5 we have seen that some girls, at least, preferred work in the mines to work in the mills, the former being less dusty, and, with

---

(1) Ibid, A1, 11
(2) Ibid, A1, 6
(3) Ibid, A1, 7
(4) Ibid, A2, 8
(5) 'Children in Mills and Factories', Report from Select Committee, Parl P 1831-32, XV, 338
(6) S P Chapman, The Early Factory Masters (Newton Abbot, 1967), 156-209
(7) Parl P, 1833, XX, A1, 19
(8) Parl P, 1834, XX, 44
(9) Ibid, 49
(10) Parl P, 1833, XX, A1, 5
(11) Ibid, A1, 13

shorter hours, leaving open the possibility of a supplementary income from embroidery. Nevertheless, work in the mills had its advantages. Hours were shorter than those the hand-loom weavers were obliged to work, thus Janet Anderson of Kirkcaldy took home from the loom-shop 4/=3 for 3 weeks weaving at the same period as a 14 year old mill-girl would be bringing home 5/= to 6/=6 weekly (1). Jane Meldrum (Kirkcaldy, 17) was six years at the loom before going to Templeton's Mill. She did not at all like weaving at home but "liked the mill fine". Jessie Mackenzie went into service after her first spell of mill work but preferred factory work. "We were sorer confined in service than at the mill. At the mill we have Sunday, and we have the time after the mill sets, we hadn't that at service" (2). Mary Mackay, at Kirkland, had been eight years in service and thought spinning easier work than being in service - "sair work, service" (3). In a society where all had to work long hours, work in a flax-spinning mill was not devoid of attraction when compared with the drudgery and danger of the mine and the domestic drudgery of the loomshop.

In the towns the mill owner could feel less immediate responsibility for the welfare of his workers, and, with a pool of experienced labour to draw upon, need not seek to secure his labour force so firmly. In the larger towns very few mill workers lived in houses belonging to the millowners (4) and it was only some of the more enlightened who took any part in the education of their workers. Aytoun maintained a school for his young workers where they were instructed gratis in reading, writing and arithmetic. Attendance was good in the evenings after work (5). In Kinghorn, the Arthurs and Swan kept, at their own expense, a school for their workers which they could attend in the evenings and on Sunday. In addition, Swan paid the parish schoolmaster the fees for those children in the mills who chose to attend the parish school, usually about 25 in number (6).

---

(1) 'Factories Enquiry Commission - Second Report', Parl P, 1833, XXI, A3, 9

(2) Parl P, 1833, XX, A2, 8

(3) Ibid, A2, 11

(4) Parl P, 1834, XX, 62

(5) Ibid, 65

(6) Parl P, 1833, XX, A2, 6

It was the search for power that led to the development of spinning-mills on many of the county's rivers and streams; at the time of their establishment the relative inaccessibility of many of these sites was more than counterbalanced by the cost advantages of water-power. With the development of the urban steam-powered mills the country mills found competition becoming more and more strenuous. Often situated in virgin sites, the country mills had to develop an infrastructure, not only to keep the business running, but to attract and secure a stable labour force. With transport costs generally higher than those of the urban mills and with the disadvantages inherent to water power in one of the country's driest counties it is not surprising that the country mills show the best and worst examples of working conditions as they sought either to create a workforce of high morale or to keep costs at a minimum.

Henrietta Keddie gives a clear, if romanticised view of the early days of one of these country mills, that at Blebo two miles east of Cupar. John Walker became a spinning-master in 1803; "well conducted, and by trade a manufacture, his mill was worked by water-power. Mill, dwelling house, and the cottages of his mill-hands were situated in one of the loveliest miniature dens (small glens) in the country. Before the group of buildings was built there was no carriage-road through the dens, which must have been a woodland fairyland. The first occasion when a post-chaise drove through was that on which the millowner brought home his young wife. Master and servants formed a little community apart, ruled by the justice-abiding, kindly disposed head of the party, while its serious-minded girl-mistress regarded her husband's mill-hands very much as her mother had been accustomed to view the cottars of the farm-town of Balass. They were not mere servants; they were retainers, and, with few exceptions, faithful and attached. It was a transitory stage in the people's history, consisting of elements which could not continue. It was not desirable that it should, but it had its merits no less than its defects.

"The mill-hands looked up to my aunt, young as she was, with little question. They came to her freely for advice and assistance in their domestic concerns. She prescribed medically for them and their children

in simple forms of illness, like the chatelaine of the Middle Ages. I remember seeing her in later years overlooking a preparation of calico dipped in melted beeswax, which she kept in stock to meet the many applications for the relief of burns, for which the medicated cloth was considered a sovereign remedy" (1).

In 1834 there was still a measure of humanity in the settlement. Stating that "his profits have been little or nothing for years bygone", Walker pointed out that in such an out-of-the-way area, he had to find accommodation for all his workers in his own houses. Each family had a house to itself and some of the girls employed were lodgers with some of the families. "The rest of the women live in apartments, four to six in each, a bed and bed-clothes for every two and properly cleaned sheets are regularly furnished them". The houses were annually white-washed and occasionally inspected to see that all was well. As the final seal of respectability certificates from doctors and minister were produced (2).

George Moon's Russell Mill, on the Eden above Cupar, was another of these well-conducted country mills with, according to the Commissioners, "all the appearances of being as comfortable an establishment as we have seen, well regulated and well managed; the houses of such of the workers as have houses well furnished and kept, all of them, but two, having a timepiece or clock in them" (3). The mill was "most liberally conducted, both Mr and Mrs Moon paying great attention to the health, comfort and morals of their people" (4).

Some of the workers lived in the neighbouring village of Springfield while some were housed by Moon adjacent to the mill. This housing was reported as being clean and comfortable and was annually whitewashed. The working day was 13 hours long, commencing at 5:30 am and finishing at 8.00 pm but Moon did supply his workers with a degree of social welfare (5). Medical aid was provided at his expense and £2:5/= was spent annually on medicines for Russell Mill. Although by the 'thirties

---

(1) H Keddie, Three Generations, (London 1911), 44-45

(2) Parl P, 1834, XX, 56-58

(3) Parl P, 1833, XX, A1, 15

(4) Parl P, 1833, XXI, A3, 10

(5) Parl P, 1839, XX, 47-48

PLATE 7.a

FORMER WORKERS' HOUSES, MID MILL, NEAR DUNFERMLINE

(064849)

PLATE 7.b

ALEXANDER PLACE, GALLATOWN, KIRKCALDY (277918)

- demolished 1969

Moon did not employ anyone under 13, a school was set up at his own expense for his young workers and a teacher brought in for six months of the year (1). Older children were released for a quarter annually, their places being filled by younger members of the same family. There was no benefit society at Russell Mill, or at Hospital Mill, of which Moon was also tacksman, but workers were paid during absence and the destitute were supported. On completion of seven years service each girl received a new gown. Agnes Greenhill was entitled to a third one, having been 21 years at the mill, but refused "the third septennial premium .... lest her age might be known". Adjacent to the mill was a green paddock for the girls to use as a playground (2).

Various strands of evidence point to the beneficent paternal atmosphere at Moon's mills; Moon stated that there had not been a bastard child amongst his people for the last twenty-one years. Two ministers, a doctor and an apothecary prepared certificates testifying to Moon's principled organisation. Most significant perhaps was the fact that the questions posed by the Commissioners and Moon's answer were read to the workers in the presence of the Commission, an indication that Moon felt he had nothing to hide and a practice so unusual as to be felt worthy of note by the Commission (3).

Laurence Wilson converted an existing water-mill at Pitliver, on the Lyne Burn below Dunfermline, to a flax-spinning mill in 1815. Only employing 32, some of the workers lived at Charlestown a mile away. The mechanics and foreman flax-dresser lived at the mill and the girls from Dunfermline lived in a bothy under the same roof as the men's families. The girls' food was supplied by their parents and cooked by a person who also cleaned their rooms. The Dunfermline girls went home on Saturday nights.

There was no corporal punishment; disobedience was initially checked by the overlooker. Further disobedience resulted in a small fine, the ultimate sanction being dismissal. In summer a 76-hour week was worked, with the winter Saturday ending at sunset instead of 6.00pm, but

---

(1) Parl P, 1839, XLII, 70

(2) Parl P, 1833, XX, A1, 20

(3) Parl P, 1833, XXI, A3, 10

both overseer and workers rated Wilson a kind master. Too small to support a school, in winter he taught the workers in his own house (1).

Leslie was a small town which more than doubled its population as the waters of the Leven were harnessed for flax-spinning. A small town, it combined some of the open characteristics of the larger town with the colonial nature of such places as Blebo and Russell Mills. Thus the workers at two of the mills, Haggart's and Law's, lived in houses of their own in the town while John Fergus had his workers living chiefly in houses belonging to him. Free schooling was provided although there was no compulsion to send the children to school. A measure of community discipline was seen in the way in which Fergus's workers were not allowed to accummulate any filth about their houses and a cleansing service was operated (2).

Control of a very much more rigorous variety was exercised at Andrew Smith's mill at Gateside. Troubled by shortage of water on the upper Eden, the mill ran from 4 am till 10 or 11 pm when there was sufficient power. The child-workers often fell asleep - at least once with fatal consequences - they were frequently violently beaten and boys and girls were locked up separately at nights. The children often attempted to run away when they were pursued by the overseer, brought back and thrashed with a whip in the master's loft. For Peter Smart's first three years at the mill he did not see his mother at all, and when both his hands were badly damaged in the machinery, the information was kept from her (3).

With the exception of one widow and her family, Smith provided board and lodging for all his workers. 2/=10d a week was charged for board and lodging, the girls sleeping in bothies. One of these, of about 400 square feet, had seven bed frames, five of which were occupied by three in each bed. Breakfast was porridge and milk, dinner, potatoes, kale, oat or barley cake and eggs (4). Beef was supplied once a year, and pig meat occasionally. Smith gave the children religious instruction on

---

(1) Parl P, 1833, XX, A1, 8; Parl P, 1834, XX, 53

(2) Parl P, 1833, XX, A1, 18; Parl P, 1934, XX, 66-68

(3) Parl P, 1831-32, XV, 338

(4) Parl P, 1833, XXI, A3, 10

Sabbath evenings, and free seats were available for them in the established and secession churches, so that control was exercised over the day of rest as well as over the working day (1).

In summary, the country spinning mills present the more varied picture. Set up in situations where a water supply was reasonably regular, their appearance was often attractive, and their establishment proved the focus for local, short-distance population migration. As the nineteenth century advanced, their competitive position became less favourable in the face of minimal technological development in the application of water power, continuing refinement in the application of steam power, comparative remoteness from source of supply, railways and markets and inability to produce the finer yarns which might have ensured a continuance of their existance in the context of a whole industry under duress. In these circumstances a stable workforce might make the different between survival and closure, and it is clear that - in their various ways - the country millowners tried to maintain this stability.

Whether the carrot or the stick was used, census analysis shows a high degree of stability. 76% of the millworkers at Dura Den in 1881 had been born in east Fife, 42% of the total in Ceres and Kemback, between which the Den forms the boundary. A 10% sample of Leslie in 1871 showed that all the flax-mill workers had been born in Fife, 61% of them in the parish of Leslie (2).

In the towns, as one door closed, another opened. As spinning declined, power-weaving, floorcloth, engineering, paper and ceramics were all growing rapidly, and the dislocation was minimal. Spinning mills passed naturally to other uses, Swan's mill in Coal Wynd, Kirkcaldy became a jam factory, several were adapted for use as engineering works, the West Bridge Mills became a twine factory. In the rural areas on the other hand, there was little to replace the spinning industry as it declined. Parts of the unit might be used, as at Dura Den and Hospital Mill where small sawmills took over and at Gateside where a bobbin mill continued the

---

(1) Parl P, 1833, XX, A1, 19

(2) Census Enumerators Schedules, Scottish Record Office.

association with textiles, but most of the country mills were very much underused, and decayed rapidly. In a context of rural depopulation, the little settlements emptied gradually. The result is that many of the country mills are now in an advanced state of decay, a number have been demolished for their stone, and, of the housing, some is standing empty, rapidly losing aesthetic and economic value, while some is being used for other purposes. Thus the houses where the Midmill workers lodged have now become a piggery.

An exception to this general decline in fabric is often the owner's or manager's house. Large, often built of good stone in a desirable position overlooking the mill, quite a number of these remain. At Midmill, the simple eighteenth century house where Laurence Wilson gave lessons to the mill-girls on winter evenings was given a fine extension complete with bay-windowed public rooms, in the revived prosperity of the 1860s. Moon's house at Russell Mill was another rebuilt in the late prosperous flush. In Kirkcaldy, Swan's mansion of St Brycedale, unobtrusively neo-classical, has become the John Hunter Hospital (1).

We have seen how the nature of the evidence and the evidence itself have made it difficult to be definitive in assessing the working conditions of the mill-worker. An attempt to compare these conditions with those of the hand-loom weaver is fraught with even more difficulties. In examining spinning-mills one has the security of dealing with a specific number of units at a given time - 46 in 1839, with 3029 workers - with readily identifiable locations and owners and producing a narrow range of products. When it comes to examining the hand-loom weaving situation in the first half of the nineteenth century it is a question of examining a whole spectrum of activities - from the customary weaver procuring his own materials and over winter, producing coarse linens for his neighbours or for sale by himself, to the factory producing heavy canvas - represented over the whole county, from the densely packed wynds of Dunfermline to the breezy uplands of New Gilston. In this context, the less-urbanised areas are likely to go unnoticed, since it is the larger town which has been worked over by the local historian, and the Hand-Loom Weavers' Commissioners,

---

(1) Macbean, Patrick Don Swan, 93; Smith, County of Fife, 49-50, 475

as a general principle, did not visit places with fewer than 400 looms (1).

It is as well to remember at this stage, that we are dealing with fabrics whose production, at the weaving stage, had still not been satisfactorily mechanised but whose prices were affected by the mechanisation of cotton weaving, particularly in those grades of cloth where cotton could replace linen. Thus the weaver of cotton checks in Auchtermuchty received 6d per ell in 1815, and in 1839, 2d. For a dowlas web of 120 ells, the rate was 26/=, in 1826 and 19/= in 1839. Thus, earnings per piece were depressed but rarely sufficiently - at this stage - to push the weavers out of the operation (2).

A spinner of 13-14 years could expect to take home 5/= to 6/= and a male adult 12/=. In attempting to relate the weaver's earnings to this, certain factors have to be considered. Earnings are often given for a particular length of cloth, but from this deductions may have to be made. Thus William Wood, Kirkcaldy, received £1:4/= for a web which took him 4 weeks to weave in 1833. From this deductions of 3/=11d would have to come, paying for winding bobbins, dressing the warp, the reed, drawing into the reed, tallow for lighting and the rent or part-payment for the loom. Wear and tear of gears, reeds and brushes was not charged (3).

Kirkcaldy was one of the largest towns of east Scotland where heavy weaving was carried on in factories. In 1839 the average net weekly earnings were at least 8/=6, with steady and skillful men earning 10/= and 15/= described as "not rare". Dunfermline was a town where lighter fabrics were produced but the specialised skills involved were reflected in an average journeymen's wage of 7/=6, with average weekly wages from 6/=11 to 15/=4¾d for the finest work. The relatively unspecialised weaving of dowlas, neither complex in pattern nor demanding in terms of strength of loom or arm, was less well rewarded. Under favourable conditions, able-bodied men could make 7/=6 per week, but the "inferior hands" - old men, women and boys - might make only 4/= (4).

---

(1) Parl P, 1839, XLII, 184

(2) Ibid, 212

(3) Parl P, 1833, XX, A3, 8-9

(4) Parl P, 1839, XLII, 187-188, 202

The net average wage of 20 hand-loom weavers employed by Ninian Lockhart and Sons, Kirkcaldy, on cotton shirting stripes from January to June 1838 was 8/=9½d (1). In Newburgh about 20 men on broad sheeting made 10/=6, good workmen made 7/=6, the ordinary hands 4/=6, and the old 4/=. In Cupar the net average was about 4/=7 and in Auchtermuchty wages on linen ranged from 4/=6 to 7/=3 (2).

Wages in the inland towns and villages tended to be lower than in the coast towns and Dunfermline. The absence of alternative employment, the putting-out of work from the coast towns and the generally unspecialised nature of their work tended to "place the weavers in such places under a disadvantage in competing with others more favourably placed". Thus one of the Cupar spinners was obliged to send his yarns for bed-ticking to Kirkcaldy for weaving at 3/= per week more than the Cupar weavers were paid, since the latter were either unable to weave this cloth from want of experience or unable to pay the cost of fitting up the heavier looms necessary (3).

A comparison of working hours poses as many problems as that of earnings. The need to serve the mill machinery meant the establishment of standard working hours and the evolution of a disciplinary structure to induce or compel punctuality and attention. For the hand-loom weaver- almost invariably paid by the piece - working hours were a matter of self-discipline and the pace of work was something he set himself. Hence the nostalgia in J C Craig's verse:-

> Sae free they were, no tethered up
> Like folk in factorys noo;
> The wrocht just when they liked, and when
> They cared, they could be "through" (4).

The average hours per day in Kirkcaldy were reckoned at 12 and 13. The heavy canvas weavers, although working in loom-shops, were "under very little restraint as to hours and those who receive high wages often work very irregularly. The weekly average would not in my opinion, be above

---

(1) Ibid, 208

(2) Ibid, 212

(3) Ibid, 195

(4) J C Craig, Sangs o' Bairns and Hame (Edinburgh 1909), 138

60 hours .... Saturday afternoons, Monday and often Tuesday, are considered holidays, or rather idle days, during which little, if any, work is done" (1).

There was clearly every temptation to make work spasmodic rather than continuous, but Harding, the Assistant Commissioner reported - of the dowlas and sheeting weavers - that "72 working hours per week is rather below than above the average". He knew many instances of weavers working 13 hours a day, exclusive of meals, "and in some cases, for several days together, 16 hours a day" (2). Work at the loom started from the age of ten to twelve and the young people all worked as long as there was daylight. In summer a start was made at 5 or 6, finishing at 7, 8 or 9 pm. In winter the hours were 7 to 9, often 10 or 11 pm, with an hour off for each of breakfast and dinner.

Jane Ormrod was 14 and had 3 years of experience at the loom. Working from 5 till 9 pm, with two hours off for meals she would complete a web of 117 yards in 2 weeks, or 12 working days. Her father, receiving 10/=3 net for the web, stated that most girls of Jane's age would take three weeks to weave such a web "yet he would rather see his daughters hazed up than in a mill" (3).

What was clear at the time was that earnings in the mills tended to be higher than at the loom and the hours shorter. At the same time as weaving held out the illusion of greater freedom, the weaver was driving himself rather than being driven by an overseer or an extraneous prime mover. The mill worker saw the open air only when going to work and on Sundays, the weaver had a few days off when planting and lifting his potatoes and harvest work was quite common.

The early mills, before fire-proofing, had flagged floors and boarded upper floors. The atmosphere was dusty in the preparing rooms, very unpleasant in the wet-spinning rooms and generally hotter than outside. The floors of the weavers' houses were earthen, "the treadles invariably playing in a little trench dug in the ground". Many of

---

(1) Parl P, 1839, XLII, 187

(2) Ibid, 188

(3) Parl P, 1833, XXI, 8

the houses were extremely damp, and in wet weather the treadle holes had to be baled out.

One other difference between mill and loom was the difference between working as one member of a comparatively large team in an organisation remote in concept from the domestic organisation and working as one of the family in the loom-shop in or attached to the cottage. The hours of labour of the mill-worker were so long that home was little more than a place to sleep in, most of the workers' meals being taken at the mills. As a result parental influence became less important for the young mill-worker and great concern was felt at girls spending their wages on finery, meanwhile stinting themselves on food. While working in a confined space for long hours in a damp room at home was undesirable, the standing, the dust, the hot close atmosphere, the danger of accident, the need to be as unremitting in attention as the machinery, "the syphilitic taint of the mill" all acted as disincentives. At the mill the worker was an individual alone with the machine; at the hand-loom there was the mutual support of the family (1).

Power-weaving

Turner, in his study of Dunfermline and Kirkcaldy as centres of regional control and production in the textile industry, isolates two vital phases in their development, the early nineteenth century establishment of mill-spinning - important in itself and for its stimulation of hand-weaving - and the great spread of power-weaving in the eighteen-sixties (2).

Nowhere is the time-lag between innovation in the cotton and linen industries more marked than in the application of steam-power to the weaving of linens. Edmund Cartwright set up his power-loom factory at Doncaster in 1786. By the early nineteenth century most of the early difficulties had been solved and the cotton power-looms were increasingly adopted. Between 1813 and 1820 the average annual rate of increase was 2000, during the next nine years 5000, and during the following four years 10000. While Robb invented a power loom for linen-weaving in 1788 and Crompton patented another in 1810 neither was a success.

---

(1) Ibid, 9; 'Childrens' Employment Commission - Second Report', Parl P 1864, XXII, 215

(2) Turner, Dunfermline and Kirkcaldy, 142

Power looms were weaving linen in London in 1812 and in Aberdeen in 1824 and these were exceptional cases (1).

Macdonald's Mill in Kirkcaldy was fitted up with 24 looms driven by a steam engine in October 1821, at a capital cost of £2000. It was calculated that weaving of white dowlas by hand at the time cost 18/= and by the power-loom 12/= "a difference which it was then considered would be sufficient to induce others to enter into the trade on an extensive scale". Despite the early success the introduction of power-weaving hung fire for over a quarter of century and the mill in Steam-Loom Wynd went over to spinning some time about 1836 (2).

Two reasons existed for the relatively late mechanisation of linen-weaving. Flax is a relatively inelastic fibre - "a linen thread will break if extended one thirty-sixth part of its length" - which meant that warp threads were liable to break often or to strain parts of the early power looms "where rigid mechanisms could not provide the gentler controls and flexibility provided by the hand-loom weaver". With the development of the vibrating roller to avoid sudden strains - patented in 1839 by Schofield and Leach and improved by Dobson in 1854 - technical obstacles to mechanisation were removed (3).

Nevertheless, had the financial imperative been strong enough, there is little doubt that the technical problems would have been solved sooner. In 1836 the minister of Abbotshall attributed the lack of mechanisation to "the low rate of weaving by the hand" (4). A large pool of hand-loom weavers existed who had few alternative outlets for their labour and could have their earnings depressed, keeping the industry in a competitive position. In times of difficulty it was no disadvantage for the employer to have the minimum of fixed capital and leave the workpeople to survive on their own until times became more active again. Thus the linen industry was able to survive side by side with the cotton industry for far longer than had appeared likely in the early nineteenth century and still have the resilience to respond when conditions were favourable.

---

(1) English, Textile Industry, 96, 125, 161

(2) Bryson, Industries of Kirkcaldy, 30; Warden, Linen Trade, 566, 710

(3) English, Textile Industry, 161-162

(4) N S A, 9, 157

PLATE 7.c

HANDLOOM WEAVING SHOP, PILMUIR STREET, DUNFERMLINE

(092876)

PLATE 7.d

HANDLOOM WEAVING SHOP, CHALMERS STREET, DUNFERMLINE

(087878)

J E White perceptively reported to the 1864 Children's Employment Commission that "it is the rate of wages only, and not the amount of work or number of workers, which has declined; and it even appears that of late the demand for linen has not only kept up, but increased the number of hand-loom weavers". He forecast that hand-loom weaving would continue for some years in country areas, where labour was plentiful and cheap and in work which could be done by children and females. He was in do doubt that technical problems were of minor importance, "comparative cheapness of the two modes of manufacture" was the determining factor and once mechanisation was more established it would very rapidly thereafter become almost universal. At the same time he noted the resilience of the hand-loom weavers - "it must be observed, however, that hand-loom weaving has already survived the introduction of power to a much greater extent and for a far longer period than would probably have been anticipated years ago, and it may in like manner still hold out far beyond what is even not expected" (1).

With hindsight, we can see that White was writing during the linen boom of the 1860s, when shortage of cotton brought a flush of prosperity to the industry and encouraged rapid factory development in areas where a pool of skilled labour already existed. Once cotton had been restored to its normally competitive position, the hand-loom industry rapidly withered away.

Campbell's Almanac reported in 1867 "the year 'Sixty six has turned out perhaps as prosperous a year for Dunfermline as has passed over it since it was a damask-manufacturing town. Every hand-loom weaver has been in full employment, and might have had as much again, had he been able, Irish fashion, to divide himself in two and double his productive capacities. So great has been the demand for hands, that more than one oldish man, who had been for months, nay, years, in the Poorhouse - driven thither more by the want of work than by infirmity - has been out and working all summer .... Wages have risen more than 15%; and risen with little or no petitioning on the part of the workmen. The prosperity of the trade needs no stronger proof than this". In 1870 the power-looms were all fully employed and some works under-supplied,

---

(1) Parl P, 1864, XXII, 215

some firms had expanded, extensions were confidently expected and wages generally good. The hand-loom workers had been dull in the early part of the year, but were otherwise well employed and two or three firms had advanced wages (1).

Turner has shown how the development of Pathhead - Gallatown (Kirkcaldy) as a factory district benefited from the coincidence of a densely-populated weaving suburb with the provision of mains water from 1868 (2). At this point it is sufficient merely to note that there were 100 hand-looms left in 1872 and the last ceased to operate in 1904 (3). In Kettle in 1864 there were nearly 500 looms in the village alone, plus others for 10 miles around; the last hand-loom dismantled in 1932 (4). In Lower Largo about 1872, Mrs Rintoul remembered old men coming to the station and saying to her grandfather "Won't you give me a web, Mr Jeffrey" (5). In the towns change was rapid, the Linktown Weavers Society was wound up in 1867 (6) and that of Dunfermline in 1863 (7) - a recognition of the breakdown of traditional unity rather than of the end of the activity - but in the more rural areas there were persistent survivals (Kennoway, 1902; Freuchie, 1906; Auchtermuchty, 1910; Strathmiglo, 1916) (8).

The establishment of power-loom factories came in three phases, prior to 1860, between 1860 and 1876 and after 1876, although the middle phase was easily the most active. Before 1861, as we have seen, there were attempts to set going weaving mills but the first of these to be commercially successful was that of J Normand and Sons, Dysart (1847). Other works set up in the first phase in the Kirkcaldy area were Dunnikier (1858), Abbotshall (1858), and Linktown (1858), all in old-established weaving areas. Between 1860 and 1872 the combination of a buoyant market for linen, a new pure water supply for steam-raising and a pool of skilled labour operated to bring into existence 11 new works -

---

(1) Campbell's Almanac (Dunfermline 1867), 4

(2) P K Livingstone, A History of Kirkcaldy, 1843-1949, (Kirkcaldy 1955) 22; Turner, Dunfermline and Kirkcaldy, 140-141

(3) P K Livingstone, Flax and Linen in Fife through the centuries, (Kirkcaldy 1951), 7-8

(4) Ibid, 8; Parl P, 1864, XXII, 23

(5) L J Rintoul, Largo Village Book (Cupar 1932), 90

(6) J T Davidson, The Linktown of Abbotshall (Kirkcaldy 1951), 56

(7) Dunfermline Almanac (Dunfermline 1870), 13, D Thomson, The Weavers' Craft (Paisley 1903), 348

(8) Livingstone, Flax and Linen, 7-8

one in Linktown, one in the heart of Kirkcaldy, one by Kirkcaldy railway station, two in Dysart and the remaining six along the Pathhead - Gallatown axis (1). In 1870 also, Michael Nairn opened his St Mary's Canvas Factory between Kirkcaldy harbour and Pathhead (2). In general terms the third phase was one of continuing momentum rather than positive development. Competition from the Dundee area and from other textiles was considerable. Abroad, other textile industries were developing and tariffs proved difficult to counter. In Kirkcaldy only one new mill was set up, the Caledonian Mills (1903) in Prime Gilt Box Street on the western margin of the town - an offshoot of R O Wemyss's Abbotshall Works on an open site adjacent to new housing of moderate quality.

In Dunfermline, Scott's Dunfermline Steam-Power Weaving Factory (1847) was unsuccessful until taken over by Alexander Reid and Co in 1859.

Two other steam-power factories were set up in the first phase of the Dunfermline industry, Inglis Street (1858) and St Leonards (1851), the latter a most important development with 1200 operatives in 1877 and the nursery for many of the later developments in the town. The first St Leonard's factory (demolished in 1974) was not entirely given over to power weaving; at the east end of the works was the power-weaving shed of 24200 square feet, the middle part of the works was devoted to warping and winding, lapping, calendering and storage. Besides the manager's house, office and a school of 720 square feet, at the west end of the works was a hand-loom weaving shed of about 25400 square feet. In the one factory, then, were both power-looms and hand-looms, but whether this was due to an unwillingness to put all the eggs in one basket, lack of sufficient capital to mechanise the whole enterprise or the production of different qualities of produce is difficult to say. Bremner gives a full description of the factory - "the largest factory in Dunfermline and the most extensive of the kind in Britain" - and at the time of his visit there were 900 power-looms and 180 hand-looms, with 1500 employed in all. Unfortunately, he does

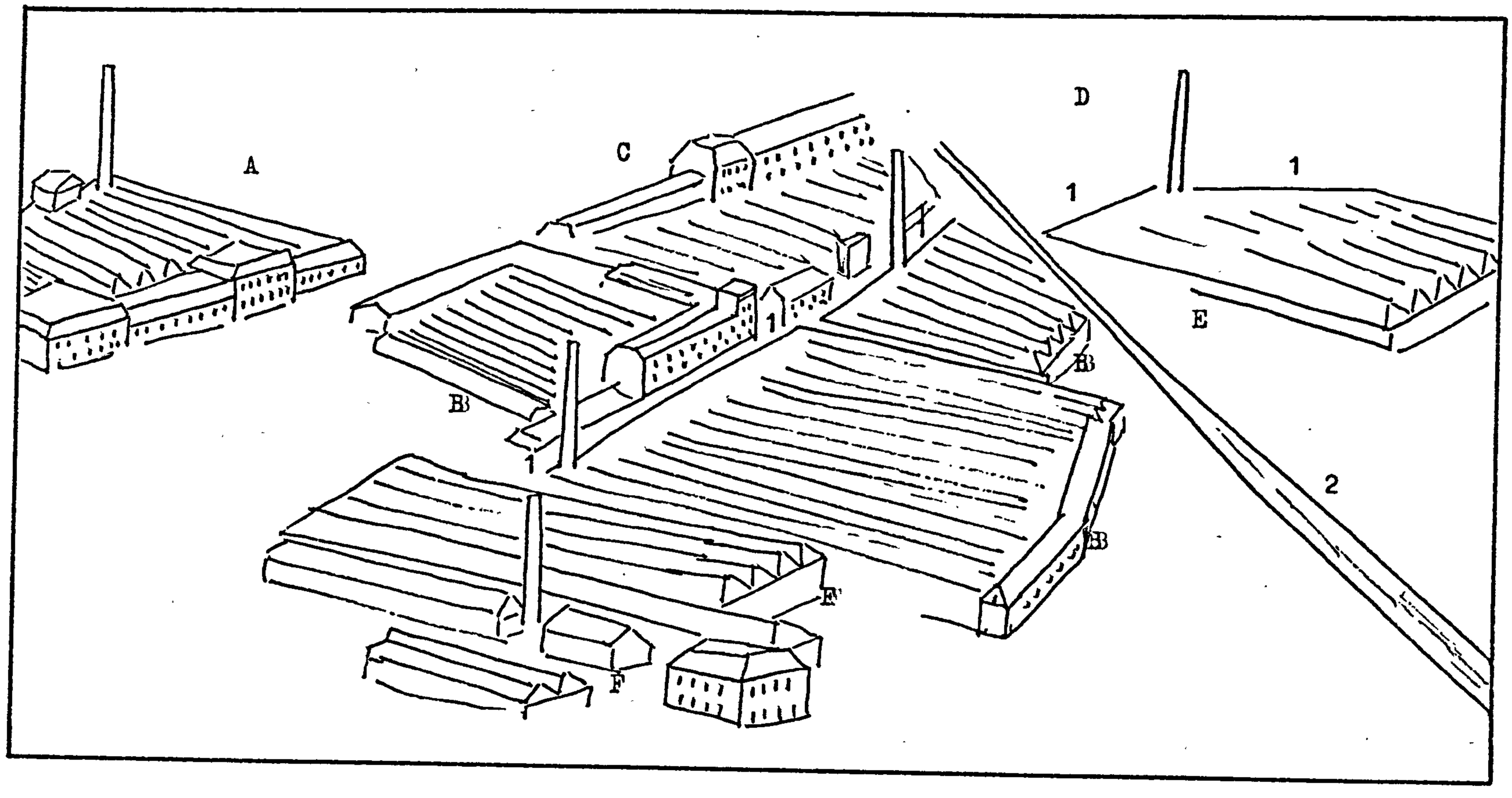
---

(1) Bryson, Industries of Kirkcaldy, 60 - 81

(2) A Muir, Nairns of Kirkcaldy (Cambridge 1956), 62

FIG. 7.1

FORMER LINEN WORKS IN NORTHERN DUNFERMLINE



A - Victoria Works C - Pilmuir Works E - Canmore Works 1 - line of town lade

B - St. Margaret's Works D - site of Caledonian Works F - Castleblair Works 2 - Stirling-Dunfermline railway

not indicate at all the scope of the hand-loom weaver and his dimensions for the workshop are faulty (1).

In the years between 1860 and 1876 eight more factories were set up so that there were, by January 1877, 5930 workers in the town's 11 factories. St Leonard's and Bothwell (1865) were on the Lyne Burn south of the town. On the flat ground north of the town 7 of the other factories were set up, along the town lade or on small burns (Fig. 7.1). Next the Abbey, Abbey Gardens Works (1860) also used the town lade. Only Victoria Works (1876) - the last - was not on running water but water could be obtained at no great depth (2).

In Kirkcaldy's third phase of development only one new works was set up, and the existing factories changed little, although, for example, Lockhart's Linktown Works had extensions in 1886 and 1900 (3). In Dunfermline's third phase no new works was set up within the town and it might be thought that this represented stagnation. Instead, there was expansion in two directions. With some 6000 workers in the mills the immediate labour market, even with immigration from other parts of the county, was fully stretched - "Dunfermline's streets were so thronged by weavers and mounters and tenters leaving the factories that, at the lunch hour, no townswoman would venture on a shopping errand" (4). Factory trains were run in from Cowdenbeath and Lochgelly to bring the miner's daughters (5) but in 1890 Erskine Beveridge and Co set up a power-loom factory in Cowdenbeath; "the youthful burgh has a large and increasing population and it is expected labour will be more easily got in that quarter than in Dunfermline"(6).

The Dunfermline works differed from those in Kirkcaldy in that most of them were substantially altered at various times after their establishment. Erskine Beveridge's first St Leonards Factory was single storey and unpretending, then came the warehouse "a stately detached building in the Italian style of architecture, and three

---

(1) Bremner, Industries of Scotland, 242-245

(2) E Henderson, Annals of Dunfermline (Glasgow 1879), 657, 665-666, 676, 685-687, 690, 699-700, 702, 704

(3) Lockhart, Lockhart and Sons, 7

(4) W T Barr, For a web begun; the story of Dunfermline (Edinburgh 1947) 46, 56

(5) P W Brown and A Westwater, History of the early Lochgelly coalfield, (Lochgelly 1954), 40

(6) Campbell's Almanac, (Dunfermline 1890), 7

storeys in height" (1). Additional loom-sheds were later built behind this. Walker and Reid's Albany Works began as one building of flexible design in 1874, so that the yarn store could be - and was - used as office accommodation until such luxuries could be better afforded. In 1882 a temporary warehouse was built and partly used as an office. In 1909 the office block and warehouse were completed in local sandstone "to a rather splendid design".

Mills established in the interior of the county were all set up during the second phase. Of these the first appears to have been that set up at Freuchie by William Lumsden in 1860, employing about 100 looms, Mechanisation came in rapidly along the Leven, at Leslie, Markinch and Kirkland, and in the Howe of Fife where weaving factories absorbed large numbers of hand-loom weavers in Cupar (3), Freuchie (3), Falkland (2), Strathmiglo (2), Auchtermuchty, Kingskettle, Ladybank and Dunshelt.(2). Most of these works managed to survive till the First World War but many of them succumbed to the dislocation of supplies and markets during and after the war.

Before reviewing the physical evidence remaining in the landscape of former weaving activities it is proposed to spend a little time examining the divergent Dunfermline damask tradition and its outward manifestations. Remarkably for two towns only thirteen miles apart, Dunfermline had specialised in fine linen from the beginning of the eighteenth century while Kirkcaldy has shared with the rest of the county the production of less-specialised medium-weight cloths.

Turner points out that the late nineteenth century mechanisation made a fresh start possible and that some mills in the newer Kirkcaldy suburbs did adopt damask working, as did some of the country mills (3). Nevertheless, such developments scarcely disturbed the centre of gravity of the damask industry which remained dramatically based on Dunfermline.

How did the damask industry differ from the production of sheetings and

(1) Brenner, Industries of Scotland, 244

(2) RHP 3948; RHP 3949; RHP 395); Warden, Linen Trades, 501

(3) Turner, Dunfermline and Kirkcaldy, 144

towellings and chair canvas? Cavallo has shown how fashion was "the solid prop supporting this rather delicate industry during its formative years", but in fact fashion was a crucial factor throughout the history of the industry (1). "It would appear that taste in the matter of table linen changes as frequently as taste in matters of dress, and that the favourite design of today may be a drug in the market next month. At one time a stately classical style is in vogue, at another nothing but florid Italian will sell, and with the next change perhaps the public taste may be met by a bit of modern device" (2).

The need to keep ahead of and indeed mould public taste meant constant revision of designs and punching of Jacquard loom-cards. Thus Balfour's "Crimean Hero Tablecloth" took about eight months to design and execute , at an outlay of nearly £600 (3). Understandably, the manufacturers were keen to encourage the training of designers. From 1826 to 1833 a drawing academy was jointly supported by the Board of Manufacturers and the Dunfermline manufacturers, who contributed £126 annually. The principles of drawing were taught to young men to fit them to be designers. The Board also awarded premiums for excellent designs in damask goods (4). The School of Art - the present Dunfermline Press Office - was opened in June 1855, under the patronage of the linen manufacturers to provide training for designers of damask. At the same time, much of the necessary design training appears to have been done within the individual firms.

In the years immediately prior to the First World War there was increasing concern about the future of the industry, particuarly with regard to the tariff-ridden American market. In order that training might be more than rule-of-thumb learning on the job, the Lauder School of Textile Industries was planned as an adjunct to the Lauder Technical School. The first plan in 1907 provided for a single-storey weaving shed of 3200 square feet fronted by a two-storey block with laboratories and classrooms on the ground floor and on the first floor, a classroom, a design room and museum, and a museum library and reading room. The elevation of the school was to be Gothic in style.

---

(1) A S Cavallo, To set a smart board;Fashion as the decisive factor in the development of the Scottish linen damask industry, Bus. Hist. Rev. 37, (1963), 49 - 58

(2) Bremner, Industries of Scotland, 244

(3) Ibid, 246

(4) Ibid, 242

The design of 1909 differed in some respects from that of 1907 and it is tempting to view these as stemming from a recognised need to view the industry as something requiring scientific study rather than comparison with the best practices of the past. Essentially the School retained its resemblance to a small mill with its single-storey four-bay weaving shed at the back and the two-storey block in front. The weaving shed was, however, enlarged to 4000 square feet, the additional space being used for a metal workshop and experimental engines. The weaving shed proper was equipped with fourteen power looms and three hand looms, one to take broad webs. The hand looms would have been necessary for design work. The ancillary machinery was also present - cop winder, pirn winder, bobbin winder, drawing machine, warping machine, warping mill and beaming mill, and Jacquard card lacer.

The first floor rooms were allocated for textile testing and analysis, a weaving lecture room, mechanics laboratory and heat laboratory. The first floor now provided four rooms, a lecture room, machine drawing chemical laboratory and electrical laboratory. The external treatment was solid rather than aesthetic, with rather heavy coursed stonework. The need to have large windows made it difficult to achieve standard classical proportions but there is a strongly classical look about the building, with its symmetry, its doorway surmounted by pilaster mouldings and a pair of Ionic columns in the central void on the first floor (1).

In the revised design - the one adopted in building the School - N and D Barclay seem to have recognised, consciously or unconsciously, a number of trends. In the internal arrangements there was a clear shift towards regarding the textile industry as a skilled occupation with laboratories, facilities for textile analysis and workshops. By switching from Gothic to Classical style the architects were perhaps influenced by the larger and more splendid mills in the town - St Margaret's, St Leonard's, Pilmuir, Castleblair, Victoria, Albany - whose final additions were all neo-classical, and by the implications of accuracy, proportion and solidity the style confers. The creation of the School as similar as possible to a damask factory in appearance was a measure of the satisfaction - perhaps even pride - felt at the impression created by the splendid facades.

Kirkcaldy and the other Fife mills produced modest goods, the home market

---

(1) Dunfermline Dean of Guild Court, Plans 680, 788

was important, change was relatively slow and expectations modest. Mills were not large and few of them have architectural pretensions. The standard pattern was the single-storey weaving shed fronted by the "clean" block, housing office, sales, packing and despatch. Lockhart's Linktown Works has a seven-bay weaving shed with a quite-anonymous office block of three storeys which still clearly shows its origin as an early nineteenth century tenement. When Denfield Works was extended in 1891, the office block built was a simple two-storey block of ground floor area 1140 square feet. The ground floor comprised stock room, counting house, sale room and private room while the upper floor had a room-and-kitchen house and a worker's bothy. Hendry's Steam-Loom Factory in Whytescauseway had weaving sheds behind and a three-storey block with attics in front. Solidly, but plainly, built, the most one can say of the mills outside Dunfermline is that they do not attract attention in any way (1).

The Dunfermline damask industry was strikingly different. Its appeal was less utilitarian than to the feelings - and the crash after World War One demonstrated the fickleness of these. It attracted the aura which surrounds something which is made and bought for sheer pleasure. Thus in "The Old Wives' Tale"- "They descended together to the parlour. A white cloth for tea lay folded on the table. It was of the finest damask that skill could choose and money buy. It was fifteen years old, and had never been spread. Constance would not have produced it for the first meal, had she not possessed two others of equal eminence" (2). Damask was bought for its whiteness, for its sheen, for the beauty and interest of its designs. Dunfermline led the world in the production of fine table linen. America proved a major sector of the market from about 1840, Bremner quoting the figure of £150000 (3). The McKinley tariffs of 1890 posed a challenge, thus exports to the United States fell from £301,557 in 1896 to £213,935 in 1897, but that the industry managed to sustain itself even in the face of fiscal opposition is shown by such years as 1906, when £362,860 of linen exports went to the United States, as well as £31,578 of cottons (4).

The Dunfermline mills were big, they were successful, they were proud of the linen they produced; as they prospered and expanded, the pride

---

(1) Kirkcaldy Dean of Guild Court, Plan 584

(2) A Bennett, The Old Wives' Tale, 1964 edition (London 1964), 461

(3) Bremner, Industries of Scotland, 242

(4) Barr, For a web begun, 54; Turner, Dunfermline and Kirkcaldy, 132

found expression in the buildings, particularly the office and warehouse blocks. The weaving sheds remained single-storey with the chimney tucked away as unobtrusively as possible but the office blocks were treated as not merely utilitarian, they were conceived of as palace fronts with external proportions and detailing of the greatest importance.

St Leonard's (Erskine Beveridge) has already been mentioned, here the three storeyed building is clearly modelled on a Renaissance palace, with Corinthian columns on the ground floor, channelled masonry at the corners and round the ground-floor windows, elaborate decoration at the eaves and large chimney stacks. Albany Works(Walker Reid and Co) is a slightly uneasy two-storey block with the doorway flanked with Doric columns supporting an architrave incised "Albany Works". Castleblair (Inglis & Co), although a large works, suffered from a restricted site for its front block, and the result is a building of good enough stone but with the windows - and especially the door - of unhappy proportions.

Undoubtedly the three finest factories are those along Pilmuir Street. At Victoria Works (Inglis and Co) the front was conceived as a whole, with a central two-storey block and wings on either side. Each wing is slightly advanced at the end and is pierced with a large doorway surmounted by a flattened arch. The ground floor of the main block and the ends are of channelled masonry, the remainder of polished ashlar. In the main block the ground floor windows are quite plain, and a heavy cornice separates the first floor which, in true piano nobile style, receives heavy ornamentation. Corinthian pillars and pilasters flank the central windows and the windows are topped by pediments. A heavily ornamented cornice tops the building, which is advanced from the rest of the facade. To the north end of the facade was added a two-storey block in 1898 containing design rooms, doyley room and sewing machine room but this, while destroying the symmetry of the front, was built in matching style.

Pilmuir Works (A Reid and Co) is certainly the most impressive of the mills, the front being 280 feet long and continued into the lower, but almost as impressive,St Margaret's (Hay and Robertson). The Pilmuir site is an awkward one, a square with a corner cut off by the railway, but the works expanded in various phases until the eastern side of the site was filled by the warehouse block. What we see today is a great

PLATE 7.e

PILMUIR WORKS, DUNFERMLINE (091877)

PLATE 7.f

ST. MARGARET'S WORKS, DUNFERMLINE (091879)

wall of masonry three storeys high, with an additional flat lit by roof-lights, and with a frontage of 28 windows. The two slightly-advanced windows at either end command attention but the middle bay of two windows, although also advanced and capped with a plaque and ornamentation, is almost anonymous. Again the ornamentation is mainly classical, with chamfered corners, windows with successively lighter ornamentation as one ascends, and a heavy string course separating first and second floors (1).

In 1898 Hay and Robertson built what they called a new warehouse in their mill. The ground floor was 155 feet square and an extra storey was built on to the south and west sides, producing a building which is probably the most pleasant and satisfying of all the Dunfermline mill buildings. The ground floor was made up of the lap house, where the articles were folded for packing, sewing machine room, packing room. sample room, stock room and counting house, with cashier's office. The first floor comprised show room, sale room, designer's room and three private rooms. The show room and sale room were decorated with ornamental fretwork on pitch pine couples fixed to the steel trusses for the roof. (2).

The exterior was again of classical derivation but was lighter than in the other factories, due to the use of polished ashlar on the first floor. As befitted the location of counting house and rooms where confidential business was discussed, the corner was emphasised by the addition of a tower almost as deep as another storey and surmounted by a colonnade. The sides were divided into panels, each of which consisted of two windows on the ground floor surmounted by a row of three windows on the first floor. Two Doric columns separated the windows, and the pediment above the windows projected above the roof line. The panels were separated from each other by roundels containing the firm's monogram.

Hay and Robertson later expanded across Foundry Street, and at this time the warehouse was extended east and a bridge built across the street. Although the need to fit this to an existing floor level meant an unsatisfying solution, an attempt was made to merge the bridge into the building. The same stone was used, pilasters divided the bridge into panels, and cornices were used to emphasise the continuity with the parent building.

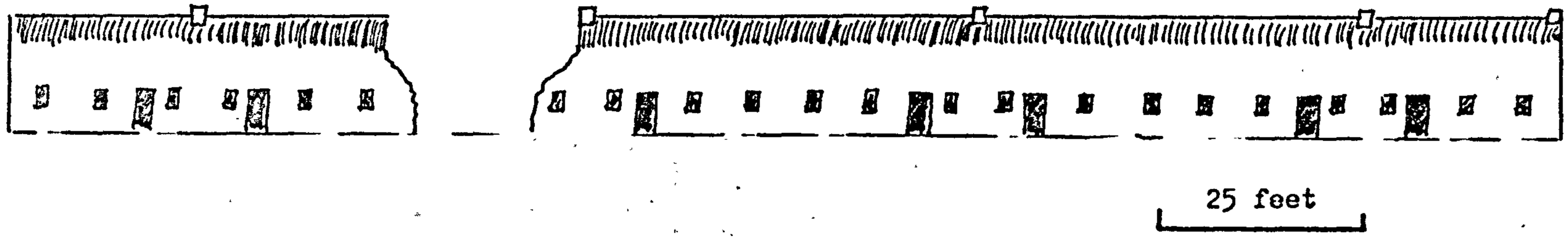
---

(1) Dunfermline Dean of Guild Court, Plans 374, 672, 725

(2) Ibid, 7

FIG. 7.2

FERGUS'S FACTORY, LINKTOWN, KIRKCALDY, 1786



The irony of the situation, which might appeal to the moraliser, is that none of the Kirkcaldy firms closed down in the 'twenties and 'thirties, and linen is still woven in the town. The specialised Dunfermline industry was unable to survive the First World War and its aftermath, the number of looms on linen fell from 7000 in 1919 to 1000 in 1929 and 600 in 1939 and today linen is no longer produced in the town.

From the preceding remarks concerning two towns only, and bearing in mind the long duration and wide distribution of the linen industry in Fife, it must be clear that reminders of the weaving industry are thick upon the ground, even granted the speed of demolition of old property. In the weaving suburbs of the larger towns, the small towns and villages and in the country districts many, if not most, of the houses over a century old must have been hand-loom weavers' cottages - places of work as well as dwellings.

Perhaps the earliest definite notion we can form about hand-loom weavers' housing is from a plan of the "factory" in Linktown of Abbotshall belonging to Mr Fergus (Fig. 7.2). This shows a row of cottages, each about twenty-five feet long, single-storeyed, with thatched roofs, and each with two rooms, one with one window and the other with two. Dated 1786, the plan states that the houses are new. The row occupies the length of eight cottages but there is a gap for access to Fergus's garden behind them. These may well be the houses referred to in an insurance policy of 1796, whereby John Fergus and Son, Kirkcaldy manufacturers insured "houses communicating in Linktown" for £200 and the stock and utensils therein for £3600. Since Walter Fergus's house was valued at £1000, James Spence of Dunfermline's stone and slated house and warehouse at £200, and two ranges of houses at Kirkland at £40 and £135, this does not appear unlikely . However, it is clear from an examination of houses of the appropriate age in the county that most hand-loom weavers' houses had the door in the middle and only one window on either side. It is clear also that many two-storeyed houses were built, with the looms on the ground floor and the living quarters upstairs (1).

Many of the places already mentioned, Kingskettle, Ceres, Cupar, Freuchie, Falkland, Auchtermuchty, and Strathmiglo, have sizeable quarters in which practically every house was formerly a weavers' workshop-home. In the towns, areas like Pathhead - Gallatown in Kirkcaldy, Carnegie Street in

---

(1) GH11937/8/635529; GH11937/11/648819; GH11937/14/653334; Parl P 1833, XXI, A3, 8; RHP 215

Dunfermline have suffered extensive demolition but in many of the smaller places former weavers' cottages have been modernised with extensions at the back and seem likely to outlast many more recently built houses.

Although Mr Fergus's row of houses was described as a factory it still combined working and living accommodation. In Dunfermline there still remain a few custom-built hand-loom weaving sheds representing the half-way stage from working a loom at home to full mechanisation in a power mill. Most are tucked in off the streets, for example, behind the Belleville Hotel where a small sandstone building of about 400 square feet is a former loom-shed. Again, off Chalmers Street, is another with a four-bay roof with north-facing windows, slate roof and sandstone walls.

The largest remaining hand-loom workshop is also in Chalmers Street, a sizeable stone building offering two full floors, an attic and a half-basement to the front and three floors and attic to the rear. Plainly built of sandstone, this building is eight bays long, sixty feet long and twenty-five broad. Unfortunately, the writer was unable to gain access to it and is therefore unable to describe the internal arrangements.

In the course of discussion on the contrasted industrial archaeology of Dunfermline and Kirkcaldy it was made clear that most of the mills in the county were of the Kirkcaldy type, single-storeyed weaving shed and a front block of at least two storeys. There stands at Freuchie, however, a small stone building, now converted to housing, which was a small steam-powered linen works in 1873. The main building measures fifty by twenty-five feet and comprises a ground floor, an upper floor of lesser height and a semi-basement at the east end, using the fall of the ground surface. Built on to the west end a large stone outshot housed the boiler and engine and in the garden behind was the pond for boiler water. This factory was very small and closed very early, becoming a boot factory when the footwear industry began the process of concentration from home-workshop to factory, similar to the linen industry. The boot factory in turn closed in 1912 (1).

Floorcloth and Linoleum

The spinning of flax and the weaving of linen were activities central to the economy of Fife. Of lesser importance were other activities -

---

(1) RHP 3950; Smith, County of Fife, 726

bleaching, dyeing, the manufacture of floorcloth, linoleum and carpets, steam laundering, even the manufacture of paper - in some way related to the core textile operations. To follow up all of these would be to ensure diffuseness and in any case some of the ground has been covered elsewhere (1). Instead some special attention will be paid to the floorcloth and linoleum industry on the grounds of its having played the most significant part among these ancillary industries as an employer and as a source of very distinctive buildings. Within the county its location was limited to three towns, Kirkcaldy, its birthplace, Newburgh, where the Tayside Floorcloth Company was founded in 1890 by T S Greig, formerly of Barry, Ostlere and Shepherd, and Falkland, where the S C W S set up the St John's Linoleum Works in a former linen factory in 1919, outside the period of this study (2).

The foundation and initial success of the floorcloth industry in Kirkcaldy was almost entirely due to the enterprise of one man, Michael Nairn, the establishment of whose "Scottish Floor Cloth Manufactury" at Pathhead in 1848 had been called "one of the boldest industrial enterprises ever carried out in Scotland" (3). In 1828 Nairn set up business as a flax canvas weaver in Coal Wynd. From tarpaulins and sailcloths he specialised in floorcloth canvas, installing special looms at a cost of £70 each, weaving cloth 8 yards wide. He built up a strong connection with about two dozen English floorcloth firms, and, recognising the inevitability of the eventual disappearance of the sailcloth market, decided that the most effective way of expanding his activities would be to start his own floorcloth factory which, being the first in Scotland, would be a fairly strong competitive position (4).

---

(1) E Gauldie, Mechanical Aids to Linen Bleaching in Scotland, Textile History, 1, 2 (1969) 129-157; CDM Ketelbey, Tullis Russell, (Markinch (1967); 'bleaching Works - Report of Commission', Parl P 1854-55, XVIII, 32, 89-91; 'Bleaching and Dyeing Works - First Report of Select Committee', Parl P 1857 (Session 2), XI, 184, 189; RHP 247/2; RHP 13481; Turner, East Central Scotland, 19-20; Turner, Perth and District, 129-130; Turner, Dunfermline and Kirkcaldy, 136-138

(2) Smith, County of Fife, 288

(3) C A Oakley, Scottish Industry Today (Edinburgh 1937), 101

(4) A Muir, Nairns of Kirkcaldy, (Cambridge 1956), 6

Until the early 'sixties, when artificial drying by hot air was introduced, reducing the drying period to three months, floorcloth took a year to dry out completely. Since it consisted, in its early days, essentially of layers of paint trowelled on to canvas in pieces 8 yards by 25, there had to be provision for huge, heavy pieces of cloth to hand drying for long periods. When building commenced in March 1847, Nairn knew that it would be the best part of two years before he could hope to see any substantial return at all on his capital. Perhaps understandably, the local savants dubbed the growing pile "Nairn's Folly". the name it has gone by ever since. Thus, the 1907 workers' banner carried a large picture of the factory, prominently labelled with its nickname.

The building was an impressive one, 160 feet long, 87 feet broad and 52 feet high, with walls of tremendous thickness and strength (1). Nairn had chosen a site midway between Kirkcaldy harbour and the newly-constructed Sinclairtown station, at the edge of the weaving suburb of Pathhead. In 1850 an extension was built on the beach, 130 feet long, 84 broad and 86 high, connected to the first by a bridge 30 feet broad and 60 feet long (2).

By 1869 the enterprise had grown until it was "the largest of the kind in the world; and the proprietors of it have done more to perfect and extend the manufacture than all the other British firms put together" (3). Artistically the floorcloth produced had advanced from the highly criticised products shown at the Great Exhibition to "the most magnificent work of the kind ever produced" at Paris in 1868. As a result Kirkcaldy floorcloth appeared in the palaces of most of the royal families in Europe (4).

Until 1914 it was a question of continued expansion, the details of which would be unnecessarily tedious. St Mary's Canvas Factory was opened in 1869 and mechanised in 1870, several factory extensions were built until main road and railway passed through canyons between the huge

---

(1) Bremner, Industries of Scotland, 344

(2) Fife Free Press, Centenary number; Muir, Nairns, 20; Smith, County of Fife, 287

(3) Bremner, Industries of Scotland, 343

(4) Muir, Nairns, 58

factories at Pathhead, and other factories were opened in Paris, near Stuttgart and in New Jersey (1). Nairn's Folly in full production had a pay-roll of 120; by the end of the century over 1500 were employed in Kirkcaldy by Michael Nairn and Company.

Nairn had started by selling floorcloth to the rich. As the century progressed, the market expanded in three senses. From a purely Scottish one it became international ("I have seen our floorcloth and linoleum beyond the first cataract of the Nile and I have seen it in the mosques of Constantinople"), the range of product and designs was greatly increased, and, from a product which only the wealthy could afford, floorcovering became a part of the household furnishings for a greater part of society (2).

James Shepherd, Commercial Manager and partner in Nairn's, built a factory, the Rosslyn Works, with Michael Beveridge, in 1864, also in the Pathhead district. In 1877, they formed the Kirkcaldy Linoleum CoLtd and the Lorne and Elgin Works were added to create another complex near Sinclairtown station. The Patent Floorcloth Co was founded in 1872 at Kirkcaldy station. When John Barry ("the best linoleum salesman the trade ever produced") and Edward Ostlere, the manager, left the Kirkcaldy Linoleum Co, they set up John Barry, Ostlere and Co (1882) and took over the Patent Floorcloth Factory. Several small firms, all near the station were absorbed into Barry Ostlere and in 1899 Barry Ostlere and the Kirkcaldy Linoleum Co amalgamated to become Barry, Ostlere and Shepherd Ltd. Thus, while Nairn's grew in a piecemeal fashion but from one centre and keeping in the one part of Kirkcaldy, Barry, Ostlere and Shepherd grew in an even more haphazard way, with three factories at Sinclairtown and several near Kirkcaldy station, although one of those was separated from the others by a main road and the main line railway. From eight firms in 1882 the number was rationalised to three, the two giants and the ailing Fife Linoleum Co surrounded by Nairn's in 1935 (3).

---

(1) RHP 12018

(2) Nuir, Nairns, 96

(3) Fife Free Press, Centenary number; Smith, County of Fife, 387-388

Kirkcaldy's sobriquet, "The Lang Toon", derived from the way in which the burgh and its suburbs, Bridgeton, Linktown, Pathhead, Sinclairtown and Gallatown, strung themselves along the shore and the main north road, like "ingins on a rope" as Andrew Fairservice put it. The great development of the linen weaving industry and the slightly later rapid expansion of the floorcloth industry was accompanied by a rapid spread of housing, thickening the thin ribbon of settlement from Pathhead north and filling in the wedge of land between Gallatown and Dysart. In this area Loughborough Road was one of high social status, beginning at its west end with foremen and under-managers and then housing the senior management personnel and some of the partners in the various works - although the pacemakers lived in the style of country gentry (1).

Most of the new housing was workers' housing, and much of it has been demolished in the last few years. An examination of the Census affords an opportunity of assessing the areas of origin of the new inhabitants, coming into newly-built houses around newly-built factories. The most striking feature of the new industrial streets was the very large proportion of workers who had been born within two miles. In Lorne Place in 1881 there were 18 linoleum workers; 10 were born in Dysart, one in each of Pathhead and Sinclairtown. Two were born in Warwickshire - perhaps some of the skilled men recruited at various times to bring in special skills - the others in Alexandria, Glasgow, Leith and Elgin. It is possible that this last followed Shepherd from Elgin to Nairn's and then to the Lorne Works. In Lorne Street in 1891 there were 15 linoleum workers, 6 born in Dysart, 5 in Kirkcaldy and the remainder in Auchterderran (2), Dunfermline and Markinch.

It is clear from these samples that the newer industrial housing areas did not attract any massive influx into the floorcloth industry from outside the county, or even outside the immediate Kirkcaldy area. The workers for the great expansion of the late nineteenth century came from the pool of labour already conversant with the linen industry in

---

(1) Thus Sir Michael Barker Nairn lived in St Mary's uphill from the canvas factory. He bought Rankeilour House, near Ladybank, as a summer house in 1874 and Dysart House in 1896, leaving St Mary's for his daughter. Edward Ostlere lived at Chapel House, where he bred Irish thoroughbreds. James Shepherd bought Rossend Castle, Burntisland in 1873.

the cramped, congested quarters of the traditional "Lang Toon". Alexander Place was a part of Institution Street, which runs from south-west to north-east parallel to St Clair Street, the A92. Building began from the south-west and Alexander Place was reached in 1880. Most of this area was cleared and redeveloped in 1969-70 but a description of Alexander Place would be representative of most of it. The Place was of roughly dressed poor quality sandstone. Built in blocks of four houses, each block had two houses at ground level with two on the first floor. Access to the first floor houses was by a pend between the ground floor houses and a stair at the rear. A typical ground floor house measured 30 feet by 16 and consisted of two rooms with a tiny lobby. Each room had a fireplace at the end away from the pend with a small cupboard beside it. At the window facing the street was a sink with tap water. A yard at the back contained ancillary buildings, toilet, coal-shed, with some drying-green space.

Institution Street in 1891 counted among those enumerated 171 workers; of these 101 (or 59%) were linen or floorcloth workers, respectively 37% and 22% of the total number of workers in the street. Of the linen workers 47, or 75% were natives of the parishes of Dysart, Kirkcaldy and Abbotshall. Perhaps even more remarkable was the fact that 69% of the linen workers were natives of Dysart parish, showing very great stability among the textile section of the employed population, despite he radical changes in the industry many of them must have lived through. 21% of the linen workers had been born elsewhere in Fife, and the birth-places of most of them - Auchtermuchty, Falkland, Dunshelt, Kettle, Kinglassie - would lead to the supposition that these were displaced handloom weavers plying their skills in the mechanised, urban, context.

Of the floorcloth workers in the street 61% had been born in Dysart and Kirkcaldy, all but one of them in Dysart. A further 18% came from elsewhere in the county and again the names are suggestive of the drift from the depressed hand-loom industry - Newburgh, Auchtermuchty, Leslie, Markinch, Dunfermline. From an analysis of the ages and places of birth of the children of those born outside the town it is clear that most of these outsiders moved into the Kirkcaldy area in the years 1877-1884; in other words, they are likely to have been the first

families to dwell in the Institution Street houses as they were completed.

From these samples, and there is no reason to suppost that they are untypical, the stability of the textile tradition in the weaving suburbs of Kirkcaldy seems well established. The new industrial quarters were filled from those already in the industry in the older suburbs and in the weaving areas of the county. The floorcloth and linoleum industries employed a wider range of techniques than linen-weaving and this may well be reflected in the fact that 20% of the Institution Street linoleum workers were born in other parts of Scotland than Fife. Nevertheless, the links with the linen industry and with the Sinclairtown district were very strong, and this is confirmed by the pattern of stability revealed by the Census.

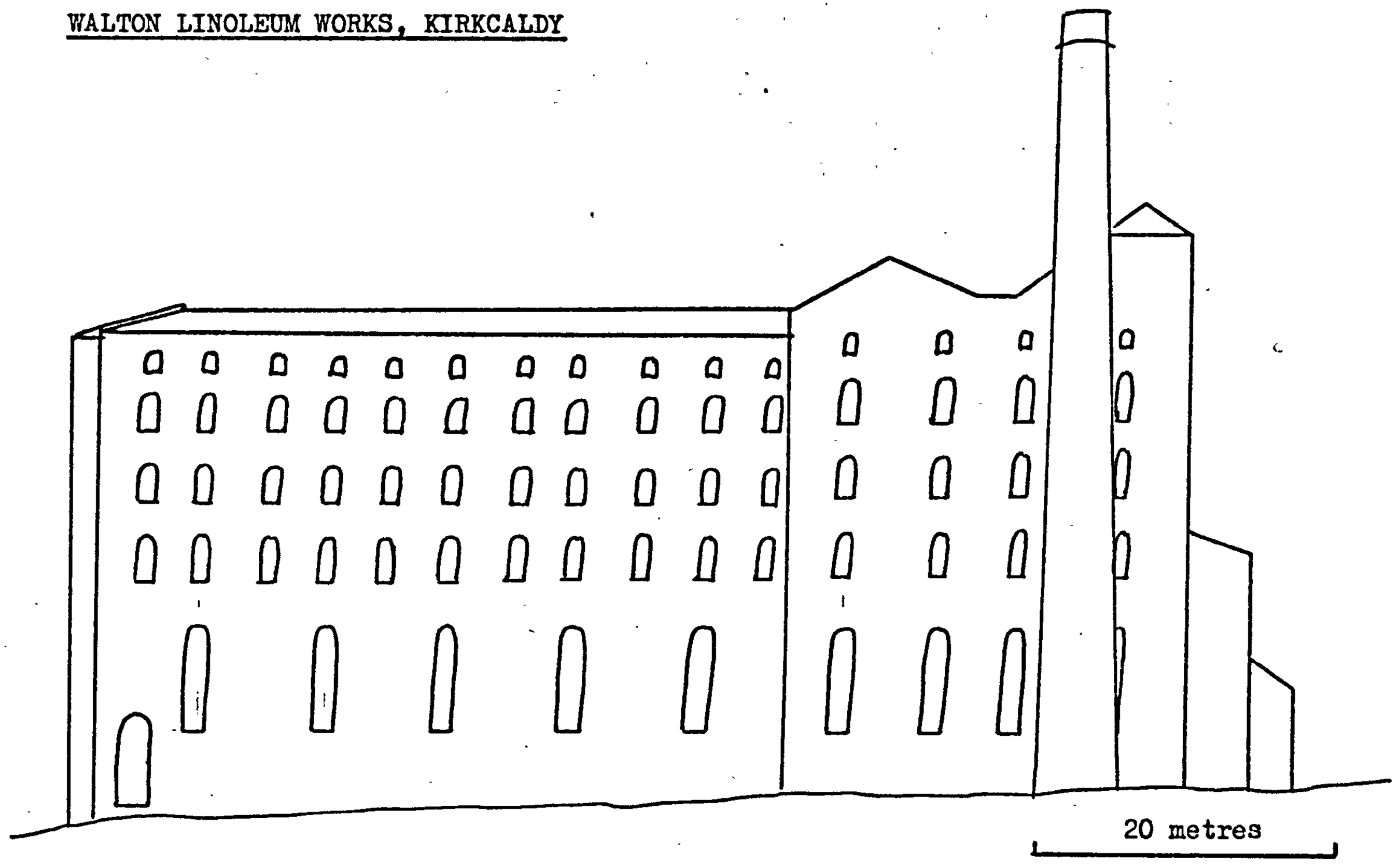
The period with which this thesis is concernad ended with the linoleum industry approaching its peak. This is not the place to record the contraction of the industry, the development of other forms of floor-covering, the less fortunate aspects of amalgamation, management lacking the drive and imagination of the pioneers. Instead, one places on record the facts that Barry, Ostlere and Shepherd closed in 1964, and production of linoleum at Nairn-Williamson has fallen so markedly that it is seldom that one can now say:-

"For I ken masel' by the queer-like smell,
That the next stop's Kirkcaldy".

Since the factories were totally unsuited for conversion to other uses, there has been a complete clearance of the thirteen acres of Barry's factories and since 1967 some of the older Nairn factories have been demolished - including Nairn's Folly. Many of them were of cyclopean proportions - the dimensions of Nairn's Folly have been given but this was eventually dwarfed and engulfed by even greater buildings, 90 feet in height. Externally, there was a strong family resemblance in all the factories due to the common manufacturing situation of trying to work long lengths of heavy, wet material in as continuous a process as possible. Barry's Abbotshall works, Nairn's Folly and the Lorne Works were all built of local Cullaloe sandstone but many of the later works - like the Walton Works - were built entirely of brick and this material

FIG. 7.3

WALTON LINOLEUM WORKS, KIRKCALDY



always played an important part in internal building. The fenestration of the works is unusual and reflects the internal arrangement of the manufacturing processes rather than any attempt to achieve visual harmony. Barry's Walton Works (Fig. 7.3) had very tall windows at ground floor level and dwarfed windows on the top floor, with intermediate sizes between. This building, part of a complex 1000 feet long, was built (1901) for the first inlaid linoleum machine, invented by Frederick Walton. The process was continuous, with mixing on the ground floor, after which the process proper began on the concrete top floor, with space underneath for the drying of ninety-foot lengths of linoleum.

Although many of the large factories have now gone, three other interesting remains of the industry are still to be seen in Kirkcaldy. Ironically, while Nairn's Folly has gone, his canvas factory of 1828 is well-preserved as a result of its having become the British Legion Social Club. A plain building of rough sandstone blocks, its fenestration suggests that it was originally a two-storey building with a loom-shop on the ground floor and that another loom-shop was later formed by adding a floor.

At the top of The Path stand the offices used by Nairn's up to 1939. Although essentially single-storey, they bear comparison with the best faces of the Dunfermline mills. Built of a warm red sandstone, the block glows in the westering sun. The door and curved corner window are flanked with Ionic columns, the door is surmounted by a dignified pediment and the roof is concealed by a parapet and colonnade. Not as ostentatious as some of the Dunfermline mills, these offices convey successfully an stmosphere of order and confidence.

Kirkcaldy museum - itself the result of a public gift by John Nairn in 1925 (1) - now has in its industrial annexe a Linoleum Room which houses many real objects relating to the history of the industry, including a reconstructed hand-printing loft. Kirkcaldy was fortunate in that it had, in the days when its most celebrated industry was declining, a museum curator far-sighted enough to recognise the need of future generations to understand their heritage.

---

(1) Muir, Nairns, 118, 128

PLATE 7.g

CONSTRUCTION DETAILS,

LINOLEUM FACTORY,

KIRKCALDY (287924)

PLATE 7.h

NATIONAL WORKS,

KIRKCALDY (277918)

CHAPTER 8

Overland Transport

Earlier chapters have developed the concept of Fife as a network with no dominant centre. As a consequence, there has evolved a pattern of roads and tracks reflecting the relatively short-distance movements of people and goods within parishes and within the hinterlands of the seaport and market towns. Superimposed on this pattern are the linear elements of the national network, linking the Queen's Ferry to Crieff and Perth, and the Broad Ferry (Burntisland - Kinghorn - Kirkcaldy) to the harbours on the Tay opposite Dundee (Woodhaven - Newport - Ferry - Port-on-Craig). The study of overland transport in Fife must involve a recognition of these two elements and the dual objectives of the personalities responsible for the overall improvement in land communications in the last two centuries. In any consideration of contemporary evidence it is necessary to consider and sympathise with those who - like the inhabitants of East Markham in Nottinghamshire - "tended to spend their labour and their rates upon the network of roads in the middle of the parish and remained profoundly indifferent with Angus MacTavish was bogged on his way to Aberdeen" (1).

Since it was the long-distance traveller who was most likely to narrate his experiences and be scathing at the expense of local efforts at road improvement, care should be exercised in the acceptance of such comments, whether sanguine or the opposite. Johnson in August 1773 found the roads "neither rough nor dirty .... Where the bottom is rocky, as it seems commonly to be in Scotland, a smooth way is made indeed with great labour, but it never wants repairs; and in those areas where adventitious materials are necessary, the ground once consolidated is rarely broken; for the inland commerce is not great, nor are heavy commodities often transported otherwise than by water" (2). Yet Douglas, nine years later in 1782, found the streets of Kirkcaldy "ill paved and the terror of strangers" (3). Conceivably Johnson's critical

---

(1) W E Tate, The Parish Chest, 3rd edition (Cambridge 1969), 247

(2) S Johnson, Journey to the Western Islands of Scotland (Oxford Standard Authors, 1930), 4

(3) F Douglas, A General Description of the East Coast of Scotland from Edinburgh to Cullen (Paisley, 1782), 12

faculties were lulled since it afforded "a southern stranger, a new kind of pleasure, to travel so commodiously without the interruption of tollgates" (1). Overall, it is difficult to agree with McIlwraith that "for the majority of users roads were considerably more tolerable than has been believed". Instead one is impelled to the conclusion that potential road-users adapted themselves to the state of the roads (2).

Many of the early local links in Fife were connected with the Church. On Tayside Balmerino Abbey was founded in 1227, when it was given the grant of the whole quarry at Nydie, near St Andrews and eight miles away. A quarry road was established, with a branch to St Andrews (3). Functioning for parts of its length as a parish boundary, the quarry road has gradually passed out of use but some stretches of it have been a basis for modern minor roads (eg in 3922, 4021 and 4219) and others survive in the field pattern of the enclosed farming landscape.

The need for regular access to the parish church for worship and for burial parties resulted in the evolution of kirk roads four feet broad - sufficient to accommodate four men carrying a coffin - and of bridges built by kirk sessions. These are particularly in evidence in the hilly parts of the county. In Dunbog kirk roads run from Collairnie (306171) and Balmeadie (318182) to the church at 288180 (4). Running straight as a die towards the church at 310084, the Kettle kirk road led from the upper part of the parish around Muirend (318072).

Bridges built in the fifteenth, sixteenth and seventeenth centuries defined the lines of traffic which afterwards developed into roads (5). For example, routes from Dunfermline, the ferry at Pettycur and from Markinch focussed on Auchmuirbridge on the Leven (219011) before going

---

(1) Johnson, Journey, 4

(2) T F McIlwraith, 'The adequacy of rural roads in the era before railways', Canadian Geographer, v 14 (1970) 358

(3) R F Smith and N M Johnston, 'Quarry to Abbey: an ancient Fife route', Proc. Soc. Ants. Scot. v LXXXIII (1948-49), 162-167

(4) W S Buchan, The Parish of Dunbog, its history, kirk and people (Cupar 1953), 12

(5) D G Moir, 'The Roads of Scotland - Statute Labour Roads; the First Phase', Sc. Geog. Mag. v 73 (1957), 104

on to Falkland (1). The road from Kinghorn to the north fell into disuse in the eighteenth century, and in 1800 the southern stretches were enclosed. At Kirkness a wall was built across the old road in 1826, and in 1830 part of it was ploughed up. The discovery of coal at Capledrae led to agitation for the re-opening of this early road in 1836 (2).

Evidence of the condition of roads in the late eighteenth and early nineteenth centuries is fragmentary. David Methven's letter of 1785 has been quoted earlier (3): in 1803 Arabella Moubray wrote to Lord Morton from Cockairney in these terms:- "The road from the North Ferry to Couston, this place and Otterston is in wretched bad order and indeed hardly passable". Parts of this road were so steep that "a Lady in taking the turn in a Gig was thrown into the Moss only last year". Also, near Aberdour "the road .... has always been so deeply rutted that it was impossible for six months of the year .... and the Tenant regularly opened the fences at each end of the Meadow ground which became the road during the winter".(4). Near the Kinross border the reports were similar - "hitherto the rains have been so unremitting as to have made the roads almost impassable" (5) - "whenever the roads are tolerable shall take ride to Kinross" (6). Perhaps the clearest indication of the inadequacy of the roads is in the transport of lime from Charlestown to Valleyfield - 4 miles off - by sea and of the Halbeath coal being taken 4½ miles by wagonway and then 7½ miles by sea rather than the 5 miles by road (7).

---

(1) J T Davidson, The road of the Bluidy Feet" (Kirkcaldy, 1942) 1 - 6; J T Davidson, "The Gullets" and Kirkness (Lochgelly, no date), 3 - 4

(2) S R O, GD 1/42/Sec. 11/16

(3) Vide supra, Chapter 2

(4) S R O, GD 150/ Box 108

(5) S R O, GD 29/2063/40

(6) S R O, GD 29/2063/66

(7) Earl of Elgin's papers

Provision existed under Acts of 1661 (1) and 1685 (2) for heritors to change the routes of highways by up to a limit of 200 ells, so long as the change was wholly contained in their own ground. In 1741 two roads ran from Burntisland to Kirkcaldy, the more southerly of which ran along the seaside and was inaccessible at high water. The other road, by Drinkbetween (263885), was not only shorter but was often the only practicable road. Nevertheless, when Alexander Bruce of Grange enclosed part of his land so that the road, instead of going directly from 260880 to 263883, went via 257882, the Burntisland magistrates complained that this new route was "in many Places impassable ... for all Sorts of Wheel Machines". Instead of one side of the triangle measuring 584 yards, two sides had to be followed, one of 576, and the other of 566 yards. The assessment of this change was that "the new Road was not only about twice as long as the old, but more than twice as bad" (3).

The procedure for turning about roads in this way was comparatively straightforward. For example, on 5 January 1797 Colonel William Clephane petitioned the Justices of the Peace at Cupar under the Acts that the road from Powguild (209928) and Little Raith to Auchterderran (215959) be turned about. At that time the petitioner was in process of enclosing his farm at Dundonald and clearly did not wish the old road to cut diagonally across his fields. The Justices appointed a committee of four local landowners "to visit and inspect the road mentioned in the Petition and proposed alterations thereof, and to cause measure and stake out the same, and to report ...." (4).

In general terms, however, although the turning about of roads may have benefited the road-user in addition to the encloser of land, road improvement was obtained in two main ways; by the increasingly efficient organisation of statute labour and by the creation of a system of turnpike trusts intimately interwoven with the statute labour network.

---

(1) 1 Ch. 11, c. 284

(2) 1 J VII, c 49

(3) D P L, Burntisland Magistrates v Alexander Bruce of Grange (1741)

(4) S R O GD 1/49/150

Statute Labour Roads

Moir has clearly outlined the main features of the statute labour system of Scotland; there follow in an attempt to build on to his description of the legal evolution of the system, some concrete examples of its operation in the comparatively restricted area of Fife (1).

Statute labour roads were roads repaired by personal labour as defined by various statutes from the seventeenth century on. Six days work was the basis on which the system was founded, and the parish was the unit or organisation with the constable as the executive officer. Statute labour roads suffered from the inevitable disadvantages of a piecemeal approach by non-specialist roadmakers and unskilled labourers who - despite not having to work at the critical times of the agrarian year - could scarcely have been dedicated to this service. The constable had an impossible burden, having to organise attendance or commutation of services and then to supervise the actual road-making operations. Absenteeism or defection involved not merely a great deal of additional work but also meant that the roads laid a correspondingly greater burden on those who did contribute. Thus, the 14 men included in the "Return of the men of Kettle parish in a poor Condition not able to answer the Roads" by Mr Hugh Glass, Minister of the Gospel on August 15, 1774, escaped their road service without their absence being compensated for in any way. Evasion occurred at higher social levels also. "Lord Crawford has 4 ploughs in East and West Cults and 3 in the Walton. He gave no service in the summer 1774 and all the Constable could recover from him was 13/=4 as the two days Conversion of the four ploughs at Cults". Lord Crawford reacted strongly when the Justices of the Peace for the county discussed the matter in his absence - "without hearing what I have to say for myself, it is giving me Cupar justice - Whatever Accounts are given at the district meeting may I presume be yet rectified it is therefore to be hoped that I may have a hearing at the next meeting of the Committee as any person may be guilty of a mistake - I beg that Reddie the constable may have no reproof upon my account as it was the Gin that spoke in him that day" (2).

---

(1) D G Moir, 'The Roads of Scotland. Statute Labour Roads; the First Phase', Scot. Geog. Mag. v 73 (1957), 101-110; D G Moir, 'The Roads of Scotland. Statute Labour Roads; the Second Phase', Scot. Geog. Mag, v 73 (1957) 167-175

(2) S R O GD 26/12/24

In the late eighteenth century ad hoc road committees of heritors were set up by the Justices of the Peace to try to rationalise the implementation of the statute labour and from 1790 statute labour in the county was entirely based on the conversion of services to money which was then devoted to the employment of specialist labour. At the same time the unit of organisation became the district; the county had four of these - Kirkcaldy, Dunfermline, St Andrews and Cupar - each with its own Surveyor (1).

The income of the district trustees came from three sources, from the owners of vehicles plying from hire, from householders occupying house property valued at over 20/= per annum, and from an assessment on land. Of these, the first two fell into desuetude due to the impracticability of their collection (2). Some of the burden of maintaining the roads was to be laid on the owners of all vehicles plying for hire and the 1797 Fife Statute Labour Act directed the trustees to convert the statute labour from the owners of all chaises let for hire at 10/= (for 4 wheels) or 5/= (for 2 wheels) and from the owners of carts and similar vehicles let for hire at 10/= (for 2 horses) or 5/= (for 1 horse) (3).

In place of personal services demanded of householders the Act empowered the trustees to assess "all householders, cottagers, labourers and tradesmen, of every determination, whether masters or journeymen, living together or separately in one house" at up to six days' labour "as they shall consider proportioned to the circumstances of each individual". Farm servants hired for the year at a specific annual wage were exempted, and there were powers to excuse the indigent (4). Later this assessment became scaled to the value of the house occupied by the individual, either as tenant or proprietor, as shown in Table 8.A.

---

(1) 30 Geog. 111 c 93

(2) W Pagan, Road Reform (Edinburgh 1845), 163; S R O GD 164/353

(3) 37 Geog. 111 c 52 sec. XI; S R O GD 164/353

(4) Ibid, secs XII - XIV

Table 8.A

Scale of Assessment for Statute Labour, 1817

Rent or yearly value of House	Assessment
20 - 30/=	1/=
30 - 40/=	1/=6
£2 - 3	2/=
£3 - 4	3/=
£4 - 5	4/=
£5 - 6	5/=
£6 and upwards	6/=

(Source :- S R O GD 164/353)

In order that these two sources be adequately assessed, each district appointed a Surveyor and Collector of Statute Labour whose duty it was to supply - on oath - an exact list of the owners of vehicles let for hire and of individuals liable for statute labour in his district before 5 January. By 15 January the Clerk of the District was to have a copy of this List of Assessment and - if approved by the trustees on 1 February - the individual assessments were to be delivered in the ten days up to 25 March of the year for which the conversion was due. Collection began on the 29 of September "or the next lawful day thereafter". If the money was not forthcoming at his first call, a second and last demand was made within 14 days. The Collector attended trustees' meetings, and all courts of appeal, and was bound to make payment of the full amount of the total assessment, except when altered by appeal or finally written off as irrecoverable.

A final report on the collection was to be made to the District Clerk on or before the second Monday of November. This was "parochially arranged, containing the names of each individual assessed and the amount brought into a sum total .... which sum, under any deduction occasioned by arrear, or from being irrecoverable as aforesaid, he shall be immediately bound to pay to the Collector of the County" (1).

Despite the provision made by the Act for the assessment of the owners of vehicles for hire and of householders, this source fell into disuse, by 1845 its only existence being in the £15 yearly paid by Kirkcaldy,

---

(1) S R O GD 26/12/37

as the conversion of the assessment of the burgh's householders (1). It was the heritors who provided the bulk of the statute labour assessment, collecting this in turn from their tenants. The unit of collection was the ploughgate, 50 Scots acres of land or £70 of rent, in the option of the person being assessed (2). In Dunfermline District the assessment per ploughgate was 30/=, in the other three districts 36/= (3). The ploughgate conversion money had its own surveyor, following the same procedures and timetable as the Surveyor and Collector of Statute Labour. Accounts were kept on a parochial basis, but the money could be expended on a more realistic basis (4). Thus, in 1796 28½ ploughgates from Ballingry and 15½ from Auchterderran were allocated to the Shank of Navity road (today's B920), the amounts per farm ranging from a half to three in the case of the three largest farms. The collection was split between Robert Beatson and Colonel Clephane, but by the end of the year 9 assessments out of 44 were still outstanding (5).

Nothing more clearly shows the nature of Fife as the home of the small laird than the number of proprietors - 789 - from whom the assessment was collected. Re-collection of the statute labour by the proprietor was in itself a considerable business - one had to re-collect from 72 tenants, another from 58, a third from 52 - so that the expense of collection was really concealed from the district trustees (6). Once turnpike roads were established, the agricultural community was paying for roads in two ways, through statute labour assessment and by virtue of the tolls incurred on journeys (7).

The way in which money was allocated, and the order of magnitude of the sums involved, is well brought out in Table 8.B.

---

(1) Pagan, Road Reform, 176

(2) S R O GD 164/353

(3) Pagan, Road Reform, 162

(4) S R O GD 26/12/39

(5) S R O, GD 1/49/149

(6) Pagan, Road Reform, 165

(7) Ibid, 163

Table 8.B.

Total Conversion of Statute Labour, Dysart Parish, 1823

Lord Rosslyn's Conversions	£55 : 10 : 8 (nearest 1d)
Sir John Oswald	5 : 10 : 3
Town of Dysart	2 : 6 : 1
Town of Pathhead	1 : 2 : 8
John Miller	2 : 2
Mr Millie	2 : 6
Bailie Whyte's heirs	3 : 3
Mr R Mitchell	3 : 7
Lord Rothes	15 : 11 : 1
Mr Fergus	17 : 4 : 1
John Anderson	3 : 7
David Swayne	3 : 7
	£98 : 3 : 7
deduct Proportion of General Expense	13 : 4 : 2
remains for allocation	£84 : 19 : 5
Allocated as follows:-	
To road from Gallatown to Dysart under Lord Rosslyn	£30 : 0 : 0
From Dysart to Blairgate under Lord Rosslyn	6 : 0 : 0
From Gallatown to Capshard under Sir John Oswald	40 : 0 : 0
From Pathhead to Overtown to the Muirquarry under Sir John Oswald	8 : 19 : 5
	£84 : 19 : 5

(Source:- S R O GD 164/353)

The establishment of a predictable source of income and the opportunity to appoint specialist staff or to put out work to specialist contractors meant the opportunity to create better roads and this comes through strongly in an examination of accounts from the 1770s and again in the 1820s. William Scott made 116 roods (812 yards) of road at Carslogie

for £3:17:4 in 1778, Henry Honeyman made a road of 184 roods (1288 yards) from Monimail to Caldcoats for £6:18/= in 1780, giving costs of 8d and 9d per rood respectively. Girls were paid for gathering stones for the road and on the Milton of Balgonie road Katherine Anderson was paid £11:2:9 "for Bread and Beer to the Milltown people" (1), thus indicating a difference from the practice in Dorset where the custom of supplying beer to harvesters was not extended to workers on the roads (2). The tools of the roadmaker - left with the Cults constable in 1778 - were - 3 good Spades, 4 old Spades, 5 breaking Hammers, 5 good Picks, 1 Garden Line (3).

Statute Labour could not be used during harvest but, once composition had been made, it was possible to engage labour even at that busy season - although precautions had to be taken to ensure that the labour force remained. "During harvest, I made a bargain with seven men to give Shearer's wages and 2 pecks meal a week for 24 working days, to begin Monday 15 September. The wages to be paid at the end of harvest"; thus Lord Leven (4).

Lord Rosslyn estimated the cost of a new road in 1820 at the east end of Dysart at £2:12:9 per rood - a staggering increase over the above figures far exceeding any effects from the movement of prices and wages. Exactly specified at 18 feet wide and with the metal 9 inches in thickness it is clear that a new approach to road-making is reflected here. Instead of collecting stones, stone was quarried at 1/3 per cubic yard and then systematically broken. The cost of quarrying, breaking and transporting the road metal worked out at £2:7:3 per rood (5). The expense involved in breaking stone and the thickness of the layer clearly show the influence of McAdam, another contrast to the Dorset situation where Meikle reported nothing to show the influence of Telford and McAdam (6).

---

(1) S R O GD 26/12/24

(2) W P Meikle, 'Highway Repairs in the Eighteenth Century', Trans. Newcomen Soc, v XXI (1940-41), 124

(3) S R O GD 26/12/24

(4) Ibid

(5) S R O GD 164/353

(6) Meikle, Highway Repairs, 125

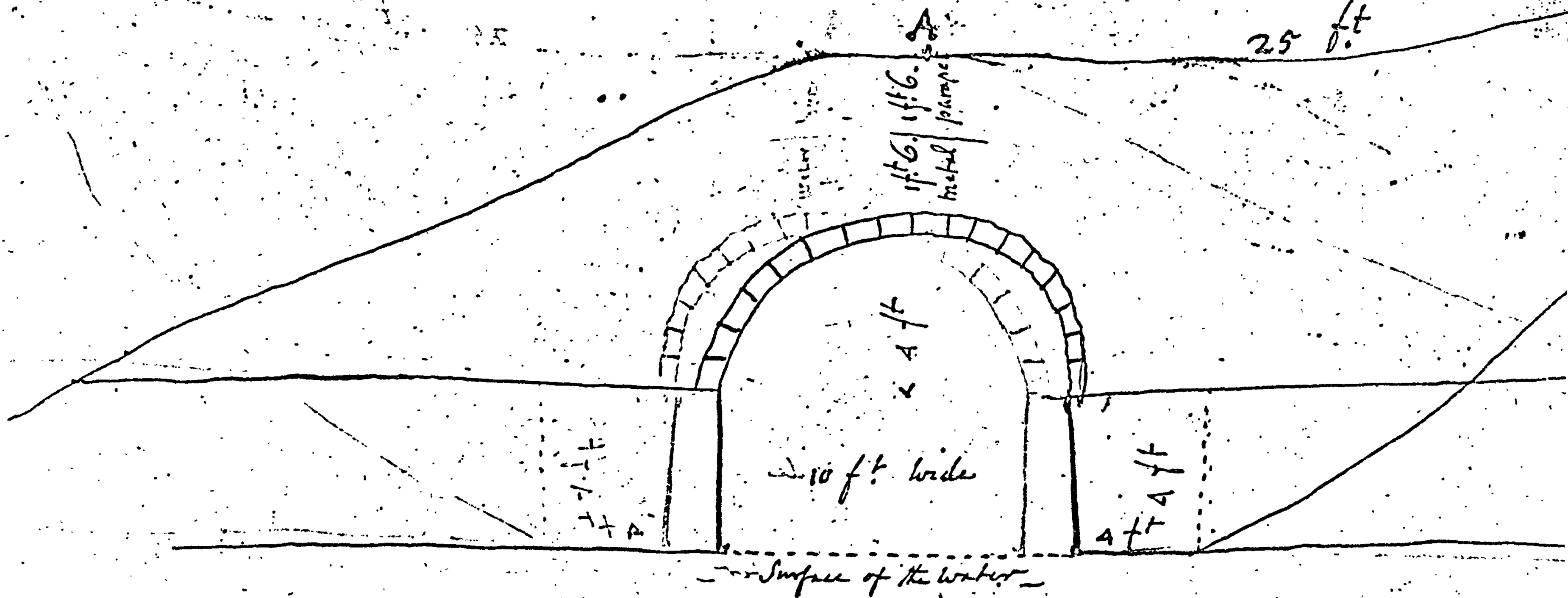
FIG. 8.1 MILL TAIL BRIDGE, 1771

The Mason To begin to build on Wednesday, August 27.th

The Engager to have the work finished before the End of Sept.r

The Engager to uphold the bridge for 7 Years

The Top of the parapet to be cov
dressed Stones



From the Surface of the Water to The Top of the parapet wall 11 ft. James Bru

As well as roads, the statute labour trustees were responsible for bridges, these being under separate accounts in the nineteenth century. We are fortunate in possessing the drawing and estimate for the building of the bridge over the Mill Tail Burn between Pittillock and Cupar (287054). James Bruce put in his estimate for £10 on August 16, 1777, the mason was to begin on August 27, Bruce engaged to have the work finished before the end of September and to uphold the bridge for seven years. As he was paid in full on 16 October 1778 one must presume he fulfilled his contract; certainly the bridge stood till superseded in 1833 by one better graded to the road. Stones cost £3 and lime £1:1/=. A wooden arch, nails and labour cost £1, labour on the stonework cost £3, a "hewn pend" on the east cost 15/=. The allowance for maintenance was £1.3/=. Although a shilling out in his addition and despite the crudity of his drawing Bruce produced a solid masonry bridge (1).

The duties of the trustees were not negligible. The number of formal meetings may not have been large, up to five per annum in the Kirkcaldy District, and there may have been a large number between whom the work could have been divided (Cupar 50, Dunfermline 7, Kirkcaldy 73, St Andrews 54) but there were many other duties as well as the formal meetings of the complete district (2). Appeals against assessment, supervision of the surveyor, inspection of work were only part of the service demanded of the trustees. For example, a Cupar district meeting appointed a committee to examine the line of road between Luthrie and Letham. On 6 August 1791 the Right Honourable the Earl of Leven, the Honourable John Hope, Colonel Alex. Baillie, John Balfour of Fernie, Robert Baillie of Carphin and Alexander Wedderburn of Wedderburn perambulated part of the road from Cumnoqulie (313152) northwards and were unanimous in finding the present line extremely inconvenient. In doubt as to which line to take, it was left to the proprietor to have the choice if he could decide within 10 days (3).

---

(1) S R O GD 26/12/24

(2) 'Statute Labour Trusts in Scotland (1843-47. Return' (Parliamentary Papers, 1850, XLIX), 149

(3) S R O GD 26/12/39

Before leaving this topic of Statute Labour roads, some mention must be made of the relative costs of their construction and maintenance, vis a vis the costs of building and maintaining turnpike roads. As noted above, evidence on construction costs is scanty and it is seldom possible to draw the distinction between the construction of a completely new line of road and the re-making of a former road. However, Table 8.C below does show the contrast between construction costs of statute labour and turnpike roads and the general rise in costs of construction as the principles of good road-making became clearer.

Table 8.C

Construction Costs for certain Fife Roads

Location	Date	Statute labour/ Turnpike	Cost/mile	Comments
Carslogie	1778	S	£ 8	"forming a road"
Monimail	1780	S	£ 9	"forming a road"
Dysart	1820	S	£ 655	"making a road"
Leven/Kirkcaldy	1840	T	£ 650	"altering and improving"
Burntisland / Kinghorn	1842-3	T	£ 2300	A completely new line.

(Sources:- S R O GD 26/12/24, GD 164/353; Pagan, Road Reform, 135-136, 142).

In respect of maintenance, Table 8.D. ranks the road authorities of the county in an order based on the average amount spent in ordinary repairs in the years 1841-43. From the table, it is possible to conclude that more was spent, per mile, on repairing the turnpikes than on the statute labour roads. In addition, those roads with a great deal of through traffic - the Great North Road and the present A92 in the former Kirkcaldy Turnpike Trust - received a great deal of maintenance in order to have their positions maintained. By 1841, the statute labour roads were mainly the cross-country feeders to the turnpikes and there was a tendency to restrict expenditure on them.

FIG. 8.2

TOLLGATES, TURNPIKES AND STATUTE LABOUR ROADS

AROUND CUPAR, 1832

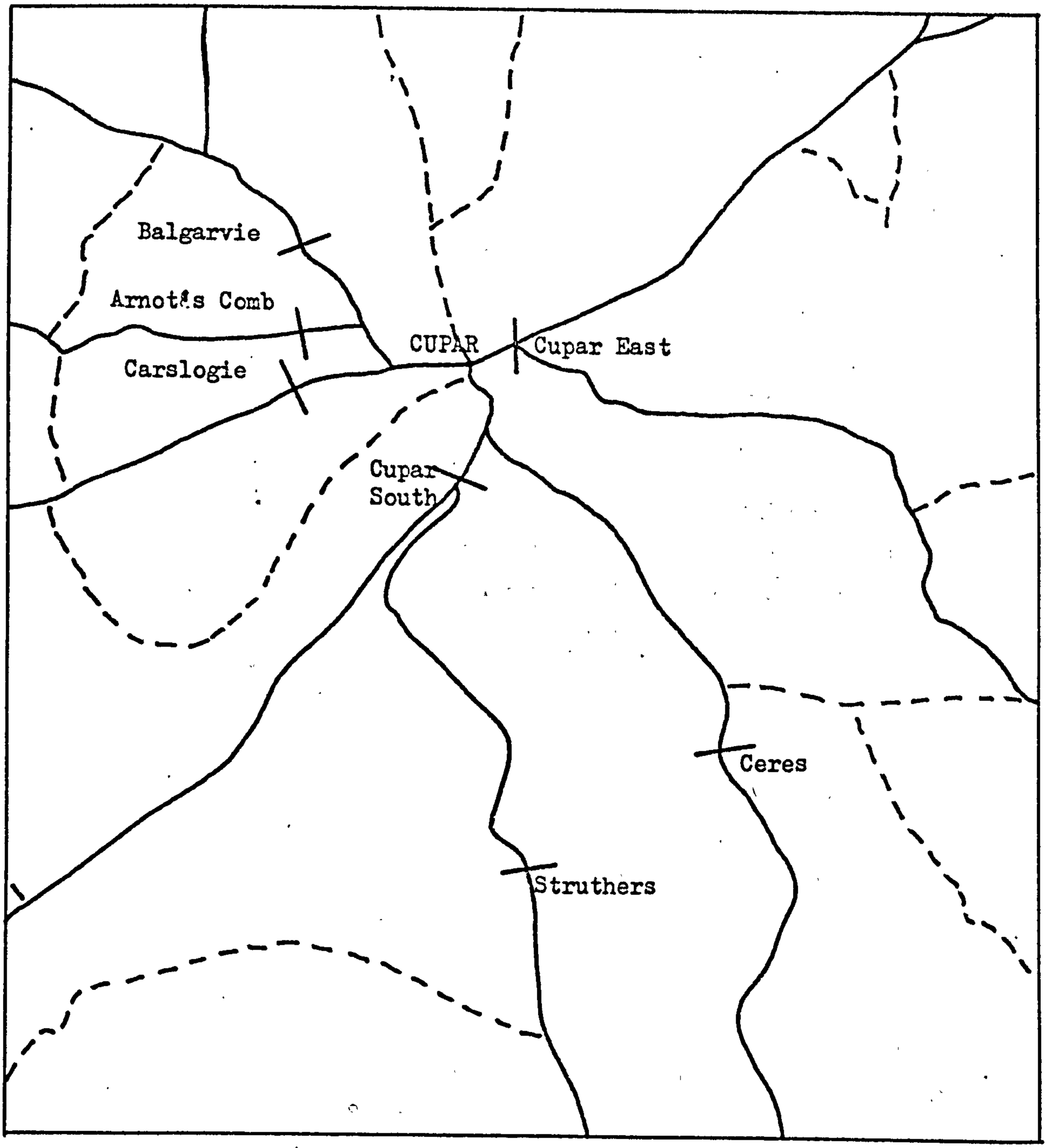


Table 8.D

Average Annual expenditure on ordinary repairs, 1841-43

Trusts	Mileage	Repairs	Repairs per mile	Statute Labour/ Turnpike
Great North	30.5	£1855	£61	T
Kirkcaldy	68	3064	45	T
Whitehill	4	124	31	T
Cupar	81	1593	20	T
Aberdour and Duloch	11	194	18	T
Dunfermline	34	575	17	T
Kirkcaldy	80	1306	16	S
St Andrews	218	3239	15	S/T (1)
Dunfermline	65	529	8	S
Cupar	123	889	7	S

(Source:- Pagan, Road Reform, 158-160, 170-171, 178-179)

Turnpike Roads

Interwoven with the statute labour system there evolved in the county a network of turnpike roads so that a town like Cupar was difficult to approach and leave without paying toll at least once (Fig. 8.2). Turnpike trusts, set up by Act of Parliament to improve nominated stretches of road by exacting toll on travellers and by borrowing on the security of the tolls, were very late in being established in Fife. The first English turnpike was set up in 1663; Midlothian was the first Scottish county to be turnpiked from 1713. In the 1750s took place the "Turnpike Mania" when 186 new trusts were formed in England and Wales (2), yet it was 1790 before there was passed "an Act for making and repairing the road from Newmill Bridge, by Foodie's Mill, Inverkeithing, Aberdour, Kirkcaldy, Gallatown and Cameron Bridge, to Crail, and other roads in the county of Fife". (3)

---

(1) At this period the statute labour money for St Andrews District was combined with the toll receipts and the two administered jointly (Pagan, Road Reform 108)

(2) W Albert, The Turnpike System in England, 1663-1840 (Cambridge 1972) 125

(3) 30 Geog. III, c 93

The first General Meeting of the trustees for the county took place at Cupar on May 4, 1790, dividing the county into four districts corresponding to the presbyteries of Cupar, St Andrews, Dumfermline and Kirkcaldy and arranging inaugural district meetings for, respectively 10, 13, 17 and 15 May 1790. It was recommended that an able engineer be employed to "point out the proper lines of road .... if found necessary"- a strong comment on the state of the roads. The districts were also to consider what proportion of the total sum to be borrowed they should be allowed, where tollgates should be erected and the tolls to be levied, and how much should be allocated to the different roads within the districts, reporting back on June 1, 1790 (1). In subsequent years other trusts were set up until., at its maximum extent in 1845, the road system of the county was administered by the following bodies - Cupar District; St Andrews District, Kirkcaldy District, Dunfermline District, Fife Large Bridges, Fife Lesser Bridges (Cupar District), Fife Lesser Bridges (St Andrews District), Fife Lesser Bridges (Kirkcaldy District), Fife Lesser Bridges (Dunfermline District) - all statute labour bodies - and Fife Turnpikes (Cupar District), Fife Turnpikes (St Andrews District), Fife Turnpikes (Kirkcaldy District), Fife Turnpikes (Dunfermline General District), Whitehill Road Trust, Aberdour and Duloch Trust, Leven Road and Bridge, Outh and Nivingston Trust, Carnock and Comrie Trust, Cupar and Kinross Road, Auchtermuchty and Pitcairly Road and the Great North Road - all turnpike trusts, making 21 road authorities in total (2). It is not difficult to understand how in 1845, the expenses of management were nearly 44% of the sum actually spent in maintaining roads and bridges (3). The multiplicity of trusts not only raised the costs of management but also increased the cost of travel to the road user. Although tolls could not normally be charged within six miles of each other, at places where the roads of different trusts came together, such as Kirkcaldy or Cupar, the traveller could pay several times over. Cupar - with five separate trusts represented - was notorious as a town where the movement of manure out and freestone in was restricted, and roads were destroyed as carters followed circuitous routes to avoid toll (4).

---

(1) S R O GD 164/306

(2) Pagan, Road Reform, 105-159

(3) Ibid, 181

(4) Ibid, 205

While there were differences between individual trusts, these were not fundamental and by the time that the Fife Trusts were constituted, turnpike legislation had become standardised. The roads affected were nominated and any new roads to be constructed described. The land to be taken for toll-houses and any houses to be demolished for road widening were detailed, and the charges and conditions for travel were set out. Details of the actual charges made by the trusts have been given elsewhere, but the principles on which tolls were charged were that the heavier the load or larger the number of animals drawing a vehicle the heavier the payment should be. Vehicles with broad wheels passed at reduced rates (1). Over the nineteenth century tolls were slightly eased as a result of railway competition, in 1821 a four-horse carriage would be liable for 3/=, in 1860 2/=; for 6d a 25 cwt. load could pass in 1821, for the same sum in 1860 a 30 cwt. load could pass (2).

Exceptions to toll were logical. The surveyor on duty, the post, the horses and wagons of soldiers, yeomany and volunteers, carts of vagrants and criminals, all of these were to be encouraged to keep on the move. In case agriculture should be discouraged, manure carts passed at half toll in summer, animals could go to and from watering places, crops not for sale and implements of husbandry passed free. Materials for repairing roads and bridges were accorded free passage while those going to and from church on Sundays went free, as did persons attending the funeral of one about to be buried in the parish of his decease.

Penalties for infraction were severe. Damage to roads or bridges could mean paying for the damage, a fine of £100 Scots and a public whipping at the nearest market-town. Allowing travellers to use their lands to evade toll-houses would incur a fine of 20/= Scots for each landholder's offence; blocking the roads, leaving dead horses on the road, taking horses out of their traces, dragging timber or stones on the road, riding on the footpaths - all of these were offences liable to a fine, for which the evidence of only one witness, presumably the toll-keeper, was necessary for conviction (3).

---

(1) S R O GD 164/316

(2) WM Stephen, 'A Toll-Schedule at Struthers, Fife', Proc. Soc. Ants. Scot. v 100 (1967-68), 198-199

(3) S R O GD 26/12/38

The qualification for a trustee was to be the owner of land worth £100 Scots. The eldest son of such a person was also eligible. No tenant farmer, as such, was qualified to act as a trustee. The same parties could, and often did, act as trustee for turnpike and statute labour trusts. In his evidence to the Commissioners on the Public Roads (Scotland), William Horsburgh, Clerk to Cupar District Turnpike and Statute Labour Trusts, reported that the meetings of trustees were generally well attended and that there was no difficulty in finding a sufficient number of trustees to act (1). Between 1823 and 1832 the trustees of the Great North Road in Fife had 12 general meetings. Of the 34 trustees, almost half (16) attended no meeting at all and another six attended only one or two. Only the Lord Chief Commissioner, the Right Honourable William Adam, attended all 12, another attended 11 and three and two persons attended, respectively, nine and eight meetings (2). The Cupar District trustees held 30 meetings between March 1843 and November 1847, at one of which there were 25 present and at another 2. Double figures were in attendance at only 11. The conclusion towards which we are guided is that most of the trustees were indifferent, leaving the conduct of affairs to a comparatively small part of their number (3).

Any attempt to assess the amount of traffic on the turnpikes is fraught with difficulty. Income came from four different sources. Firstly, income from tolls was derived in two ways. In the first half of the century, the tolls were farmed, thus assuring the trusts of a steady income and freeing them from the expense and uncertainty of collection (4). The tolls were advertised and then let by public roup (5). Thus the tacksman, in paying a rent of £421 for the Crossgates tollgate in 1841 (6), would anticipate clearing enough in tolls at the gate to cover that rent, to pay the collector about £36:10/= per annum plus coal, candle

---

(1) 'Commissioners on the Public Roads (Scotland) Report', (Parl. papers 1860, XXXVIIII), 493

(2) D P L, A Letter from the Right Hon. William Adam to the Earl of Wemyss on the subject of the Great North Road (1832), Appendix of documents 12 - 13

(3) Parliamentary Papers, 1850, XLIX, 217

(4) Albert, Turnpike System 85-87

(5) Pagan, Road Reform, 168-169

(6) Ibid, 158

and free house and to give a return of about 20% on the amount paid to the trustees (1).

By the second half of the century some of the trusts had taken the collection of tolls into their own hands. In the Kirkcaldy District in 1860, the Clerk, William Douglas, could say "none of our tolls are let. The rates are all collected by persons put in by the surveyor. I think that this is a more advantageous system than the former plan of letting the tolls by public roup. I consider that most of the tacksmen must have made money from the tolls. I am led to believe this from the circumstances of parties having come from Edinburgh, and taken the tolls at a considerable rise of rent, which increased rent they continued to give in subsequent years" (2). The Clerk to St Andrews District reported that they had 20 toll-bars and checks, of which some were let annually and others were kept by the Trustees in their own hands. "At present we have 12 in our hands, and collect the tolls. This is done in some cases where there is reason to suspect that the full amount of the toll duties might not be drawn if the tolls were let - and, in others, when the rent offered does not amount to what we think adequate. In most cases where we have taken the toll into our own hands, we have been able to realise as large a revenue as we anticipated"(3).

The tolls on certain public coaches were reserved by the trustees and collected on their behalf by the Treasurers, thus in 1841, Kirkcaldy District Turnpikes collected £383:6/=4 as coach tolls, based on 9d per horse on the mail and 6d per horse on other coaches (4). This system had obvious advantages in expediting the passage of the regular coaches and rationalising book-keeping.

Individuals could make special arrangements with the trustees as a composition for their tolls. Messrs Robert Haig and Co paid £45 per annum from 1841 to 1843 as composition for toll-duties at Guard-Bridge Bar (St Andrews) (5). In Kirkcaldy doctors were given freedom from tolls

(1) Ibid, 172

(2) Parliamentary Papers 1860, XXXVIII, 496

(3) Ibid, 497

(4) Pagan, Road Reform, 134

(5) Ibid, 129

in the whole district for £2:10/= for a gig and 15/= for a horse (1), while Mr William Douglas was given freedom for his farm produce at Bennochy Bar for £5 (2).

Finally part of the statute labour funds was given over to the turnpike trusts, since the incorporation of a stretch of road as a turnpike relieved the statute labour trustees of the necessity for its maintenance. The percentage of each of these four sources of income for each trust in 1842 is given in Table 8.E below.

Table 8.E

Source of Income, Fife Turnpikes, 1842

Turnpike Trust	Total Income (£)	Mileage (in Fife)	Source of Income (%) A	B	C	D	(3)
Cupar	4436	80	76	9	-	14	
St Andrews	5540	145	58	4	1	31	
Kirkcaldy	5181	68	76	8	-	15	
Dunfermline	1263	34	89	4	-	2	
Whitehill Road	62	4	100	-	-	-	
Aberdour and Duloch	269	11	82	2	-	-	
Leven Road and Bridge	-	8	(under construction)				
Outh and Nivingston	589	15*	85	-	-	14	
Carnock and Comrie	149	3*	100	-	-	-	
Cupar and Kinross	964	15*	56	-	-	14	
Auchtermuchty and Pitcairly	181	4*	51	13	-	35	
Great North Road	6269	19*	62	37	-	-	

(Source:- Pagan, Road Reform, 124-160)

From Table 8.E it is clear that the trusts varied a great deal from the Whitehill Road Trust, with its solitary toll-house and annual income of £62, to the fourteen toll-houses and checks in each of Cupar and St Andrews districts and the £1051 for which New Inn was let in 1841. This variety showed in a number of ways, notably in the variety of toll-house

---

(1) Ibid, 134

(2) Ibid, 135

(3) A - toll rentals, B - coaches, C - compositions, D - statute labour, * - other parts of these roads in adjacent counties. These figures do not always add up to 100% because of rounding and, in some cases, factors such as loans or repayments of rent arrears.

designs, while their modest architecture testified to the fact that traffic was not such as to give the trustees grandiose expectations (1).

For some of the trusts, particularly St Andrews and the Auchtermuchty / Pitcairly Road, considerable stretches of former statute labour roads had been turnpiked, and their income therefore included a sizeable proportion of the statute labour assessment. Other roads, like the Great North Road and the Carnock and Comrie, were comparatively new creations with no statute labour involvement.

Not unexpectedly the trusts with the greatest actual and relative incomes from the coaching traffic were those involved with the important north-south routes through Fife - the Great North Road and the Kirkcaldy and Cupar District Trusts. From Edinburgh to Perth passed daily three public carriages, the "Royal Mail" for Aberdeen, the "Defiance" and the "Saxe-Cobourg" for Perth itself. Two coaches daily passed over the Great North Road going between Dunfermline and Edinburgh. Other short stretches of the road were also used by Perth - Kirkcaldy and Kirkcaldy - Glasgow coaches while Kinross and Milnathort were starting places for runs to Anstruther and Burntisland (2). By contrast, the Auchtermuchty and Pitcairly Road was traversed daily in summer only by the Perth-Kirkcaldy stage. In winter the coach ran on alternative days only (3).

As regards toll rentals, it is quite clear that the greatest activity was on the main through routes. The Great North Road was clearly a principal avenue for the movement of other vehicles than the regularly timetabled coach while the Kirkcaldy - Cupar axis was also of considerable importance for this kind of traffic. The figures also suggest that there was a decrease in the intensity of use of roads in the north and east of the county.

Fig. 8.3 sets out to indicate the volume of traffic on Fife roads in 1841 based on the toll payments received for specific toll-bars by the trustees. While this is necessarily an approximation to the amount of traffic passing along the roads, the amount the tacksman paid in rent would bear more

---

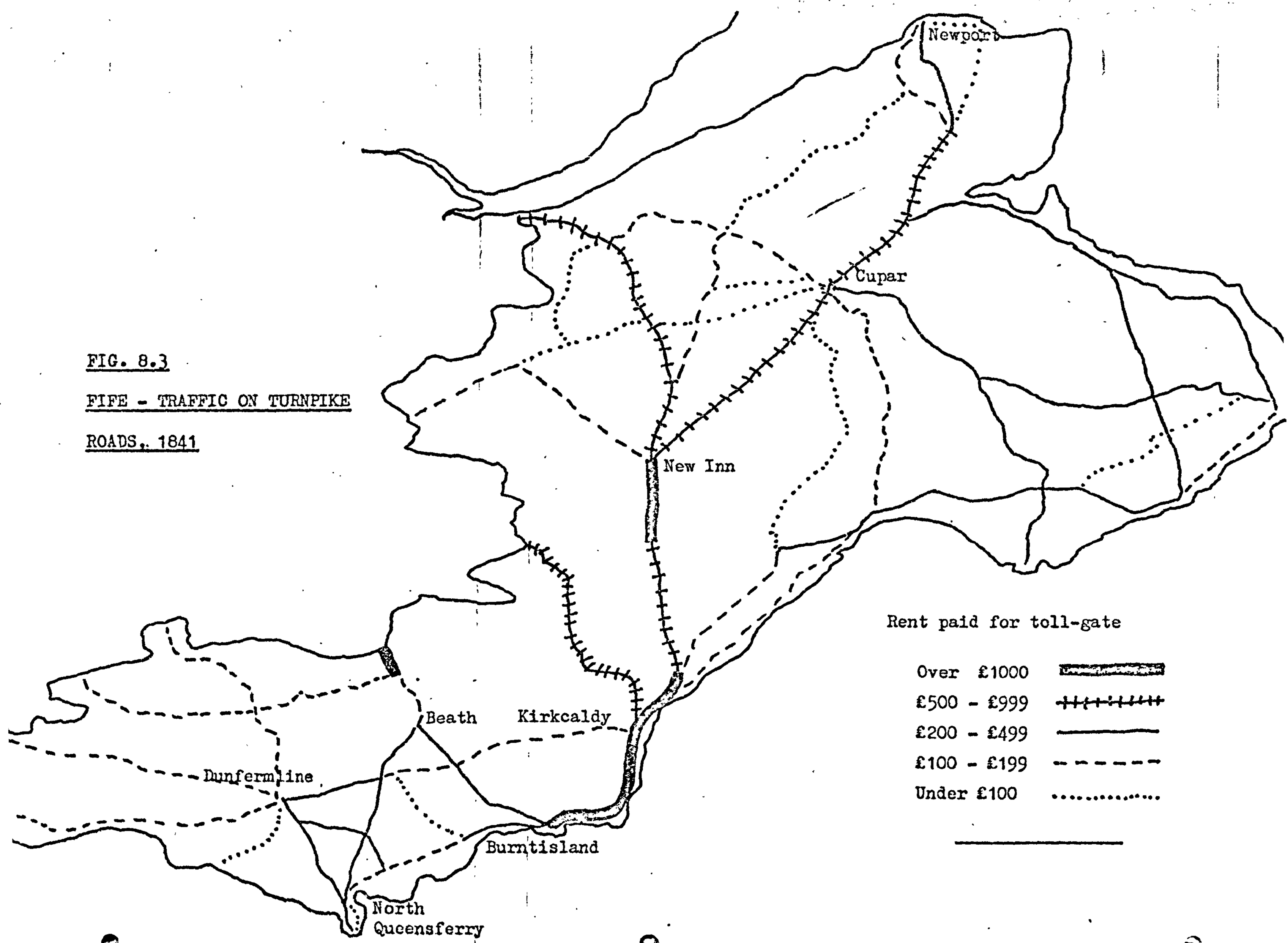
(1) W M Stephen, 'Toll-houses of the Greater Fife area', Ind. Arch. v 4 (1967), 250-251

(2) L Gardiner, Stage-coach to John O'Groats (London 1961), 136; 191; N S A, 9, 20, 179

(3) N S A, 9, 77, 781

FIG. 8.3

FIFE - TRAFFIC ON TURNPIKE ROADS, 1841



than a minimal relationship to the amount of traffic passing the toll-bar.

An examination of Fig. 8.3 shows the importance of the great through routes, from Queensferry to Perth by the Great North Road and from Edinburgh to Dundee by the Broad Ferry and "the great road through Fife". Three kinds of traffic are unrepresented on the map, and two of these would tend to reinforce the pattern. Sums for regular coaches are not included, but the largest and most frequent coaches ran on the two roads just mentioned. Again, the exempt travellers, the post, the military, the poor, would tend to follow the main roads through the county. Also under-represented in some areas is the short-distance traffic to the nearest seaports, although some of these, like Kirkcaldy and the East Neuk ports, were well covered by toll-bars.

Part of the justification for turnpiking roads was that the ability to borrow money on the security of the tolls made it possible to engage specialist surveyors and roadmakers who would ensure a more efficient road system than that provided by statute labour. At the same time, the establishment of a multiplicity of small trusts each designed to satisfy some specific local need militated against this efficiency and tended to create the high administrative costs mentioned above. In practice, however, although there was separate accounting, there was a degree of consolidation as far as actual road-building and maintenance was concerned. John Alexander for example, was surveyor for Cupar Statute Labour Lesser Bridges (Cupar District), Cupar District turnpikes, and Cupar and Kinross Turnpike and the Auchtermuchty and Pitcairly Road, receiving a total salary of £150 in 1841, (increased to £200 in 1843), divided between the five authorities in proportion to their resources (1). Robert Drysdale handled the four turnpikes in the Dunfermline area and the Dunfermline District Statute Labour (2). John McConnell, of whom more will be said below, also was in charge of five authorities (3), in one of which, the Leven Road and Bridge, he was assisted by Henry Petheram, who was in turn surveyor of Lesser Bridges

---

(1) Pagan, Road Reform, 106, 116, 126, 144, 152, 154

(2) Ibid, 113, 138, 140-141, 148

(3) Ibid, 111, 130, 134, 161

at Kirkcaldy and St Andrews and treasurer of Kirkcaldy Statute Labour (1). Thus there was an informal linking of trusts which might have made accounting difficult but would no doubt have resulted in a less piecemeal approval to the county's roads.

Unfortunately the evidence is too scanty to establish exactly how this situation came about. One might suppose that the trustees of some of the smaller trusts would approach a surveyor of proven ability in one of the bigger trusts in order to have his services at a reasonable rate, but whether the principal factor was a shortage of good surveyors or a desire to effect economies is far from clear. It is possible that, in the early part of the century, the emphasis was on engaging one of the men skilled in the making of new roads, later in the century maintenance of existing roads and strict economy may have bulked larger in the trustees' calculations.

The late eighteenth and early nineteenth centuries marked the period when Telford and McAdam were acquiring their great celebrity, although in the case of McAdam it was not until 1815, at the age of 60, that the consolidated Bristol Turnpike Trust offered him the general surveyorship (2). One is immediately presented with the question of the roadmaker, or engineer, of Fife and the extent to which he was working in isolation or was influenced by the great advances being made elsewhere. Telford and Rennie were involved in harbour projects along the coast but Telford played a minimal part in road development, as will be seen below. McAdam, with no claim to be an engineer, did have some influence in the movement from local pragmatism to basic first principles.

Of the early roadmakers we know little more than the names, and occasionally the cost of work accomplished. Thus, in Dunfermline parish, Inglis and Co, A Beveridge, Drummond and Co, Harrower and Co, were all small contractors involved in road repairs and road construction. The scale of their operations is indicated by the fact that Inglis and Co were paid a total of £56:1/=1d between November 1823 and April 1826 (3).

---

(1) Ibid, 111, 118, 120

(2) R N Spiro Jun, 'John London McAdam and the Metropolis Turnpike Trust' J Trans Hist, v 2 (1955-56), 207-208

(3) S R O, GD 91/141

Robert Drysdale, latterly surveyor of the Great North Road between Queensferry and Kinross and of the Burntisland - Cowdenbeath limb, was appointed in November 1809 at a salary of £40 per annum. In his report he details the construction of some of the roads as follows:-

North Ferry / Inverkeithing (2 miles) David Brown (1811)

Inverkeithing / Milestone 3 (1 mile) Thomas McBean (1805)

Milestone 3 / Balbougie Den (1 mile) Thomas McBean (1804)

Balgougie Den / Crossgates (2 miles) Thomas McBean (1815-17)

Cowdenend / Ore Bridge (3 miles) John Mackie and James Brown (1810-13). (1).

While each stretch had its own characteristics these stretches of road were generally built in two layers - "where the soil was of wet clay and the bottom of the road was laid in the manner of a causeway; the crevices filled up with small stones and beaten hard together. The upper stratum was six inches in depth, and the stones broken to one and a half inches square" (2). Over Moss Morran, near Cowdenbeath, the Burntisland branch "was laid with brushwood; the understratum with broad flagstones above the brushwood; the crevices filled up with small stones and covered six inches deep with stones broken to six ounces and blinded" (3).

The Trustees of the Great North Road were concerned about their road and the Lord Chief Commissioner reported that "there are various parts of the road between North Queensferry and Kinross Bridge, which present a rougher surface to the wheels of a carriage, than under the improved system of stoning roads is fit to be allowed to continue. In Balbougie Den and from thence to the south end of Crossgates, this is the case. The first was made in 1808, before the improved system was known, the second portion was made when our funds ran short, and I had to supply the trust with a loan of £2000" (4). In 1830 the question arose as to the superintendence of the Great North Road, Drysdale the local man or John McConnell, partner of McAdam "the distinguished improver of that very useful art for the accommodation of man (perfect road making)" (5) and at

---

(1) D P L Report by Mr Drysdale, Surveyor, as to the Construction of the Great North Road (1832), 6-9

(2) D P L Drysdale, Report, 6

(3) Ibid, 10 "Blinded" means covered with gravel

(4) Ibid, 12

(5) D P L McAdam, Great North Road, 20-21

a meeting on 23 October 1830 it was agreed that the Perthshire and Kinross section of the road, amounting to 18 miles, should be entrusted to McAdam at £6 per mile per annum for five years. Operations began under McConnell's general supervision in 1830, with one Bromley as resident surveyor and Drysdale restricted to the Fife mileage but still in receipt of his £40 now worth £2 per mile (1).

The meeting of the Trustees of the Great North Road, held at Kinross on 18 April 1832 saw the whole question of maintenance of the southern part of the Great North Road re-emerging. Because of his acquaintance with the county and his knowledge of the people, the Lord Chief Commissioner supported Drysdale, but an amendment by Sir Alexander Mackenzie proposed that McAdam and McConnell be given the superintendance of the repairs along the whole road (2). A thorough examination of the whole question of road-making and repair then ensued with Commissioner Adam deputed to write to McAdam and Telford "to obtain a correct view of the principles on which the different systems are supposed to rest" (3).

Because of the conflicting opinions the trustees sought to carry out an experiment on a stretch of road, 1¾ miles long, between Blairadam and Lochrin Bank. "It bears as heavy carriage as any part of the road between the North Ferry and Perth, The carriage is very chiefly in carts with very narrow wheels and heavy laden with coals and lime .... The climate is damp, the situation high, the soil wet and spongy"(4). Telford, aged 75 and near the end of his very full life, contented himself by sending extracts from his reports to the Parliamentary Commissioners for the Holyhead Road but the trustees engaged a pupil of his, Mr Pollock of Newhouse, near Holytown, surveyor of the Glasgow -Carlisle road, of whom Kirkman Finlay could not "speak in terms too highly commendatory" (5), and who was "recommended as superiorly skilled and as a most judicious and experienced road surveyor" (6).

---

(1) Ibid, 42

(2) Ibid, 47

(3) D P L Report of the Select Committee.... Great North Road Trust 1832, 10

(4) Ibid, 10

(5) Ibid, Appendix 13-14

(6) Ibid, 9

Pollock reported on the work necessary to bring the whole road up to a sufficient standard on 27 July 1832. Basically, he proposed leaving the road's foundations as they were and picking and relaying the top 4 inches. Where big stones appeared on the surface, "they must all be taken out, even although they reach to the bottom of the road. And when large stones are picked up to the before mentioned depth, they are all to be taken off the metal road, cleaned and broken down in a proper manner so as no stone shall exceed 4 ounces English" (1). Pollock's piecemeal approach was to cost £1368, compared with Drysdale's estimate of £480 for repairs for the year from April 1832, this latter making no allowance for improvements of any kind (2).

Both Drysdale and Pollock estimated on the basis of a piecemeal approach to the existing road, and in the long term the influence of Telford could be said to lie in the alignment of roads, either those indicated by himself or his harbour surveys, as in Burntisland in 1828, or by his followers, rather than in the details of their construction (3).

The response of McAdam and McConnell was much more vigorous, as befitted missionaries of a new system of road-making. McConnell reported to the trustees in surprisingly moderate terms that the main line of road was in good shape, with large stones as a foundation and unequally broken material as a top covering. 4½ miles were "in a rough bad state, the remainder, though not good, has a much smoother surface". The Burntisland limb had "the same faults of formation in a much more objectionable degree. Four miles are extremely bad, the immense blocks of stones in the bottom being scarcely covered by broken metal, which in some instances was not more than two inches in thickness" (4). The trustees at their meeting on 19 May 1832 allocated £1200 to partial replacement of the bad stretches. At the same time they engaged McAdam and McConnell to superintend the road at an annual salary of £300 and authorised them to take up the causewayed stretches of road, break up the large stones and replace them without a causeway (5).

To the proposal that an experimental stretch of road be laid out, McAdam

---

(1) Ibid, Appendix 15

(2) Ibid, Appendix 16

(3) T Telford, Report on the Lower Ferry (London 1828), 14

(4) D P L, Minute of Meeting of Committee of Great North Road Trustees, (Kinross 19 May 1832)

(5) Ibid

gave an answer which "was not what your committee anticipated". In declining to carry out the experiment he submitted, with much deference but also with the force of authority, "that it would appear

> to be an admission .... that there is a doubt whether placing pavement or large stones under a road be profitable for the public service or otherwise; and their opinion long formed and confirmed by seventeen years experience, having satisfied their mind on the subject, they decline now to make an experiment that might have the appearance of creating a doubt" (1).

On 20 July, 1832, McAdam pressed home his advantage with a letter to the Right Honourable William Adam which is an interesting amalgam of common sense, arrogance and humility (2).

> "After the first seven years of our practice we had better proof of the efficacy of the system, in introducing good effect and economy, than speculation and opinion in print. How has this evil of water been met in all roads in Scotland? We have in almost every instance found the road placed in what is called a box, which seems to have been considered an essential point, and was prepared at some expense. This box is in fact a ditch dug out with some pains and cost, which must of necessity be always wet, being below the surface of the adjacent ground, no drainage of any ordinary expense could afterwards render the bed of the road dry. The construction of the road was afterwards so unskilful, that the rain penetrated to the bottom, by which double supply of water, the road was not supported, the natural consequence followed, the roads became uneven on the surface, holes and deep ruts, the consequence of the sinking of the subsoil unevenly the constant moving of the metal from an unskilful workmanship, allowed carriage wheels to travel rather <u>amongst</u>, than <u>over</u> the materials of which the road was composed.

---

(1) D P L Select Committee Report 14

(2) As well as his undoubted experience in road improvement, McAdam was able to deal with the Lord Chief Commissioner as one of his own class. Telford was seen as the first professional engineer, making his way mainly by his own abilities. McAdam was born into a prosperous family, made a fortune in his twenties, and returned to Britain to indulge his interests as landowner in Ayrshire and Bristol, pioneer coal-tar manufacturer, road trustee, experimenter and improver. Adam wrote to him in terms of "gentlemanly feeling" and "integrity". While some (<u>vide</u> Gibb <u>infra</u>) would question the latter, there can be little doubt that most trustees would feel at ease with McAdam, and he with them (Spiro, <u>John Loudon McAdam</u>, 207-208)

"It is in vain to give your Lordship and your friends the trouble of an attempt to detail the process of making a road in a proper and economical manner, or of giving it skilful drainage; it is a mechanical operation, as much as making shoes or building a wall, which we may see all out lives, and be very good judges of from the effect produced, but which cannot be expected without the practical skill acquired by a long apprenticeship. I have studied the subject theoretically for upwards of twenty years, and afterwards practically for seventeen years, in all parts of the kingdom, with all varieties of soil and material, and have now arrived at the conviction, that I have much yet to learn, that the science is in its infancy, that old and rooted prejudices and practices must be rooted up, and a better description of persons encouraged to enter into the public service as executive officers on roads" (1).

No doubt these passages conceal a great deal - the short-term cheapness of the McAdam roads as they used the materials already on them (2), the strenuous striving after business which contemporary engineers found distasteful (3). Certainly, Drysdale found himself "after more than twenty years service, dismissed without blame or fault or imputation of any kind", but with a retiring allowance of £30 (4). As we have seen above he continued to work in the Dunfermline district while McConnell continued to snap up roads to manage until - in addition to the Fife roads mentioned above - he was responsible for the following:- Cramond District, Dundee-Forfar, North Roads Trust (Montrose), Strathmartine Trust, Invergowrie Trust, most of the roads in Dundee District, Invergowrie-Perth Turnpike, Carse of Gowrie District, Perth-Dunkeld Road, Blairgowrie-Cupar-Angus, Perth-Crieff, Perth District, Perth-Bridge of Isla Road, Kinross-Yetts of Muckhart, Hillfoot Road, Clackmannan Trust, the Caithness Roads, Glasgow-Edinburgh Road. With the McAdams he had also charge of 500 or 600 Lines of Road (5) in England (6). Since he undertook six visits a year, his delegation was not complete. Against the complete professionalism of the big road manager must be set the implications of the following letter, written

---

(1) D P L, Select Committee Report, Appendix 25-26

(2) Sir Alexander Gibb, The Story of Telford, (London 1935), 177

(3) Ibid, 178-179

(4) D P L, Adam, Great North Road, 50

(5) Turnpike Trusts

(6) S R O, GD 51/5/624

in a previous generation to the Earl of Elgin, by his factor, John Rose, ".... however if your Lordship could bring it about to get him appointed surveyor for the Dunfermline district of roads I suppose Gratitude would lead him to be very moderate in his charges for what he has yet done or may do to your Lordship" (1).

Resistance to tolls was not marked. Initially; there was some reluctance as tolls were imposed before the roads were improved, but thereafter it was only in 1843 that opposition to toll-bars was expressed in physical fashion, when "New York toll-bar (that is, Fife New York, in the parish of Collessie) found itself one morning lying on its back at some distance from its legal situation", and the Anstruther bar was destroyed one night. The Cupar-St Andrews road had a gate at either end of its nine miles. When another bar was erected at Dairsie Bridge it was smashed several times at night until the county trustees agreed that it be removed (2).

The impact of railways and, to a lesser extent, coastal steamers, seriously affected toll receipts; the late introduction of railways to Fife meant that the falling-off in revenue was not in the 1830s and 1840s, as Albert states for England, but in the late 1840s (3).

---

(1) Earl of Elgin's Papers, Letter Books, v 2, 4 July 1790

(2) Pagan, Road Reform, 204-205

(3) Albert, Turnpike System, 87

Table 8.D

Tolls, Revenue, Fife Turnpikes, 1832-1874

	Cupar	Kirkcaldy	St Andrews
1832 (value)	£3233	£3332	£3109
1832 (percentage)	100	100	100
1841	104	124	101
1842	103	119	101
1843	109	134	113
1844	110	146	116
1845	113	146	127 (1)
1846	116 (1)	162 (1)	121
1847	112	136	112
1850	65	100	95
1858	85	80	125
1871	72	79	106
1874	61	116	101

(Sources:- Pagan, Road Reform, 124, 126, 129, 131, 133-134, 137-138, 140-141; Parliamentary Papers, 1836, XXXVIII, 9-10; Ibid, 1850, XLIV, 251; Ibid, 1852, XLIV, 26; Ibid, 1860, XXXVIII, 12; Ibid, 1873, LVIII, 10; Ibid, 1876, LXV, 10)

Table 8.D shows the startling fall in toll receipts from the late forties for three of the biggest trusts. If anything, the falling off in revenue is understated, since coach money is not included, and mail and stage coaches were the first casualties on the coming of the railway. Thus no coaches went through to Perth after the winter of 1847, and the "Loch Leven Castle" made its last run on the Milnathort-Burntisland route in July 1859, a year after the Fife and Kinross railway opened.

"The old "Balcarras" stage-coach ceased to run between Kirkcaldy and Anstruther on Wednesday last, consequent of the opening last Thursday of the branch line of the railway to Leven" (2).

---

(1) The peak year for each trust is underlined.

(2) Gardiner, Stage-coach to John O'Groats, 191-192

After the rapid passing of much of the long-distance and passenger traffic the turnpikes settled to a level of activity more than half as great as it had been at the peak period. On the Great North Road at Fordel in 1857 "although the carrying of passengers has in a great measure been drawn off by Railways still there is a considerable amount of general traffic passing" (1). "The railways have done a great deal of injury to the revenue in the Kirkcaldy District, partly caused by loss of revenue from stage coaches, which have been discontinued since the railway was opened. The revenue has been pretty stationary for the last four or five years" (2). On the Leven road revenue fell away by about £100 annually after the opening of the railway. Cupar and Kinross, Auchtermuchty and Pitcairly, both attributed falls to the opening of the Fife and Kinross Railway (3). Outh and Nivingston had a good deal of mineral traffic on the roads, but a subscription debt of £10000 had no prospect of interest being paid on it because of the annual diminution of revenue. The toll at Rumbling Bridge was let for £50 instead of £140 or £150 when Roscobie Limestone went by rail to Auchterarder (4).

Nevertheless, a kind of stability was attained, despite the fact that toll-bars were not re-located after the construction of railways - mainly on account of the great uproar which would have resulted (5). The roads became valuable as access for railway stations (6), and although much of this traffic did not pay toll, the amount of wear and tear on the roads must have been substantially reduced. Thus, in a modest way they continued, with no new alignments or improvements until the advent of the internal combustion engine. In 1874 the debts of the six main trusts in the county were £3843, as compared with £58636 in 1843, showing the financial success of the retrenchment policy (7).

---

(1) S R O, GD 172/595

(2) Parliamentary Papers, 1860, XXXVIII, 496

(3) Ibid, 511

(4) Ibid, 495

(5) Ibid, 509

(6) Ibid, 502

(7) 'Scotland Turnpike and Bridge Trusts, 1843-47 Return' (Parliamentary Papers, 1850, XLIX), 251; 'Scotland Turnpike Trusts, 1845-47, Abstract Statements of Income and Expenditure' (Parliamentary Papers, 1876, LXV) 495

William Pagan, a Cupar solicitor, was a vigorous campaigner for the abolition of tolls and his book, Road Reform, ran into three editions. From the 1850s there was increasing pressure to abolish tolls: in 1858 Lord Elcho brought in an Abolition Bill while the Royal Commission of 1860 recommended the abolition of tolls in Scotland, with upkeep on the roads paid for by rates levied by the burghs and counties. Thirteen Scottish counties passed private Acts abolishing tolls before the Roads and Bridges (Scotland) Act of 1878 gave the counties five years to take over the work of statute labour and turnpike trusts (1).

The first meeting of the new trustees for the county took place at Cupar on 11 March 1879. Colonel John Balfour of Balbirnie was appointed chairman and the county divided into four districts for road purposes. The Dunfermline District comprised the parishes of Aberdour, Beath, Carnock, Dalgety, Dunfermline, Inverkeithing, Saline, Torryburn, Culross and Tulliallan. From the Commissioners of Supply 22 trustees were appointed, mainly gentry from the Earl of Elgin downwards. From the former elected trustees 22 further trustees were appointed, including in their number 11 farmers, 2 coalmasters, an innkeeper and a factor. The Great North Road was absorbed on 15 May 1880.

R Anderson was appointed Surveyor of the new Dunfermline District at a salary of £300 and with responsibility for 71 bridges and 160 miles and 2865 feet of road. One of the first observations he made as the result of the abolition of tolls was that the roads near Dunfermline with heavy mineral traffic would be upheld at considerably less expense "as a good deal of the extra traffic will fall into their natural channels".

The steelyards and tollhouses were valued and then sold by public roup in the Justices of the Peace Court Room, Dunfermline in May 1879, the burgh tollhouses being vested in the burgh.

The new district trustees demonstrated their forward thinking in directing Anderson to find out the cost of a Blake Marsden Stonebreaking Machine

---

(1) M Searle, Turnpikes and Toll-bars (London n.d.) 764, 769

and then in authorising its purchase. The breaker, costing £160 and working for a 10 hour day, would produce 60 to 75 tons of road metal daily, the expense for depreciation, 5 men, water and coal being £2:10/=. Metal would be produced at 1/= per cubic yard saving £150-200 annually as against hand broken metal at 2/= - 2/=6 per cubic yard.

In 1888 Anderson was sent to London for a week to study steam road rollers, visiting Aveling and Porter's works in order to learn how to work their vehicles. He was authorised to purchase an engine and 15-ton roller at £500, a 4-ton waggon at £58:5/=8d and a sleeping van at £81:19/=7d.

Thus towards the end of the period under consideration, we see the roads of the county toll-free, divided into four manageable districts large enough to be able to achieve the economies deriving from skilled management and a degree of mechanisation (1).

Archaeology

The visible evidence of changes in the county's road system consists of three main kinds. Firstly there are the roads themselves, their gradients, cuttings, and embankments, and the stretches of older and more recent roads showing how successive generations of roadmakers have attempted to adapt the roads to the traffic. Secondly, in order to establish authoritatively the appearance of a pre-turnpike road, two excavations were carried out in the summer of 1969. Thirdly, there remains still a large variety of toll-houses, milestones and other wayside furnishings helping to fill in details of the former roads landscape.

Lines joining Kirkcaldy to Cowdenbeath and Cowdenbeath to Burntisland define a knuckle of land within which are several examples of changed road alignments in relation to the ferries at Pettycur and Burntisland. From Kirkcaldy road access to Pettycur was across the grain of the county, producing a narrow road with several dips and summits (A on Fig. 8.4). Till 1842 the road to Burntisland rose to over 300 feet with several steep ascents (B). The construction of the present A92

---

(1) Fife County Council Roads Department, Minute Book, Dunfermline District Committee, 1879-1899

along the coast from Burntisland to Kinghorn in 1842-3 produced a beautifully-graded link which contrasts strongly in breadth, line and gradient with the earlier section which still constitutes the A92 from Kinghorn to Kirkcaldy (C). Nothing emphasises more strongly the influence of Telford than this short 2-mile stretch of gently rising road cut into the sea-cliff, making obsolete the more direct but rough, stony and steep inland route.

Three miles north-west of Burntisland the Pilkham Hills rise to just over 600 feet, creating no major obstacle to movement save that their southern face is a steeper example of the east-west ridges hampering north-south movement in southern Fife. The earliest road to Cowdenbeath (D) to the main line of the Great North Road undulated across these ridges, approaching the foot of the hills before slanting up their face by a steep climb of 1 in 15, which in parts rises to 1 in 5. In 1816-17 (1) a second approach to the hills was made (E), using a line which gave a slightly lower summit level but at the same time still meant a stiff final pull to the top. The present A909 (F) follows the line of the road built in 1840-42 to service the new deep-water pier at Burntisland and again shows the influence of Telford in the scale of the thinking behind the new route. The ascent begins at 334 feet O.D. at 196881, and by means of sweeping curves and a 700 yard embankment the hills are reached. A 250 yard cutting not only provides material for the embankment and a smooth continuation of the 1 in 30 gradient but also reduces the summit to 527 feet O. D.

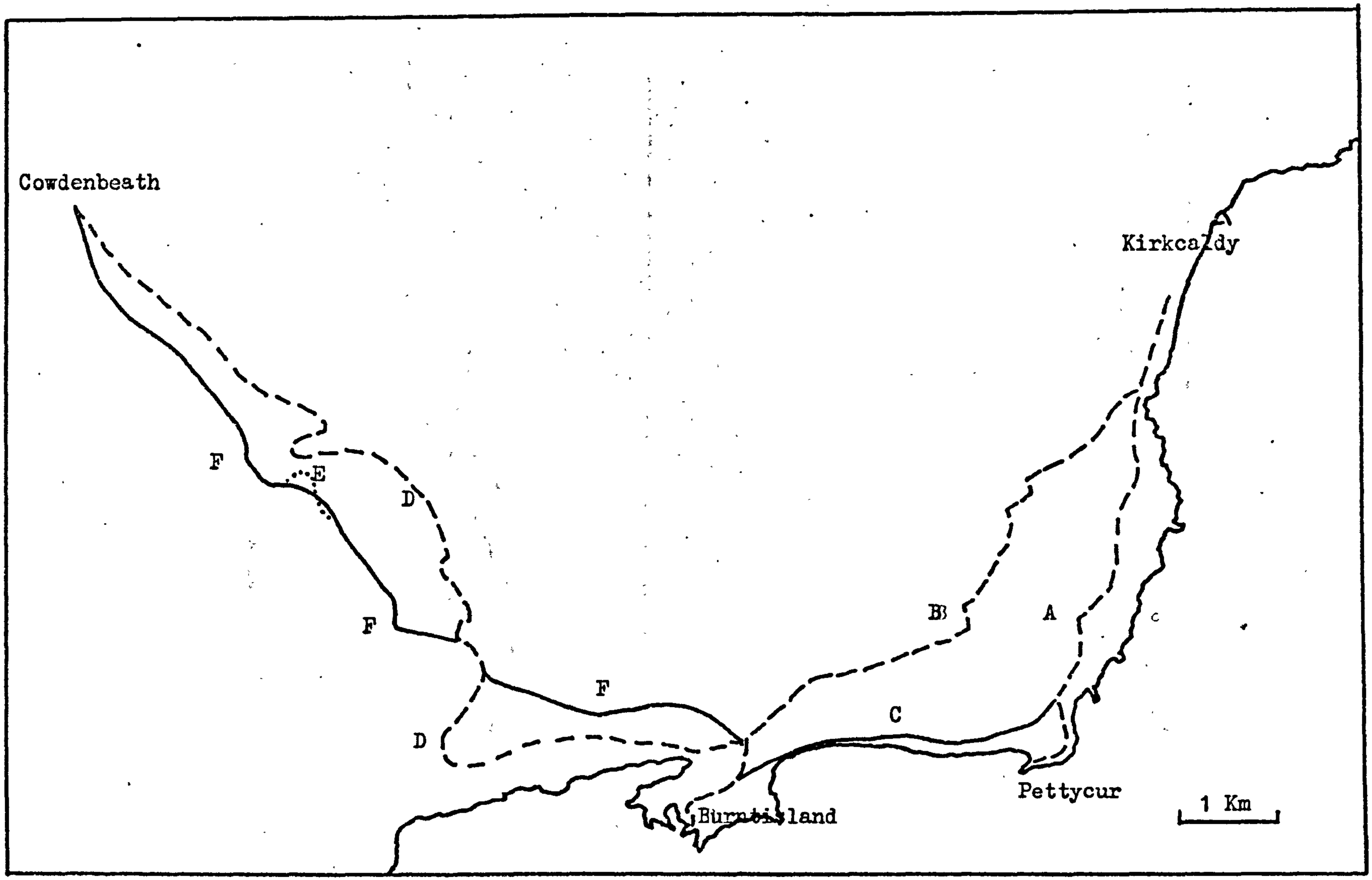
The oldest road survives as a farm road, field service road and as a broad strip some 20 yards across between walls and ditches. At one point there are ruts 2 feet deep; in the valley bottom at 197894, it is very wet, while at 194895 stones spaced on either side of the 12-foot roadway at 20 foot centres would seem to indicate the need to indicate to the stranger the whereabouts of the highway - in itself a comment on road conditions. It was on this road that excavations were carried out in order to study a road of pre- Telford and McAdam

---

(1) D P L, Drysdale, Report, (in Report of the Select Committee on the Great North Road Trust, 1832); S R O, RHP 1264

FIG. 8.4

ROAD CHANGES AROUND BURNTISLAND



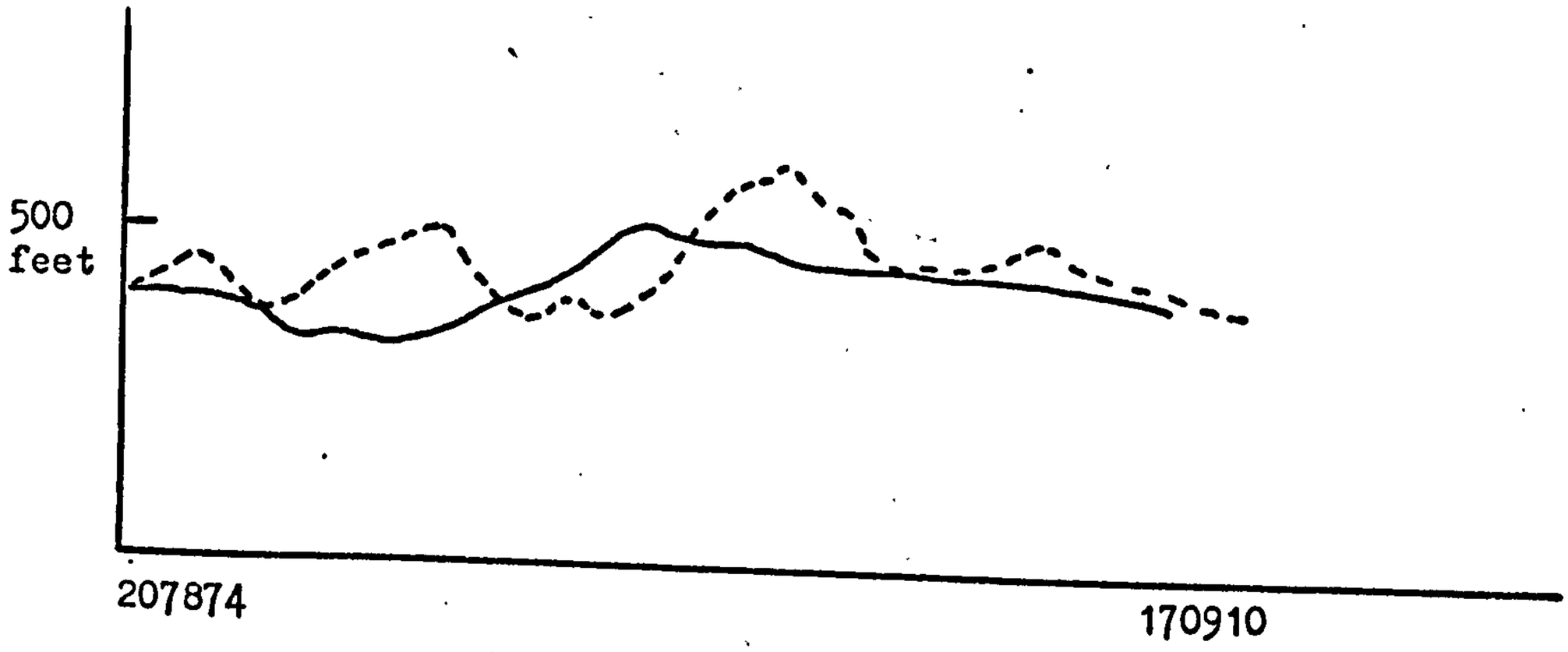
Eighteenth-century roads

Roads of 1840-1842

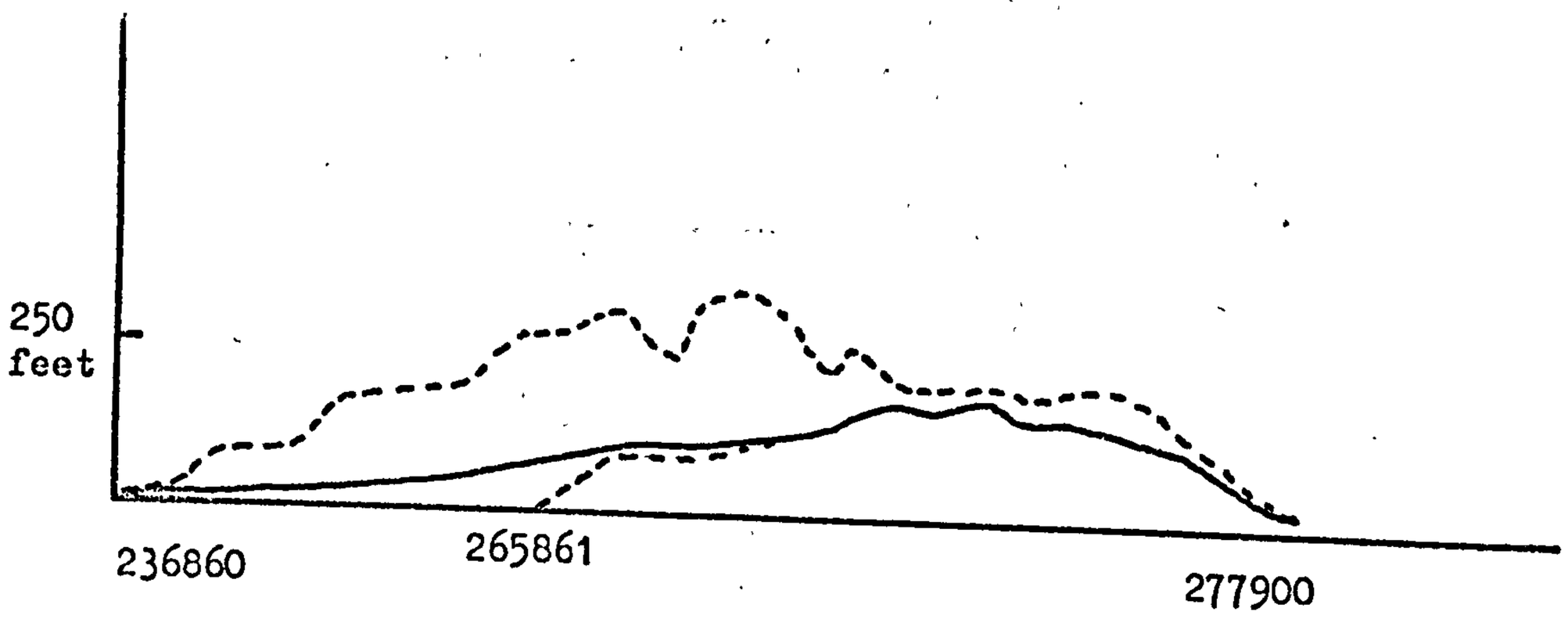
FIG. 8.5

BURNTISLAND AREA - PROFILES

COWDENBEATH SECTION



KIRKCALDY SECTION



18th-century road

19th-century road

1 Km

FIG. 8.6

ROAD CHANGES ON GREAT NORTH ROAD

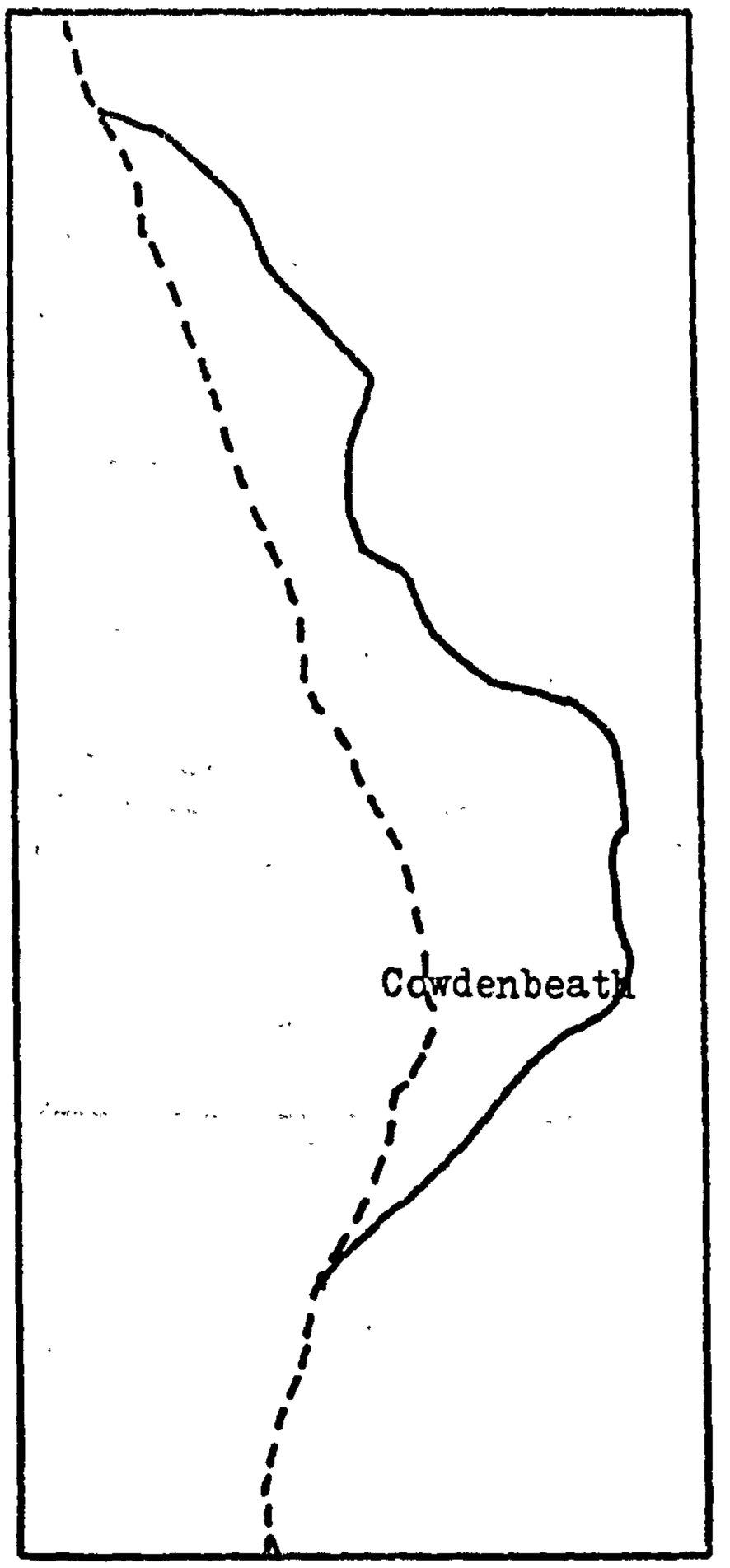
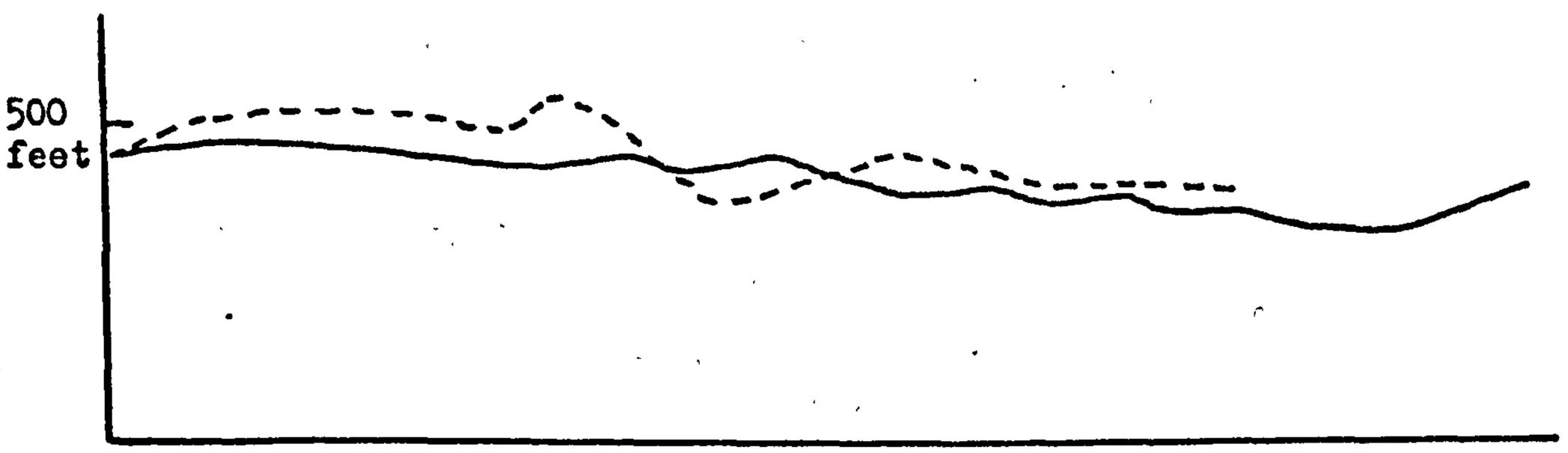


FIG. 8.7

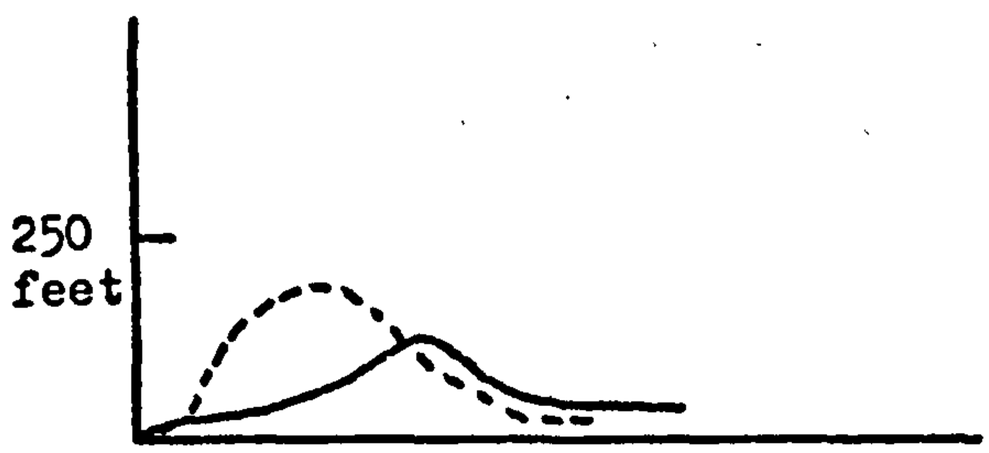
GREAT NORTH ROAD - PROFILES

COWDENBEATH SECTION



149898 134964

FERRY HILLS SECTION



132804 125821

18th-century road

19th-century road

provenance. Fig. 8.5 isolates the profiles of the stretches of road mentioned, bringing out the differences in height and gradient.

The same kind of development is seen on the main line of the Great North Road at the Ferry Hills and around Cowdenbeath, in these areas the construction of the Forth Road Bridge and M90 having superseded the earlier lines of road for all but local traffic. Again, at Valleyfield (0086) Robert Bald, the mining engineer, rerouted the Newmills-Kincardine turnpike in 1811 to give a maximum gradient of 1 in 28½ as opposed to 1 in 7½ previously (1). One of the longest stretches of new road built was the present A823 linking Dunfermline and Powmill. Although rising to 884 feet it does so gradually, and with its swinging curves this route was a marked improvement on that through Saline, which was bedevilled by tight corners and sharp climbs(2).

The first coach route south from Cupar passed through Chance Inn (373103), Muirhead (374083) and Whallyden (359046) and no better comment can be made on it than that of " one Crichton of Cupar who, finding the Edinburgh stage coach full up, said "Never mind, I'll walk", and got to Edinburgh before the coach!" (3). This road was superseded by our A916, then by the A92 beside the reclaimed Howe of Fife.

From reports of surveyors like Drysdale and McConnell we have estimates for work envisaged and reports of work done; from the traveller, the minister and the landowner we have descriptions of the state of the roads; from our own observations of line and gradient we can form our own judgements; but each of these assessments is qualified in some way by prejudice, by self-interest or by time distance. The Templehall-Pilkham section of the Great North Road was selected for two small excavations in the summer of 1969 because it had scarcely been used for traffic since 1817 and would thus be able to give a clear-cut picture of road construction methods and travelling conditions immediately

---

(1) S R O, RHP 422

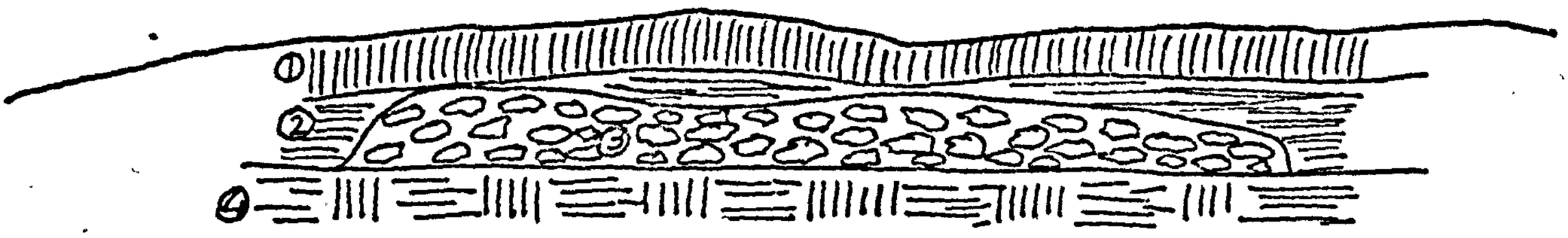
(2) D P L, Sir C Halkett and others v J Harrower, 1815-16

(3) J R M Muir, 'Post-haste to Pettycur!', Scots Mag. v 61 (1954) 225-226

FIG. 8.8

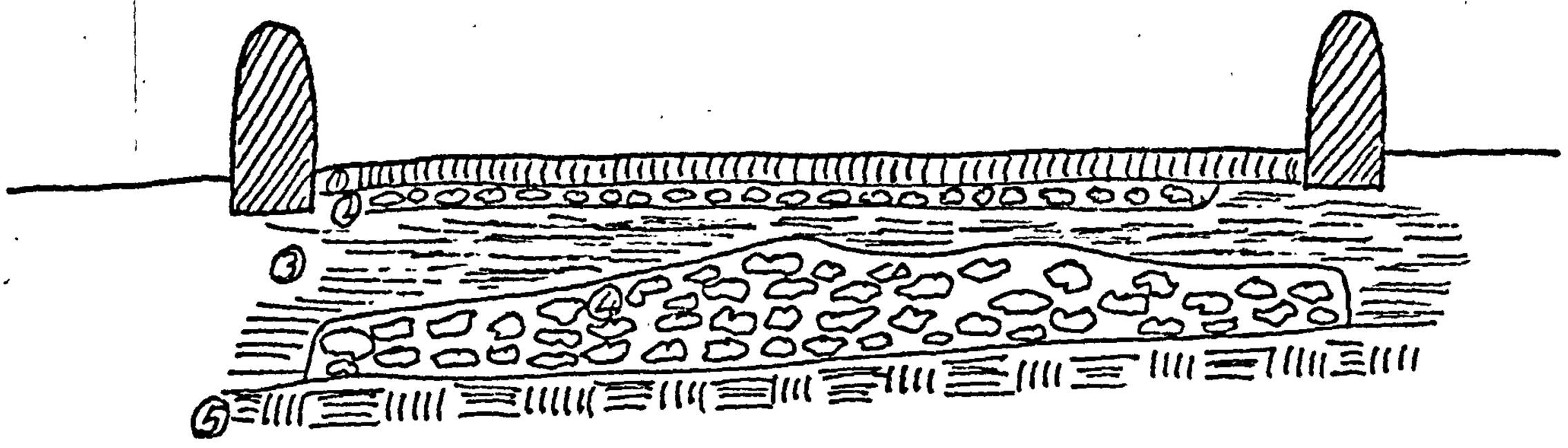
CROSS-SECTIONS, GREAT NORTH ROAD

SECTION AT NT199892



1) Soil-root layer
2) Brown soil
3) Angular and sub-angular sandstone and whinstone blocks
4) Till

SECTION AT NT195894



1) Soil-root layer
2) Angular pieces of sandstone up to 3" across, 3-4" deep
3) Brown soil
4) Angular whinstone blocks, 6" across
5) Blue-grey till

before the impact of Telford and McAdam. The two points for sectioning were at 199892 and 194895 since these were on the stretch unused even as a farm road. In addition, the gradients at these points are fairly low, and the road would not therefore have been subjected to any unusual stresses. Finally, the soil in this area is clay, which posed the roadmakers some of their greatest problems, and the second excavation was undertaken between two of the marker stones mentioned above, where the very wet ground must have posed special problems.

Both excavations revealed the same kind of picture, a 6 to 8-inch layer of soil and roots at the surface, a layer of brown clay from 1 to 2 feet deep and then a layer of well-compacted till. At the more southerly site, Templehall, between a ditch and the field wall a mass of stones 10 feet wide and up to a foot in depth was found. This mass of stones was resting on the till base and was slightly sunk in the middle, as if it had been arched upwards and then the arch had been spread. The stones were mainly about 6 inches across, angular and sub-angular in shape and composed of sandstone and whinstone. Only in two places did the top of this layer touch the recently-evolved soil-root layer.

The section at Drumpuddock revealed a similar mass of six-inch stones resting on the till bottom and filling the space of 12 feet between two marker stones. Again there was the double crown of large stones, but at this section, perhaps because of the greater depth of brown clay, the large stones were all at least 9 inches from the soil-root layer. This section differed from the other in having, immediately below the soil-root layer, a layer of angular pieces of sandstone up to 3 inches across and 3 - 4 inches deep covering 9 feet of the carriageway (Fig. 8.8)

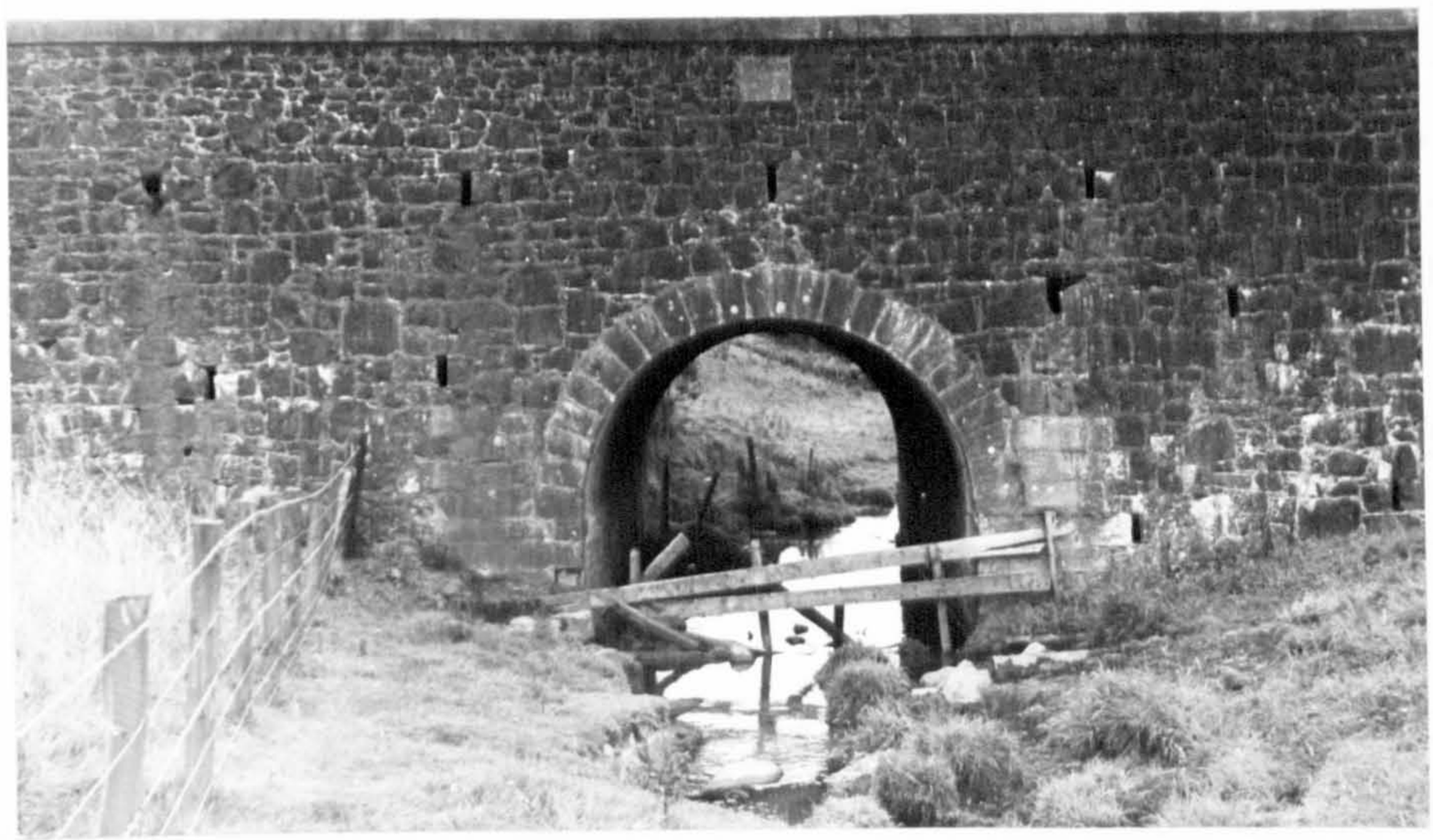
Several points emerge from these two sections. It is clear that, at the time this road was made, no careful selection was made as to size of stone, hardness or angularity. It would appear that the stones had simply been gathered and laid in the appropriate track with no attempt to make an impermeable road-bed. The layer immediately below the surface at Drumpuddock was not deep enough nor the sandstone hard enough to compact into a serviceable top surface. The subsidence of the base of the road is the result of large stones working about in a clay sub-soil, aggravated by the passage of water down through the road and resulting in "pumping", by means of which the stones have sunk to be replaced by

PLATE 8.a

OLD GREAT NORTH ROAD - SECTION (198893)

PLATE 8.b

MILL TAIL BRIDGE (1834) (286053)



upward-moving clay. At Templehall the coaches may have been fortunate, but at Drumpuddock the wheels of coaches would be likely at any moment to churn into at least 8 inches of clay with only an uneven road-bed underneath (1).

The wayside furniture of the county has been comprehensively described elsewhere (2), but for the sake of completeness a brief summary is given here. From Pagan's Road Reform, the first edition of the Ordnance Survey 6-inch map, published in 1854, and from fieldwork, it was possible to establish that there had been in the county 83 toll-houses, of which 20 survive today, mainly in some reconstructed form. Five types of toll-house survive in the county, by far the most common being the simple rectangular house, sometimes with small observation windows in the gable walls. The rapid rate of decay of these modest little houses is shown by the fact that two have been demolished since 1966 and of the four illustrated in Stephen (3) Baidlin Toll is in a bad state of decay with roof, windows and shutters gone, while that at Kirkton, Burntisland, stands on a busy corner with heavy traffic on either side. The buildings behind have been demolished and its isolation makes it extremely vulnerable.

By law "the trustees of every turnpike road shall provide for every toll-bar a printed or painted schedule or table, containing the name of the toll-bar, with a list of the tolls payable at such bar, and also the name of every other bar which shall be cleared by the payment of toll at such bar" (4).

Appendix B gives a list of surviving toll-houses and their sizes. Toll-schedules are still to be seen in the Fife Folk Museum, Ceres and in the steading at Struthers (378098).

---

(1) For expert guidance on "pumping" I am indebted to Mr McKenna, 17 Torphichen Street, Edinburgh

(2) W M Stephen, 'Toll-houses of the Greater Fife area', Ind. Arch. v 4 (1967), 248-254; W M Stephen, 'Milestones and Wayside Markers of Fife', Proc. Soc. Ants. Scot. v 100 (1967-68), 179-184; W M Stephen 'A Toll-schedule at Struthers, Fife', Proc. Soc. Ants. Scot, v 100 (1967-68), 198-199

(3) Stephen, Toll-houses, 240-241

(4) 1 and 2 Will IV c 43, sec XXXV

There remain in the county 148 complete milestones, 28 without their cast iron tops and 11 wayside markers. Illustrations and full details of their provenance are to be found in Stephen (1). It only remains to be emphasised here that a wide range of roadside furniture exists and, unlike the tollhouses, it still has a useful role to play and is accordingly well maintained. Another feature of the turnpike roads which still has a utilitarian value is the stone-box, a walled enclosure up to 7 yards square whose purpose was to hold reserve supplies of road metal for repairs. Stone-boxes at such places as East Wemyss (332963) and between Kinghorn and Burntisland (246864) still contain road metal, although grit and salt for winter spreading are far more usual. Appendix C is a full list of milestones in relation to stretches of road in the county.

In devoting such length to the roads of Fife the justification must be the interest of a county where roads were turnpiked late and where there was the conflict of interest between local and national networks. Despite the disappearance of the turnpike records it is fortunate that one of the pioneers in the movement towards the abolition of tolls, William Pagan, practised in and wrote about the county but since his time there has been no attempt to look at the evolution of the road system of the area.

Waggonways and Tramways

Colliery waggonways have already been mentioned in an earlier chapter and feature fully in the literature. In most cases they were built to run coal down to an exporting port, occasionally, as with Syme's Venturefair Railway, to bring coal to an urban market (2). Some of these, like the Elgin Railway were converted to standard gauge and became parts of larger units (3). Some, like the Halbeath Railway, were superseded as better graded main lines opened up a variety of markets. Others, like the Methil Railway, were phased out as the workings they served were abandoned (4).

---

(1) Stephen, Milestones, 179-184, Plates 20-22

(2) B Baxter, Stone Blocks and Iron Rails (Newton Abbot, 1966), 232

(3) G Dott, Early Scottish Colliery Waggonways (London 1947), 2, 12; Baxter, Stone Blocks, 21, 77, 232

(4) Dott, Colliery Waggonways, 14; Baxter, Stone Blocks, 231-232; S R O RHP 39, RHP 1287

Because of their transient nature these early waggonways have not left major traces in the landscape. The Fordel Railway has cuttings (146884, 152838) and embankments (143885, 153846) with a filled-in level crossing still apparent on the former Great North Road (1). Double walls or hedges help to locate stretches of the Halbeath Railway (131877) while Dunfermline's Coal Road is bordered by a similar strip of the former Elgin Railway (083877), an early restriction on the westward growth of the town. (2)

As regards tramways, three systems were developed to serve the three main population concentrations of the early twentieth century. In November 1904 Randolph Gordon Erskine Wemyss, the vigorous developer of the Wemyss estates, launched a scheme to connect the towns and villages of Wemyss and Scoonie to Kirkcaldy by an electric tramway of 3 feet 6 inches gauge. Thomas Meek and Sons were the engineers for the line which ran, mostly over the Wemyss lands, from Sinclairtown, Kirkcaldy to Durie Street, Leven with a maximum gradient of 1 in 18 (3). In March 1905 a Provisional Order for construction was obtained, and in August the Wemyss Tramway Order Confirmation Act was passed by Parliament. In November the Wemyss and District Tramways Co Ltd, with £55000 of capital and £30000 of debentures, took over (4). The single-deck cars had running powers over Kirkcaldy track and thus ran into the middle of the town. The Wemyss trams only used the public highway in the towns and villages, the rest of the route being fenced within private land. Wemyss and District Tramways Co Ltd had extensions authorised in 1909 from Sinclairtown, through Thornton, Kinglassie and Auchterderran to Lochore (5), which would have linked up with the Dunfermline extension from Lochgelly to Lochore, but the Wemyss proposals - which would have meant the displacement of 119 people (6) - were never carried out while the Dunfermline - Lochgelly - Lochore arm was only completed in two stages,

---

(1) J C Inglis and F Inglis, The Fordell Railway (Larbert, 1947), 28

(2) S R O, RHP 613

(3) S R O, RHP 5692

(4) A S Cunningham, Rambles in the parishes of Scoonie and Wemyss (Leven 1905), 283

(5) S R O, RHP 5767/1

(6) S R O, RHP 5767/2

in 1909 and 1912 (1).

Wemyss went out of operation in 1932, Kirkcaldy in 1931, having operated a six-mile system since 1903. The Dunfermline system, at 18 miles, was the biggest of the county and lasted longest, till 1937. Also on the 3 feet 6 inches gauge, it had spurs to the mining areas of Kelty and Lochore and to Rosyth Dockyard (2).

There are some sizeable vestiges of the tramway system to be seen in the three areas concerned, and at Falkland. The A823 between Dunfermline and Rosyth retains the central area where the track ran for the Rosyth extension of 1918. A Wemyss tram serves to house hens at 249073 and in Kirkcaldy brackets to hold overhead cables can still be seen on buildings in St Clair Street. The Wemyss track can be followed through the woods at 304949, where the Wemyss estate is entered by an ornamental gateway. Power stations were erected at Denbeath (Wemyss Coal Company) and at Victoria Road, Kirkcaldy, the latter now being used only for stores. At Gallatown, Kirkcaldy the fine tramshed remains. Built of brick with high clerestory roof, the front is of red sandstone ashlar and is very impressive with its height and flanking inspectors' offices.

Despite their comparatively short existence in Fife, tramways have left some surprisingly effective reminders of that existence.

Railways

As with the consideration of roads in the county, the question immediately arises of the dualism of the railway network of the county. Mention has already been made of the waggonways, but unlike other areas in both Scotland and England these did not become parts of a regional or national system but tended to continue serving their own initial purposes until obsolescent. The main impetus to railway construction in the county came from the overall view of the East Coast route, in which "Fife appears to have been considered, in the main, as a difficult but important link in the East Coast railway route" and which is intimately related to the location, duration and efficiency of ferries and bridges over the Firths

---

(1) W N Bett and J C Gillham, Great British Tramway Networks, 4th edition (London 1962), 143

(2) Ibid, 142

PLATE 8.c

ORIGINAL RAILWAY STATION, BURNTISLAND (233857)

PLATE 8.d

TRAM SHED, GALLATOWN, KIRKCALDY (297942)

of Forth and Tay (1).

Robert Stevenson, at the time of his 1820 survey for a railway through Strathmore, laid out routes from Perth by Newburgh to a line from Burntisland to Newport via Kirkcaldy, Cupar and Leuchars. In 1836 Robert Stevenson and Son resurveyed the Burntisland-Newport line, estimating the cost of construction at £465,000 or £12000 per mile. The object of this railway was "the connexion of the Scottish Metropolis with the town of Dundee, and the whole of the North East Coast of Scotland" and it was this line that was followed, with the same objectives, when the Edinburgh and Northern was built through the county in 1847 and 1848 (2).

This route, although "its gradients or lines of Inclination are so gentle and the radii of its turns so favourable", served only Kirkcaldy and Cupar of the bigger towns, and when branches were made for perfectly good technical reasons, junctions were chosen which further tended to emphasise the fragmented nature of the county. Thornton became the junction for Dunfermline, Cowdenbeath, Leven and east Fife, rather than Kirkcaldy. Ladybank played a similar role in relation to Perth and Kinross, rather than Cupar. St Andrews was by-passed, to be served by Leuchars Junction, and as a result neither place developed fully. By the end of the 1840s the basis of the rail network was established and, while many local lines were built to serve particular areas, the needs of the through traveller were better served than those of the county's inhabitants (3).

Of the local lines, one deserving special mention was the Leuchars-St Andrews line of the St Andrews Railway Company, the first line in Scotland to be built on economical principles. In the late 1840s, the possibility of railway expansion coming to a halt seemed only too imminent and the St Andrews Railway - with its low preliminary and construction costs - showed how small towns could be effectively linked to the heavily-capitalised main lines. Initiated by the merchant and professional classes of the town, financed mainly by local shareholders, the railway stopped

---

(1) The County of Fife, ed A Smith (Edinburgh 1952), 61

(2) University of Glasgow, Edinburgh and Dundee Railway Company Minute Book, 1836-37

(3) County of Fife, ed Smith, 58-59

modestly half-a-mile short of the town, but brought to it a modest prosperity (1).

The outward signs of the impact of the railways are so evident and so well-known in general terms that it is proposed here to do no more than point out some examples specific to the area. Thornton village (2897) was a creation of the railway and in the early years of this century 440 were employed by the North British as follows:- traffic department 140, locomotive 180, engineers department 120. In addition, two railway waggon works - Pickering and Company and Messrs Shirlaw, Fenwick and Co, Fife Wagon Works - employed another 50 men. Two hotels in the village catered for the overnight traveller and the railway nodality of the place resulted in the establishment of two auction markets between the village and the station. The appropriately named Station Road has the former United Free Church and a school. Elsewhere is the Church of Scotland and another school. Thornton being at the edge of a parish, schools were provided by Markinch and Dysart School Boards in response to population growth (2).

A similar pattern can be observed at Ladybank (3009), where the route from the south fanned out into three and a community closely dependent on the railway grew, also with hotel, auction mart and social facilities. The village of 204 persons in 1841 grew to 376 in 1861, 722 in 1871 and 1340 in 1901. An analysis of the 1861 Census showed that most of the adult males in the village were employed as drivers, stokers, fitters, cleaners, porters, guards and clerks, with platelayers and an inspector. 46% of the railway workers were born in Collessie - the parish in which Ladybank is situated - or Kettle, the immediately adjacent parish to the south. Apart from two from Perth and one from Coupar Angus, all the railway workers were born in Fife and nearly all in the rural areas north and east of Ladybank (3). It seems more likely that railway work provided an outlet for those under pressure from

---

(1) C J A Robertson, 'The Cheap Railway Movement in Scotland: the St Andrews Railway Company', Trans Hist, v 7, (1974), 1-41

(2) A S Cunningham, Markinch and its environs (Leven 1907), 108-111

(3) Census Enumerator's Schedules.

increasing efficiency in agriculture and from the struggle to survive in hand-loom weaving.

The opening of the line from Thornton to Dunfermline in 1849, and of the Stirling and Dunfermline in 1850, opened up the Lochgelly-Cowdenbeath area with "the sudden transformation of weavers and farmers to the largest coal and iron producing centre in Fife" (1). The application of steam power made deep mining possible and - despite the restrictions mentioned below - the newly-established rail link tapped a whole new area. The parish of Auchterderran increased from 1913 in 1841 to 3210 in 1851, Beath from 973 in 1841 to 1252, while Cowdenbeath, from a roadside hamlet of 127 in 1841, went to 1148 in 1861 and 7908 by 1901. Typical at the level of the individual decision is the statement by Messrs Dale and Oliver in 1894 that Messrs Bonthron Brothers Works have been in the market for some time and that it is contemplated to convert them "into an engineering establishment because of their situation close to Sinclairtown station" (2).

The establishment of the railway and particularly the bridging of the two Firths, opened Fife up as a tourist area. While prosperous families had visited Burntisland for the bathing as early as 1793 (3), the Forth Bridge allowed a sizeable seasonal influx to such places as Aberdour, Kinghorn and the East Neuk towns, especially St Andrews (4). From 1890 there was a rash of villa building and the improvement of seaside walks and other facilities.

At the same time the railway opened up the possibility of the day trip, the first railway pleasure trip to Dunfermline by the Edinburgh, Perth and Dundee taking place on 17 July 1850, when the Rev. Dr Chalmers "addressed them from the steps of the east end on the popular points of the history" of the Auld Kirk (5). The works outing of 500 or 600 by special train to Elie or Leven, described by such as Robertson (6)

---

(1) P W Brown and A Westwater, History of the early Lochgelly Coalfield (Lochgelly 1954), 17

(2) Fife Free Press, 3 Mar 1894

(3) S R O, GD 29/2063/52

(4) G W Ballingall, Historical Collections regarding the Royal Burgh and Parish of Kinghorn (Kirkcaldy 1893), 27; Robertson, Cheap Railway Movement, 23

(5) E Henderson, Annals of Dunfermline (Glasgow 1879), 663

(6) D P L, John Robertson, Some early recollections (n.d.) 5

or Stuart (1), was a special feature of small town life of the late nineteenth century.

It is not intended to summarise here the stages by which the railways of Fife were projected and built, eventually coming, almost entirely, under the control of the North British. That has been done fully elsewhere (2). Instead it may be revealing to look at two ways in which the North British monopoly was challenged, particularly since they relate to the problem of serving the interior of the county from the main line.

In the 1840s, as well as having the Burntisland-Ferry-Port-on-Craig line authorised and constructed, the Edinburgh and Northern put forward proposals for a Kirkcaldy-Lochgelly branch and - when this was rejected - a direct Burntisland-Dunfermline route, which was also vetoed, the grounds being that such routes were superfluous as prospective traffic might quite as well be carried round by Thornton (3). This may well have been the correct decision for the time, if we can accept James Aytoun, whose property at Auchterderran was on the Thornton-Dunfermline route. "This branch .... I shall always use in my journeys betwixt Fife and Edinburgh, as well as for the conveyance of my gas coal to that town; from which market - the best in Scotland - I am at present cut off from, there being no cheap conveyance from my neighbourhood to Edinburgh" (4).

By the 1870s many new pits had been sunk in the Kelty-Cowdenbeath-Lochgelly area, traffic had increased greatly and delays were common on the railway and at Burntisland, the main coal-exporting port for that part of the coalfield, the approach to Kirkcaldy harbour being excessively steep and with a sharp curve. The Burntisland Direct Mineral Railway Bill was promoted in 1876 by a group of coal and iron-masters and managers to run a railway from Burntisland direct to

---

(1) J Stuart, Reminiscences (London 1911), 58

(2) H Douglas, Crossing the Forth (London 1964); J T Gairns, 'The Fife Coast Lines of the London and North Eastern Railway (North British Section); Railway Mag. v 52 (1923) 263-271; H G Lewin, The Railway Mania and its Aftermath (London 1936); T Moffat, 'Railway development in Fifeshire', Railway Mag, v 34 (1914) 394-401; J Thomas, The North British Railway, v1 (Newton Abbot 1969)

(3) Lewin, Railway Mania, 223, 333

(4) D P L,J Aytoun, A Letter to the inhabitants of Dunfermline on the subject of the Queensferry Passage Bill (1848) 2

Cowdenbeath, with branches to Burntisland harbour and Ross Point, and to collieries at Donibristle, Lochgelly, Lumphinnans, Lassodie, Hill of Beath, Townhill and on the Earl of Elgin's lands. The line would measure 8⅝ miles from Cowdenbeath to Burntisland as compared with 20¼ via Thornton and there would clearly be considerable savings in time and in money (1).

Dissatisfaction with the existing state of affairs crystallised into a number of different compartments. The colliery owners were concerned about the amount of back-shunting and re-arrangement of trains necessary. Trucks from Lassodie (1292) were shunted at Kelty Junction, Lumphinnans Junction and Thornton Junction, the return journey taking 3¾ days. William Robertson, coal exporter, Burntisland gave examples of ships delayed at Burntisland as a result of poor railway service and had had to pay demurrage on several of these. In 1875 it was quite common for quite small ships of 100 - 500 tons to spend over two weeks in loading coal. Instances were given of coal-trucks taking 38 days for the return journey to and from Dundee, where storms caused delays at the Tay ferry. The coal-shipping season was from April till the end of December and at that time the "North British are totally unable to overtake the business". Pits stood idle because the coal could not be moved. John Stephenson of Townhill had to refuse an order for 600 tons because he "could not get trucks to take it away nor engine power" (2).

Coal traffic at Burntisland was delayed by the ferry traffic and there was greater delay of coal traffic as passenger trains had priority on the East Coast main line in particular. As well as coal for shipment there was an interest in the import of Spanish haematite. At Lochgelly the blast furnaces were standing idle "owing to the depressed state of the iron trade and the high rate of carriage which we have as compared with our competitors in the west". Lochgelly ore was abundant but lean, "we want something to mix with it". Cumberland haematite, coming to Lochgelly by rail and ferry, cost 10/=2 per ton for transport,

---

(1) S R O, BR/PYB(S)/1/50

(2) Ibid

"to some of the ironworks in the West, I believe, it is as low as 7/=6 for the same haematite iron". At Lochgelly, they only used haematite for a quarter of their ore content and the iron suffered as a result. Spanish ore had already been used, costing 1/=8 to transport from Burntisland. Landale, managing partner of the Lochgelly Iron and Coal Company, at that time the largest coal shippers in Fife with 133000 tons in 1879 (1), hoped that the proposed railway would induce ships to discharge Spanish ore at Burntisland by reducing the cost of transport to 1/=4 (2).

Henry Mungall, manager, Cowdenbeath Coal Company, summed up the whole situation thus, "the North British Company do not attend very well to us because they have the whole district to themselves and they devote their attention more to the western districts where they compete with the Caledonian Company".

The tactics of the coal interest succeeded and the Bill was withdrawn but with an agreement that the question of rates and additional facilities should be satisfactorily settled. The promoters agreed to use the North British route for a further five years, and £99499 was spent by the North British on harbour enlargement (3). John Walker, general manager of the railway stated "we did not advance £100000 for the mere purpose of establishing a dock at Burntisland; it was for the purpose of developing the Fifeshire coalfield" (4). From 197000 tons in 1876 exports reached 469000 tons in 1879 (5). Loops were put in at Thornton and Lumphinnans while 1881 saw the Burntisland Harbour Act transferring control of the harbour to a Board of Commissioners, of whom four were representatives of the Town Council, elected annually, and four were nominated annually by the North British directorate. Distances were not reduced, but improvements took place to the route and major reconstructions took effect at Burntisland. In addition, the new docks at Methil not only ensured a rapid turn-round there but shortened the distance from the

---

(1) DPL Proceedings in reference between the North British Railway Company and the Magistrates and Town Council of Burntisland (1880) 72

(2) S R O; BR/PYB(S)/1/50

(3) D P L, Proceedings (1880) 22

(4) Ibid, 43

(5) Ibid, 48

central part of the coalfield. Another factor favouring Methil was that coal traffic crossed the main East Coast line at Thornton but, apart from this, used lines with only local passenger trains. By contrast, coal traffic for Burntisland had to share the use of the main line from Thornton south. Till 1914 expansion of coal output progressed hand in hand with rapidly increasing exports at both Burntisland and Methil.

In 1837 and 1838 John Sang, civil engineer, Kirkcaldy and James Leslie, civil engineer, Dundee, surveyed the coast from Burntisland to Dysart, finding Seafield (280892) "the best and most convenient station for the Ferry". In 1840 the building of a harbour was proposed as a terminus for a railway line to Perth via the east side of Loch Leven, one of several unsuccessful proposals to link Perth to the south coast of Fife (1). No more was heard of the proposed harbour until the period of great dissatisfaction with the North British which has been noted above, when the Caledonian not only sensed the partial vacuum in the North British network but succeeded in having the Seafield Dock and Railway Bill passed in 1883 (2). In addition to a large dock with coal-loading facilities, a railway was to be constructed from Cowdenbeath through Auchtertool, under the North British main line, to Seafield. Understandably, the North British fought a proposal which would cut at the very heart of their coal trade and it was 1888 before the promotors of the Bill - having had the House of Lords Committee extend the time for compulsory purchase of land and completion of railways (3) - appointed a contractor to carry out the work (4). In August 1889 work began on the outer concrete breakwater and £70000 was spent before the North British bought the company (5).

The line to Cowdenbeath was then completed, a junction made with the main line at 274900 and the new dock forgotten. Although only a single-track line with many sharp curves and steep gradients the Kirkcaldy and

---

(1) K P L, Prospectus of the Seafield Harbour (1840)

(2) Fife Free Press, 17 Mar 1888

(3) Ibid, 29 Apr 1888

(4) Ibid, 5 May 1888

(5) Ibid, 17 Aug 1888, 24 Aug 1889, 19 Oct 1889; Davidson's Illustrated Guide to Kirkcaldy (Kirkcaldy 1903), 60

District Railway did serve a useful purpose in taking some of the pressure off the existing lines; in particular, it cut the mileage travelled on the main line by 5½ miles.

The archaeology of railways in the county is of great variety in scope and scale. Long stretches of abandoned railway exist , like the Kirkcaldy and District Railway with its heavy engineering works. The dens, or deeply incised small valleys, have been crossed by fine masonry viaducts, as at Lower Largo and Kenlygreen (566133). The East Fife Central Railway at Lochty (521079) has been reinstated in part so that steam engines may be run there. Closed stations are commonplace, the most interesting being the "somewhat imposing" old station at Burntisland (1). Designed to impress the traveller approaching the station from the ferry, it became superfluous when the rail link from Burntisland to Inverkeithing and the Forth Bridge was opened in 1890, and a new station came into operation on the new stretch of line. At the small-scale level the Edinburgh and Northern gas lamps at Kinghorn station are of great interest but there can be no doubt that the two finest railway monuments of the county must be the two giant bridges over Tay and Forth. If maintenance costs continue to rise and traffic to decline, their long-term future must be in question. It is to be hoped that, if closure does become a necessity, the public will support their conservation to a degree equal at least to that given to a great cathedral.

---

(1) Cairns, Fife Coast Lines, 267

Various aspects of water transport have already been studied in relation to the county: the Forth crossings (1), the similar pattern of the Tay (2), the archaeology of the harbours before "the technically advanced works on the industrial period"(3). From these bases it is proposed to look more fully at the interplay of competition and developments between the ferry ports, with particular emphasis on the lower Forth crossings, and at the development of ports responding to the expansion of coal production in the late nineteenth century.

Ferry Ports

To the overland traveller a ferry passage has ever represented delay, discomfort and,occasionally, danger. For the traveller through Scotland the first two were a commonplace encountered on Forth and Tay. John Wesley, crossing the Tay in 1763, wrote "in a little we

> procured a boat about half as long as a London wherry and three or four feet broad. Soon after we had put off I perceived it leaked on all sides .... When wecame toward the middle of the river .... the wind being high and the water rough, our boat-men seemed a little surprised; but we encouraged them to pull away, and in less than half an hour we landed safe" (4).

Lord Cockburn, in paying tribute to Jeffrey, uses as his contrast the accumulation of ferry experiences - "of all my old circuit companions

> there is none it is so delightful to recollect as Jeffrey .... Every court house and every inn is associated with him .... Whether walking through beautiful scenery, or shivering in a state of nausea in a crazy Kinghorn passage-boat.... he never failed to enliven the scene by his speculations and his discussions with anybody however humble, who came in his way" (5).

Bad weather inevitably resulted in an unpleasant crossing, but two other

---

(1) H Douglas, Crossing the Forth (London 1964)

(2) J S Buist, 'Last of the "Fifies"' Sc. Mag. new series 85,2 (1966) 158-163; B Lenman 'Mechanised Ferries on the Tay - from first to last' Tr. Hist, 2, 3 (1969) 333 - 334

(3) A Graham, Archaeological Notes on some Harbours in Eastern Scotland', Proc. Scot. Ants. Scot. 101, (1968-69) 200--85

(4) A Jefferies, 'John Wesley in Scotland', Scot. Geog. Mag, 83, 2 (1967), 107

(5) Henry, Lord Cockburn, Journal v 1 (Edinburgh 1974), 139

factors contributed to the problems of ferry crossings. Until the introduction of steam vessels it was customary to operate a number of piers for any one crossing so that a vessel could make a passage to the other side, independently of the direction of the wind. Inevitably, the capital cost of such provision and the difficulties of supervision tended to produce inadequate vessels and incfficient services. The introduction of steam vessels meant that boats could ply whatever the wind's direction and in all but the worst of weathers but, if full benefit was to be obtained from steam ferries, provision had to be made for them to tie up to piers or landing-stages at all states of the tide.

The experiences implied by these difficulties are well described by an anonymous writer on a walking tour in 1800. He and his two companions left Edinburgh at 7 on a Thursday evening, reached Leith at about 7.45 and arrived at their Kirkcaldy inn before midnight, having crossed from Leith to Pettycur. "We crossed in a pinnace, being assured by the ferryman of a quicker passage by it than the common passage boat. This may in general perhaps be the case, but we had no great reason to boast of dispatch, for in spite of the utmost force of all the sail they could carry .... unaided by the wind .... we found ourselves still upon the water two hours and a half after leaving Leith, and I dare say should have been there still if J S had not interfered and supplied the place of the (ferryman's) right arm left rotting last war off the Dogger Bank. The pinnace takes only six passengers"(1).

"This is a long and inconvenient but by no means dangerous passage, no boats having been lost upon it almost within the memory of man. The boatmen were civil compared to what we have sometime seen at Queensferry, and no attempt was made to impose upon us. It labours under much disadvantage, however, from the want of a sufficient quantity of water at all times, as, excepting at high water it is seldom that a big boat can be flooded into the harbour upon the north, owing to the sand, which, in spite of every attempt to prevent it, continually accumulates and chokes it up. On this account it daily happens that the boats get aground within two or three hundred yards

---

(1) Anon, Notes of a tour through the shires of Fife, Forfar, Perth and Stirling in 1900, (printed for private circulation 1898), 1, 2

'of the shore, and are obliged to lie there till next tide; and though it is no doubt true that passengers may, by paying something extra, get themselves rowed ashore in small boats, yet this is an expensive and, at the same time, a partial aid, as the horses and carts cannot be conveyed ashore in this way" (1). As 70 minutes was "esteemed a good passage" (2), and half an hour on the Tay, travellers' frustrations will be understood, as will their occasional eruption and the boatmen's predictable response - "the Kinghorn Horsehirers and Boatmen, of which the Town chiefly consists, are noted all Scotland over for their Impudence and impositions" (3).

James Petty, in February 1841, embarked at Burntisland with 30 - 40 other passengers and made an excellent passage "notwithstanding that the sea was very rough". On reaching the south side of the Forth, Petty was made aware "that from the want of water the Steamer would not get to the pier at Newhaven" and as a matter of safety and comfort the passengers agreed to pay whatever extra charge might be demanded for landing at Granton. The master of the boat, however, stated that he could not go there without express order from the Superintendent at Newhaven. "We found on getting near that place two (boats) were sent out to take the passengers on shore. Although these boats were each manned with six hands who did every thing in their power to get the passengers safely from the Steamer to the boats, it was impossible from the state of sea to do more than give the passengers the choice of being tumbled headlong into the boat or dropt into the sea. The consequence was that several of the passengers got severe falls and I amongst the rest fell into the boat and severely hurt one of my legs from which I am still suffering. A friend who was with me came into the boat head foremost, and had I not moved forward and broken his fall his Skull in all probability would have been fractured. After considerable delay the passengers were got into the boats and if we escaped getting wet crossing the Firth we were not so fortunate in going from Steamer to the Pier as almost every one was completely drenched" (4).

---

(1) Ibid, 4

(2) F Douglas, A General Description of the East Coats of Scotland from Edinburgh to Cullen (Paisley 1782) 11, 37

(3) J Ray, A Compleat History of the Rebellion (York 1755), 283

(4) Letter in writer's collection; James Petty to the Chairman of the Fife and Midlothian Ferry Trustees, 3 Feb 1841

The celebrated were not immune. In 1807 Rennie had completed his survey of Pettycur and on 28 October "the wind blew fresh from about three points westward of South; after beating in the Forth for about three hours, we were obliged to return to Pettycur and to save time I went round by the Queensferry .... This points out the necessity of some other places being chosen for this purpose" - ferry harbours (1).

An examination of the map shows two areas where the Tay might be crossed and three where the Forth might be crossed at minimum cost in time and resources. The Tay was crossed at Perth by Smeaton's bridge in 1771, at Dundee the Firth narrows, and here the ferries have been replaced by the rail and road bridges. The Firth of Forth opens out below Kincardine where a former ferry crossing was reinstated in 1826-28 with low water piers, giving a depth of six feet at low water spring tides and two "large and powerful steam boats .... can ply at all times of tide and all states of weather". The piers on north and south cost £6468:5/=9 (2). At Queensferry the Firth narrows dramatically as the igneous Ferry Hills thrust out into it. "The singularity of this strait is greatly heightened by the situation of the Island of Garvie .... The appearance and situation are altogether so favourable, and so inviting for some work of art, that it has often happened to the Reporter, when he considered them attentively, that a Bridge of some description ought to be attempted" (3). The origins of the Queen's Ferry certainly go back further than the Queen Margaret with whom it is associated, but this obvious crossing point is now used by rail and road while Kincardine was bridged in 1936. East of Pettycur the Firth of Forth opens out, and a ferry port in the Pettycur-Burntisland area ensures a shorter road journey to Perth and Dundee than by Queensferry, although at the expense of a longer sea crossing (4).

The acceleration of activity about 1800 highlighted the inadequacies of the ferries - "with all the inconveniences of the passage at Kinghorn

---

(1) J Rennie, Report respecting the proposed Improvements at Pettycur, and intended Ferry-Boat Harbour at Newhaven (London 1808), 11

(2) W Menzies, 'Report on the Embankments and Ferry Piers on the Estate of Tulliallan, near Kincardine, in Clackmannanshire', Highland Society Prize Essays, 12 (1839), 494-495

(3) J Anderson, 'Report relative to a Design for a Bridge of Chains' (1818), 3

(4) The County of Fife, ed A Smith (Edinburgh 1952), 416

the quantity of fares has nearly doubled in twelve years .... exclusive of the rise in the price of the fares .... the rent of the Queensferry toll-bar has increased one-third in four years" - and schemes were put forward for going under and over the water barrier (1). In 1793 the level of debate was on the necessity of a special vessel for ladies and delicate passengers and of providing vessels with cabins (2). John Grieve, James Taylor and William Vazie, put forward, in 1806, a proposal for a tunnel under the forth, west of Queensferry (from 121817 to 113788 - thereby losing the benefit of the narrowest crossing). Two tunnels, 15 feet across and 15 feet high, were envisaged, with a drainage level underneath 7 feet high and 4 feet wide. The estimated cost was £164000 but this was based on a supposedly accurate chart without any actual soundings or borings - "the greatest depth is stated to be 11 fathoms below high water mark" (3) With an estimate of 4½ years to complete the work it is clear that the imaginative eye had roamed wider than technical competence could follow, and it is not surprising that only £655:1/= was raised in subscriptions (4). Dunfermline Council - who might have been expected to come out strongly in support of a scheme which would have brought the citizens great benefits, if completed - authorised support to the tune of £10.

Nevertheless, the idea that a tunnel under the Forth would be a better solution that a bridge was revived on occasion by the North British Railway Company. After the fall of the first Tay Bridge one was proposed in 1880 to go from Hound Point to Donibristle, and in 1890-91 a tunnel at Kincardine was proposed (6). In the twentieth century schemes for a tunnel in the thirties and a subway in the fifties were examined and abandoned (7).

As imaginative as the early tunnel was the design of James Anderson for a "Bridge of Chains" at high level across the Queensferry narrows. Anderson offered four designs to accommodate two sizes of vessels but, after rehearsing all the possible advantages of a high-level bridge at

---

(1) J Miller and W Varzie, Observations on the Advantages and Practibility of Making Tunnels under Navigable Rives (Edinburgh 1807(, 76

(2) S R O, GD, 150, Box 109

(3) J Grieve, J Taylor and W Vazie, Reports of a survey .... Tunnel under the River Forth at or near Queensferry (Edinburgh 1806), 1-13

(4) NLS, MS 6290/157

(5) E Henderson, Annals of Dunfermline (Glasgow 1879), 537

(6) H M Cadell, The Story of the Forth (Glasgow 1913), 101-102

(7) Douglas, Crossing the Forth, 161-163

this point, was honest enough to admit that he "would like to be able to investigate the matter still further, especially on the Strength of Materials". Anderson held the view that his bridge would take four years to build - withour knowledge of the eight years taken on the Forth Bridge, the six required for the Forth Road Bridge, plus the collapse of the first Tay Bridge, it is clear that his failure to achieve financial support saved him from ultimate embarrassment (1).

Until the construction of the great bridges it was of necessity that the ferries carried the traffic, although some travellers did prefer the detour by Stirling (2), and the national nature of the traffic was recognised by the unusual rights of the ferryman and by the overlapping membership of road trusts and ferry interests. Common trends are discernable at all the ferries and it is the slight difference in time between these trends, added to the differing space relationships between the Queen's Ferry and the Broad Ferry, that make the interplay of events between the two passages so full of interest.

The ferrymen on all the passages had a reputation for incivility and occasional extortion, and this may well have stemmed, in part, from their unusual situation as vital middlemen on major through routes. In the efforts to make the ferries effective links in the early nineteenth century one of the objectives was to provide ferry staff devoted to the interests of the travellers rather than to the preservation of the identity and independence of the ferry community. In 1802 the proprietors of the Queensferry Passage attempted unsuccessfully to break the privileges of the ferrymen (3), but legislation of 1809 effectively transferred the ferry to public ownership, making possible the engagement of a specialised staff with a superintendent "Mr James Scott, a master in the Royal Navy, perfectly accustomed to the habits of command and skilled in the navigation and management of the vessels" (4).

---

(1) Anderson, Report, 5, 29-30

(2) E L Ahrons, Locomotive and Train Working in the latter part of the Nineteenth Century, vol. 3 (Cambridge 1952), 77

(3) McRitchie v Earl of Roseberry (Bill Chamber Process, 5 Jun 1802)

(4) Statement by the Queensferry Passage Trustees (London 1811), 2; Statement regarding the Bill now in Parliament (Dundee 1826), 2-4

At the Broad Ferry 10 vessels used Kirkcaldy as a base. The Ferry Trustees were able to restrict these numbers to four in 1818, using a Decreet-Arbitral of 1684, and over the next few years, by a mixture of threats, promises and chicanery, succeeded in having three of the four licences made over to steam-boat operators so that the local pinnacemen were displaced. "Thus an abundant harvest is reaped by those who would neither prepare the soil, sow the seed, nor protect the ground when about to be torn from its lowful owners" (1).

One approach to ferry problems in the first years of the nineteenth century was to seek national support for what was part of a national network. A Memorial from the Great North Road trustees drew attention to the delay and danger of the passage, John Rennie was engaged to survey the Firth at Queensferry and, acting on his recommendations, an Act for the Improvement of the Queensferry Passage received the Royal Assent on 20 May 1809. By this the property of the ferry was purchased for £8525:19/=4½. a sum fixed by arbitration. £4336:11/=8 was paid by the Barons of the Scotch Exchequer, and the remainder was contributed by individuals. New piers were constructed on both north and south sides, a signal house built and the original north pier extended (Fig. 9.1) (2). Houses for the superintendent and the boatmen were built, and all the boats repaired. In addition, two large pinnaces, two small pinnaces and a large boat were built. This last had an awning to protect the passengers from the weather (3).

By 1813 £33677:0/=3½ had been spent in purchasing and improving the ferry; of this £20237:12/=7 has been advanced by individuals, and the remainder had come through "the liberality of Government in the free and absolute Grant which has been obtained for the furtherance of this object" (4). Allied to the ferry improvements the Great North Road trustees proceeded as well as they were able to improve their stretch of road, while West Lothian and Midlothian were making "great improvements" at their side (5). New regulations were drafted and displayed in the ferry inns, they were displayed in Edinburgh and in the north, and every skipper had a copy for

(1) A Pinnaceman, Remarks on a Report of the Committee of the Town Council of Kirkcaldy (Kirkcaldy 1835); Kirkcaldy Ferry - facts connected with claims of the Pinnacemen (Kirkcaldy 1835)

(2) 'Committee on the Queensferry Passage. Report' (Parliamentary Papers 1813-14, iii), 119-120

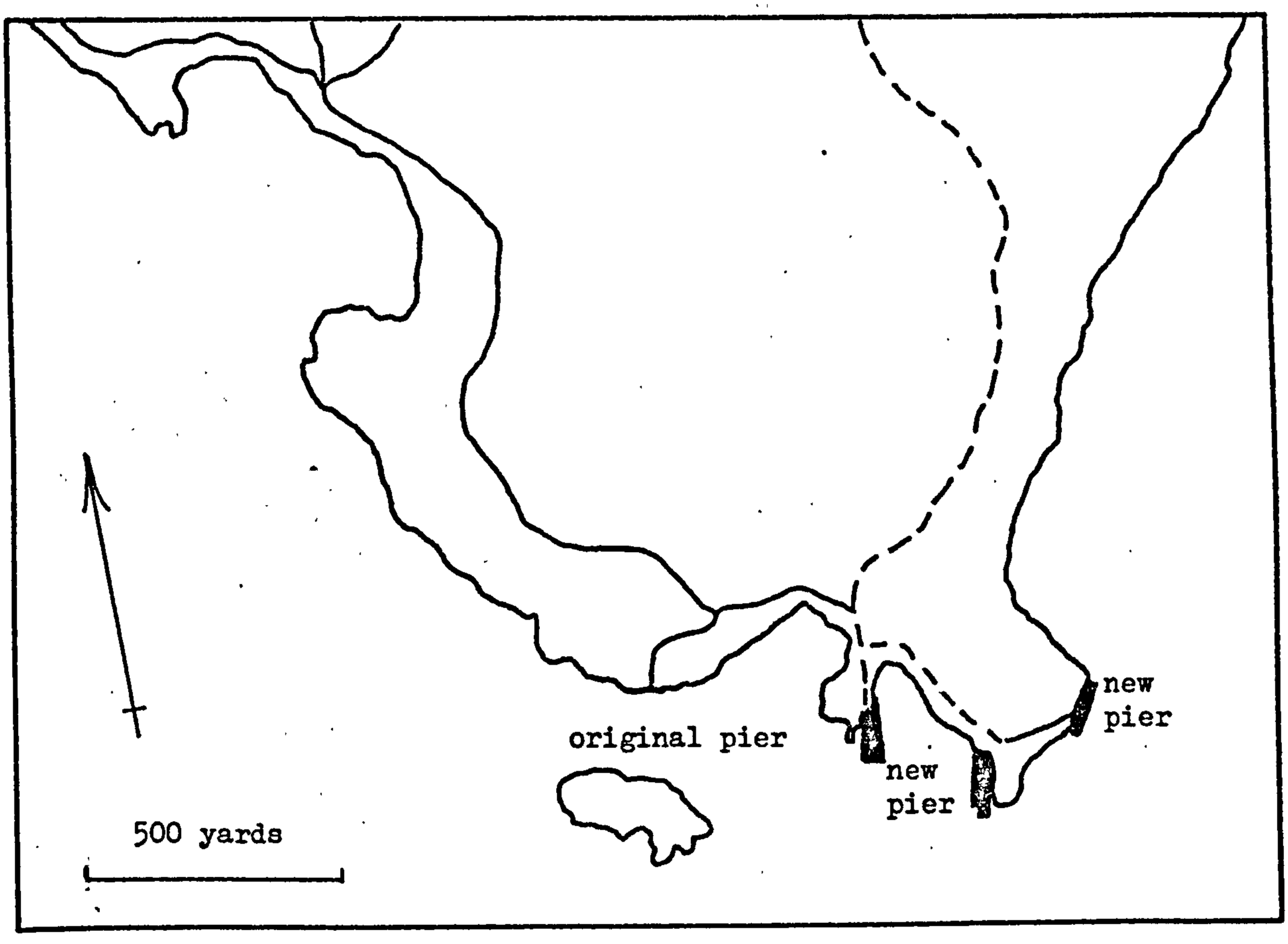
(3) Queensferry Passage Trustees, Statement respecting the Queensferry Passage and the Great North Road (London 1811), 1-2

(4) S R O, GD 24/919

(5) S R O, GD 51/5/605

FIG. 9.1

IMPROVEMENTS AT QUEENSFERRY PASSAGE, 1809-1814



18th-century road

19th-century road

his pocket (1). Once the Long Craig pier on the West Lothian side was completed, the most difficult crossing - when a west wind reinforces the ebb tide - could be accomplished. A measure of the improvements was given when "on occasion of a mutiny among the French prisoners at Perth .... two troops of Dragoons were passed over, from one Pier only, in the space of two hours .... before the alterations took place, this would have occupied the largest part of the day" (2).

With the provision of a number of piers, giving a choice of courses according to wind and tide, and a depth of water suitable for use all day, and not merely for 4½ hours, the "ferry was as perfect for transit by sailing - boats as the nature of the thing would admit" (3).

On the Broad Ferry Government assistance was less easy to obtain. The Trustees in 1809 looked for help to "Government and the northern counties of Scotland"(4), and under the Broad Ferries Act of 1813 the Lords of the Treasury advanced £10000 in response to subscribers' £10000 (5). In the state of confusion prevalent in the 1820s, outside assistance was again sought. There was a large number of existing piers to maintain and a need to construct low-water piers to eliminate such items in the annual expenditure as "wages of Florymen at the several Stations - £521:15/=" (6). A Memorial was presented on 3 May 1826 to the Duke of Wellington by the Earl of Rosslyn, the outcome being a refusal to give public aid to the ferry and the direction of Thomas Telford to make a survey and to prepare plans and estimates. An approach from the other side of the Forth elicited a reply to the Lord Provost of Edinburgh from the Chancellor of the Exchequer that no more applications to Parliament for works of this nature would be entertained and that it would be inexpedient for the Lords of the Treasury to sanction the employment of an engineer at the Crown's expense. (7) In desperation a Committee of Heritors applied unsuccessfully

---

(1) Trustees, Statement, 2

(2) Queensferry Passage Report, 120

(3) D P L Report of Committee appointed by Managing Trustees of the Queensferry Passage (1828), 11

(4) Resolutions of a General Meeting of the Ferry Trustees (Cupar 1809), 7

(5) 53 Geo. III, c 125, sec XLVII

(6) S R O, GD 26/12/22. Florymen were the boatmen whose function it was to transfer passengers and express cargo from ferry-boat to pier at states of the tide when the ferry was unable to reach the pier.

(7) Edinburgh City Archives, Miscellaneous Bundle 2/1

to the Government either to advance the county enough to build low-water piers or to take the ferries into their own hands. A petition to the Duke of Wellington resulted in an instruction to have Telford carry out the required survey, but it is far from clear whether he was ever paid for the work undertaken (1)

The multiplicity of piers was desirable in the era of sailing vessels and when steamers were so low-powered as to be affected by adverse winds. The adoption of steam vessels made possible concentration of resources and thereafter a more efficient service but the trustees did not necessarily see this immediately. The nine Queensferry piers were all within sight of one another and no great inconvenience was incurred by using one or the other. It was a different matter at the Broad Ferry where Kinghorn, Pettycur and Leith were supplemented as ferry ports by Burntisland and Newhaven in 1792 (2). Kirkcaldy had its own ferry rights, and a steam ferry service was run from there in competition with the trustees' sailing vessels. Their response was to acquire the exclusive rights of ferry of Dysart, to build there a landing-slip for £1200, and to purchase three steam-boats to serve Dysart, Kinghorn and Burntisland. On 1 November 1821 the trustees acquired the three Kirkcaldy licences for a yearly rent of £200 and with them the obligation to run two daily services in winter and three in summer from Kirkcaldy. A fifth ferry-station was established at Aberdour so that the three steam-boats were serving a row of harbours stretching over 12 miles (3). The situation was revealed as crucial when the "Sir William Wallace" was lost "whilst she was under the charge of a sailmaker, quite unfit for the duty of a shipmaster" (4). The imbalance in the traffic of the ferry ports is shown in Table 9.A. below.

---

(1) S R O, GD 164/324/3

(2) 32 Geo. III, c 93, sec.1

(3) Statement regarding the Bill now in Parliament (Dundee, 1826) 8 - 11, 14

(4) S R O, GD, 164/324/1

Table 9.A

Broad Ferry; Passengers crossed, 21:12:1825 - 12:9:1826

	Steam	Sail	Total
Pettycur	27302½	2822½	30125
Burntisland	23431½	1375½	24807
Aberdour	2877½	-	2877½
Kirkcaldy	33889½	-	33889½
Dysart	3308	-	3308
	90809	4198	95007

(Source: SRO, GD 164/324/3)

Had the trustees taken the advice of the Merchant Company of Edinburgh and put into effect "a total abandonment on the part of the Trustees of the coasting system and then confining their attention to one point only on each side viz. Newhaven and Burntisland with a low water pier at each", more than a decade of embarrassment would have been avoided (1). Instead they allowed control of the ferries to slip from their grasp in an ill-considered attempt to allow an outsider to restore their finances. With his failure it became inevitable that the Fife and Midlothian Ferries should wastefully ply to Pettycur, Burntisland and Kirkcaldy.

On 5 June 1826 Thomas Greenhill, an Edinburgh advocate with property in Fife, made an offer to the Fife Ferry Trustees to lease the ferries for 21 years, to lay out £31480 on improvements and when these were completed to carry passengers at 6d less than at present (2/= cabin, 1/=6 steerage). He would pay the interest on the Trustees' debt and provide for the gradual liquidation of the principal (2). The ferry passage was to be forwarded "in spring carriages" to Aberdour, Kinghorn, Kirkcaldy and Dysart. Services were to be increased to ten each way in summer and six in winter - "at present .... the rules are so complex that no person, without studying the Almanack, can know what his chances for a passage are" (3).

---

(1) S R O, GD 51/5/614/2

(2) Dunfermline Public Library, Minute for Alexander Greenhill Esq, 2, 12; DPL, Memorandum for the consideration of the Fife Ferry Trustees, 2

(3) S R O, GD 164/324/2

Since the trustees could neither run an efficient ferry nor clear their debts of some £22000, they accepted the main outline of Greenhill's offer and on 13 September, he entered the management of the ferries for 10 years, paying a rent of £1850 for the first two years and £2000 for the remainder of the period (1). The Scotsman announced important changes in the Steam Boats between Newhaven and Burntisland; two more passages per day were billed, Dysart, Pettycur and Aberdour were cut out, but Kirkcaldy retained two daily crossings. Although Greenhill was entitled to charge 2/= (cabin) and 1/=6 (steerage), if tickets were purchased at the collector's office the cost would only be 1/= and 6d. respectively (2).

On 22 November Greenhill asked to be allowed to abandon the lease and be freed from his obligations, throwing himself on the mercy of the trustees (3). The Earl of Rosslyn, anticipating this, had said "Greenhill appears to me to have been so near mad throughout all his recent transactions, that he can scarcely be dealt with as a man of sane intellect" (4). Robert Ferguson of Archerfield was inclined to be more sympathetic, since he felt that Greenhill had merely been over-rapid in trying to make his improvements. "A great deal of his agitation arises from the shame he has brought on himself. The Ferry itself is doing well as ever it did. The Piers etc are beyond his reach - he might have stated this in a more correct way than bolting as he did. I do think we should not push him further - what he has expended on the Boats - copper bottoming etc he must submit to - and with these advantages let the worthy County proceed as they please - forcing him now to finish the road, build the Pier, etc is out of the question" (5).

The incident ended when Greenhill "admitted the rashness and precipitancy of his conduct and his only excuse is, that in the ardour of the pursuit of his object he almost entirely overlooked not merely the

---

(1) Ibid

(2) Scotsman, 21 Oct 1826

(3) S R O, GD 164/324/2

(4) S R O, GD 164/324/3

(5) S R O, GD 164/324/3-4

difficulties of the undertaking but his utter unfitness, as well from want of capital, as from the state of his health and other personal circumstances, to encounter and overcome these difficulties" (1). Greenhill, presumably because the trustees recognised their own lack of wisdom in expecting a deus ex machina, was let off comparatively lightly but as Table 9.B. shows, the extra traffic he had attracted by his cut rates and rationalised services did not remain when the trustees restored the status quo. Although the principles he was working on were admirable, his precipitancy resulted in a decade's wait before pressure began to mount again for a single crossing at the Broad Ferry.

Table. 9.B

Broad Ferry traffic, 1825-28

	Revenue (£ p a)	Passengers (p a)
1825	13188	117000
1826 (Trustees' management)	12700	129500
1826 (Greenhill's management)	8700	230000
1827	10450	92000
1828	9800	111000

(Sources:- S R O, GD 164/289 and 164/324/2)

While the Broad Ferry faced the difficulties of the best utilisation of its three steam vessels, the Queen's Ferry, at the same time, was facing the difficulties resulting from its commitment to producing an efficient passage for sailing vessels. As the Right Honourable William Adam said - "at the time that steam navigation came into use the funds of the Ferry trust had been much exhausted by the expenditure occasioned to suit the transit of the Ferry to sailing boats, steam being then unheard of. By the passage of steamers up and down the Firth, and by the Broad Ferry adopting steam, great encroachments on the profits at the Queensferry took place" (1). Scott, the Superintendent of Passages, had the same kind of experience, ".... when the Forth steam-boats and those of the Kinghorn Ferry became in operation a considerable falling off of Passengers and Saddle horses was evident at the Queensferry

---

(1) S R O, GD 164/324/1

(2) D P L, Letter from Rt Hon William Adam to the Earl of Wemyss on the subject of the Great North Road (1832), 19

Passage and £250 abatement of rent was given on two or three years in consequence. In the subsequent years, and until the present period, the Receipts have risen gradually, but the Passengers and horses has (sic) never advanced to their original numbers, although Carriages and Carts has (sic)visibly increased tending to make up the deficiency" (1).

For west Fife Queensferry was unquestionably more convenient, for east Fife and Angus the Broad Ferry saved the traveller from Edinburgh a great deal, but for Perth, Burntisland saved only eight miles, and it is therefore understandable that the two sets of trustees should spend a great deal of time suspiciously eyeing each other. Thus we have the Lord Chief Commissioner again, writing to Lord Melville on the improvements to the Great North Road and the importance of the ferry as a feeder, at the same time asking him to "confirm and explain" these to the Postmaster General. "The Mail at the Queen's Ferry, if thus provided, will be made safe, and with few exceptions of weather, will be certain and regular. Your knowledge of local circumstances enables you to state how much the Conveyance of the Mail would be otherwise if the two Broad Ferries at Leith and Dundee were to be adopted - so I need not enlarge on that topic"(2).

At Queensferry there were in 1828 six sailing boats crewed by four men each, sailing every half-hour and a steam boat, the Saint Margaret unable to sail in rough water, "a particularly clumsy and heavy boat .... drawing much more water than her capacity warranted" and consuming over a ton and a half of coal in 12 hours - three times as much as other similar vessels of the time (3). While the Broad Ferry suffered from the problem of diffuseness, the Queen's Ferry was obsolescent, inefficient and inconvenient. The passage may have been more agreeable but "it did not bring back to the Ferry the foot passengers, or coach passengers, which it had lost"(4). Neither crossing was as convenient as it might have been.

The solution was to lie with the development of Burntisland as a deep-

---

(1) S R O, GD 164/324/1

(2) S R O, GD 51/5/605

(3) Captain McKonochie R N, Principles of Ferrying (Edinburgh 1828) 2, 13-15

(4) D P L, Report of Committee appointed by the Managing Trustees of the Queensferry Passage (1828), 14-15

water port, served first by well-graded roads and then by railway. As long ago as 1808 and 1809 Rennie had recognised the "excellent situation at Burntisland where the harbour is commodious, safe and of great extent. There is no better situation for a harbour in the Firth of Forth - nature has already done much, and a good deal has been done by art" (1). He found it "somewhat remarkable that this has not long ere now been made the principal resort for the ferry-boats in place of the Pettycur" (2), laying the blame on the road being "very circuitous and hilly" (3). Rennie's general assessment was substantiated by Telford in 1828, although he favoured a different landing-place (4), and in addition, he quoted figures which showed how few interruptions to traffic there had been at Burntisland and how it had, in practice, acted as the terminal port when bad weather made Pettycur and Kirkcaldy unusable.

Table 9.C

Broad Ferry passages: 22:1:1827 - 19:1:1828 (5)

	Scheduled passages	Passages missed	Passages made
Newhaven/Kirkcaldy	112	70	42
Newhaven/Pettycur	107	54	82 (6)
Newhaven/Burntisland	200	19	220 (7)

(Source: Telford, Report (1828), Appendix II)

Within the county opinion began to move towards the need to channel resources through one ferry, although the Greenhill episode meant that only the occasional trustee, like Roger Aytoun of Inchdairnie, would advocate more than the slightest change. Aytoun noted that steam opened up "possibilities of concentration impossible in the days of sail" and that, if the public desired "to possess one good and safe Ferry in the vicinity of the capital, they must desert all others .... If the whole

---

(1) J Rennie, Report respecting the Proposed Improvements at Pettycur (London 1808), 12

(2) J Rennie, Report relative to the Improvements proposed to be made upon the Harbour of Burntisland (London 1809), 17

(3) Ibid, 18

(4) T Telford, Report respecting the Lower Ferry between the Counties of Midlothian and Fife (London 1828), 13-14

(5) This table does not refer to the total period from 22 January 1827 to 19 January 1828 but to the 52 days within that period on which the weather affected ferry passages.

(6) The 82 passages made from Newhaven to Pettycur include some made by the boat intended for Kirkcaldy.

(7) The 220 passages made from Newhaven to Burntisland include passages made with Kirkcaldy and Pettycur boats.

of the revenue consumed upon several very bad Ferries could be concentrated in one, whose situation and natural advantages merited this distinction, the means would be afforded of bringing it to a very high state of perfection" (1).

Nevertheless, local interests succeeded in keeping the question open. George Buchanan, engaged by the Magistrates and Town Council of Kinghorn, favoured a completely new harbour at Kinghorn Bay with a railway to Kirkcaldy (2). James Petty and David Makgill both preferred Seafield as a ferry station, alleging that Telford had been misled by his local informants, but also on the grounds of Burntisland's poor accessibility (3). James Leslie reported that no extension of Kirkcaldy harbour would make the construction of a low water pier any easier (4), difficulty of land access ruled out Burntisland, that frequent sluicing could not keep Pettycur clear and that Seafield be constructed at an estimated cost of £68240 - although his estimate for the improvement of Burntisland with a new road to Kinghorn was £26072 (5). By 1840, after the collapse of the Burntisland Pier and Ferry Company, it was, however, clear that the county could not support a low water pier venture alone and that road and ferry must be thought of as one.

The Earl of Leven and Melville, in renouncing his support of Seafield, summed up the question well when writing to the Commissioners of Supply and the Heritors on a proposed assessment to construct the Kinghorn-Burntisland road and approaches to Gladston's pier. "What have hitherto been our impediments? I believe they will be found to have arisen among ourselves, partly from difference of opinion as to the site of the pier, partly from the interference of individuals unconnected with this part of the county, and partly from the impossibility of raising sufficient

---

(1) R Aytoun, Observations upon the means by which the Communication betwixt the Countys of Fife and Midlothian might be improved (Edinburgh 1827), 3

(2) G Buchanan, Report on Low Water Landing-places between Kinghorn and Pettycur (1827), 4, 5, 7, 10

(3) J Petty, Fife and Midlothian Ferries and Seafield Harbour (Kirkcaldy 1839), 2; DM Makgill Statement in reference to the improvement of the Fife and Midlothian Ferry (Cupar, 1838), 4

(4) J Leslie, Report on Kirkcaldy Harbour (Kirkcaldy 1840) 8-9

(5) J Leslie, Report to the Subscribers for procuring a Survey of the South Coast of Fife (Cupar 1839), 4-6, 10

funds from the County. Now, however, all these impediments seem obviated by the proposal before us; and if experience can ever teach us, it should be now, after all the disputes and obstructions of a quarter of a century" (1).

The Duke of Buccleuch's pier at Granton was begun in 1837 and the Duke and Sir John Gladstone of Fasque turned to the improvement of Burntisland as the northern ferry terminal. When the Commissioners of Supply refused to be assessed to make the road necessary to serve the new pier to be built, the Kirkcaldy Road Trustees were persuaded to undertake the building of the Kinghorn-Burntisland road and the Great North Road Trustees undertook to improve the branch from Cowdenbeath. The Duke and Gladstone undertook to build "a good and sufficient low water pier at Burntisland suitable for the embarkation and landing of passengers with comfort and safety in all weathers and tides from steam boats drawing sufficient depth of water for the passage betwixt Granton and Burntisland". The pier was to be large enough to take rails if they were needed later. The principals were to have the exclusive right of ferry from Burntisland for 25 years, but Pettycur or any other existing station was not to be interfered with. There were to be three iron steam boats, one suitable for livestock as well as passengers, on the ferry, giving an hourly service each way during daylight in vessels of greater power than at present. The financial obligations of the ferry trustees were to be of no concern to the Duke and Gladstone (2).

The trustees, despite some feeling that Gladstone "was moved only by avaricious motives" and "that his Grace was guided more by regard to his great works on the other side of the Forth", saw a way out of their problems. A great landowner and a great merchant were a different proposition from a Greenhill, and the improvements to be made would assure the good service which had never been possible before. The Burntisland Road and Ferry Act received the Royal Assent on 30 June 1842 and by 6 July workmen had already started on both road and pier (3).

Buccleuch and Gladstone did not operate the ferry for anything approaching 25 years. The hotel and stabling were completed by summer 1844, possession of the ferry was taken in August 1844 and the pier completed

---

(1) S R O, GD 26/12/22

(2) S R O, GD 152/219

(3) Douglas, Crossing the Forth, 38

in 1845. Two new boats were bought in May 1844 and a second-hand one came from Dumbarton (1). In 1844 the Edinburgh and Northern Railway was floated and in 1845 it purchased from the Burgh of Kinghorn ground for the railway and the harbours of Kinghorn and Pettycur (2). The line was opened from Burntisland to Cupar in 1847 and in the same year the Edinburgh and Northern bought out Gladstone and the Duke of Buccleuch, acquiring the ferry rights and Burntisland Pier. Despite the undertaking to "keep up the harbour and basin at Pettycur" the railway discontinued sluicing at Pettycur, ensuring that there would be no competition for the Burntisland ferry (3).

The railway ferries at Burntisland have been well documented (4), and here it need only be noted that there was an increase in the number and size of vessels till the Forth Bridge was opened in 1890 and that goods traffic was handled by the world's first train ferry. At Queensferry the ferry was quite overshadowed by Burntisland. The former port was the entry only to south-west Fife while Burntisland served the eastern counties and, via Ladybank, the Perth area. Queensferry was the object of various railway proposals of a strategic kind but from the north it was served by a railway only from 1877, and from the south the line from Ratho Junction reached Dalmeny in 1866, South Queensferry in 1868 and Port Edgar in 1878. The North British bought over the Queensferry Passage in 1867 for £4700, but their energies at the narrows concentrated more on bridging the Forth than in competing with their own Burntisland ferry. Thomas Bouch began the construction of bridges across the Forth at Charlestown (1864-66) and at Queensferry (1878-79), but it was 1890 before the Firth was successfully bridged. (5)

---

(1) S R O, GD 152/79

(2) S R O, GD 152/219

(3) G W Ballingall, Historical Collections regarding the Royal Burgh and Parish of Kinghorn (Kirkcaldy 1893), 22; Douglas, Crossing the Forth, 51, 56-57

(4) Douglas, Crossing the Forth, 58-63; J Thomas, The North British Railway, vol. 1 (Newton Abbot 1969), 204-210; J Thomas, A Regional History of the Railways of Great Britain, vol 6 - Scotland, the Lowlands and the Borders (Newton Abbot 1971), 239, 243-244; J Thomas, The Tay Bridge Disaster (Newton Abbot 1972), 15-20

(5) Douglas, Crossing the Forth, 77-78, 90; Thomas, North British Railway 209-211, 218-219; Thomas, Regional History, 79; Thomas, Tay Bridge, 22 173, 181, 183, 185

On the Tay, although less complex, the same kinds of ferry processes have taken place. Opposite Dundee and Broughty Ferry were three ferry ports: from west to east, Woodhaven, Newport and Ferry-Port-on-Craig (later Tayport). Of these, Tayport was the most frequented early port, but by the early nineteenth century a new road had given Woodhaven the main role as ferry port. In 1806 Newport took over as it in turn became the destination of a new road (1). In 1818 Robert Stevenson was asked by the Trustees of the Fife and Forfar Ferries to survey and report on means of improving the ferries which were "extremely disadvantageous for the Public, from the want of proper order among the Ferryman, and from the unnecessary number of Ferry-boats" (2). Stevenson prepared a programme which would have cost £26627:5/=6, but the committee for conducting the necessary Bill through Parliament were not satisfied and called in Telford in 1819 and again in 1821 "leaving him to the free range of his judgment in providing the best and cheapest accommodation for the steam-boats on both sides of the river". Telford's estimate, which included a new landing place at Newport, since he found Stevenson's plan "very objectionable", was £23070:16/=4, and in turning to him the committee recognised not only his place at the head of his profession but also his value in steering any measure through Parliament. Telford's fee for ferry surveys, getting two Dundee harbour bills through Parliament and visiting the works for seven years was £456:11/=4, while Stevenson charged £647:3/=6 for all the work connected with the 1819 Ferry Act (3).

Stevenson was quick to react to his having been supplanted and challenged Telford's figures, stating that the balance in favour of the Stevenson plan was really £6604:13/=8 (4). He was demolished successively by the Superintendent of Works (Dundee Harbour) and by Captain Warren, R N, on behalf of the Dundee Ferries' Committee of Management. They said that Telford's harbour was better able to give safe and convenient berthage and deep water. Furthermore, they stated that Stevenson had consistently

---

(1) A Graham, 'Archaeological Notes on some Harbours in Eastern Scotland' Proc. Soc. Ants. Scot. v 101 (1968-69), 283

(2) R Stevenson, Report relative to the Improvements of the Communication by the Ferries betwixt Fife and Forfar (Edinburgh 1818), 9

(3) Dundee Public Library, Statement by the Committee for conducting the Amended Bill for improving the Ferries of the Tay (1822), 3, 11

(4) R Stevenson, Observations on Mr Telford's Plan (Edinburgh 1820)

underestimated his own figures and overestimated Telford's. Stevenson planned to keep the depth in Dundee harbour by a scouring basin, but this had been found to be "totally inefficient" (1). His scouring basin, "which, by the way, is about as like that at Ramsgate as Mr Stevenson is like Smeaton .... instead of scouring a harbour it would scarcely wash a kitchen" (2). Telford's soundings were taken with a rod and he gave details of his survey work; Stevenson had only used a lead line, and his report was over-general (3). David Logan concluded - "it is lamentable to see a gentleman of Mr Stevenson's abilities weltering under the burden of inaccuracy and absurdity but some have greatness thrust upon them. I should not have thought it necessary to enter into the examination of a paper like Mr Stevenson's had not Mr Telford, for whose integrity and talents I cannot but feel the highest respect, been absent" (4).

In accordance with Telford's report, low-water piers capable of taking a twin-hulled steam vessel with a central paddle wheel were built at Dundee and Newport (417277). The Union and George IV provided a reliable service, only five times being detained in the whole of 1824, during which year not one whole day was lost (5). Captain Hall was able to comment thus - "these great improvements have at last virtually united two great districts of the county, by converting into an easy and sure communication, that barrier, which in less enlightened times, it might have been said, Nature had interposed in order to keep them separate" (6).

Initially the steam ferries ran alternately to Newport and Woodhaven, but after a year the latter was cut out, leaving Newport as the chief station. For twenty years the Tay Ferries were held out as the ideal towards which the Forth ferries should be striving. Nevertheless, by the early forties they faced a major crisis. As with the other ferries, income was enough to make a slender profit on running expenses and to provide for replacement

---

(1) Captain Warren, R N, Remarks on the Observations by Mr Stevenson on Mr Telford's Plan (Dundee 1820), 5

(2) D Logan, Remarks on Observations by Robert Stevenson, Engineer, (Dundee 1820)

(3) Dundee Public Library, Statement, Appendix 3

(4) Logan, Remarks

(5) B Hall, Account of the ferry across the Tay at Dundee (Dundee 1825)9-10

(6) Ibid, 21

of vessels, but the payment of principal - and even of interest on loans - was not an easy matter. Despite its growth as a result of improved efficiency and the normal regional growth in the economy, the Tay ferry was a comparatively modest enterprise, as Table 9.D shows.

Table 9.D

Ferry receipts 1819-25

	Broad Ferry	Tay Ferry
1819	£ 5971	£ 2060
1820	5614	2510
1821	6648	2526
1822	9717	3209
1823	11252	3552
1824	11845	3790
1825	13188	4308

(Sources:- Aytoun, Observations, 14; S R O, GD 164/289)

£25000 had been advanced by the Exchequer Loan Commissioners, and the need to replace the ferry boats resulted in the accummulation of unpaid interest (1). When this reached £18000, the Commissioners took possession of the undertaking, from them it passed to the Dundee Banking Company, another main creditor, and thence to the Scottish Central Railway, who operated it until their successors, the Caledonian Railway, sold it to the Dundee Harbour trustees for £20000 in 1873 - two years after work had begun on the first Tay Bridge (2). The railway interest in the Tay ferries was not confined to Newport; in 1848 the Edinburgh and Northern began the operation of Tayport as its ferry port on the Tay, operating the Broughty Ferry (3). The final stretch into Dundee was on the Dundee and Arbroath Railway (4). This was later absorbed into the Caledonian, so that in 1869 the rail ferry at Tayport was costing £9792 per annum to run and £10229 was being paid to the Caledonian for the Broughty Ferry-Dundee traffic (5). Until the coming of the Tay Bridge

(1) Hall, Account, 20; S R O, GD 51/5/619/2

(2) Evening Telegraph, 7 - 17 June 1966

(3) Douglas, Crossing the Forth, 53-54, 57

(4) Thomas, Tay Bridge Disaster, 25

(5) S R O, GD 152/219

there was, therefore, competition between the two rail ferries - that at Tayport equipped similarly to the Granton-Burntisland ferry and serving for the long-distance traffic, whilst the Newport ferry provided a reasonable crossing for short-distance travellers. Newport grew rapidly in population with regular access to Dundee, from a population of 728 in 1861 to 1487 in 1871 and 3307 in 1881, this last figure being also associated with bridge developments (1). As far as Tayport was concerned, "what came with the railway went with the railway"; the completion of the second Tay Bridge eliminated it from all but local traffic (2).

Enough has been said at various points to establish the hazards and inconveniences of the ferry crossings. Before the construction of the Tay and Forth Bridges - giving uninterrupted rail access to the county - the need to change, from rail or coach to ferry and back once more to rail or coach, created disincentives to movement of people and goods. While the fatigue and expense were clearly perceived, an accurate assessment of the extent to which initiative was discouraged was no easy matter. Thus, in 1818, the post from Dundee to Fife went through Perth "which in commercial concerns, not only causes much inconvenience, but even tends to shut up an intercourse which might otherwise lead to extensive business"(3). With the advent of the railway there was still an intrepidity about a journey to Fife. "A journey northwards from Edinburgh through Fifeshire was not one to be undertaken lightly .... The waters of the Firth of Forth can be very unpleasant at certain seasons of the year, and a bitterly cold east wind can blow there in a manner which seems to beat its method of blowing anywhere else .... The fastest down train was timed to leave Edinburgh at 6.25 in the early morning, probably in order to show the passengers the coldest beauties of the east wind when crossing the Forth" (4)

In coming to some specific instances of the ferries working adversely, the previous chapter showed the additional expense, as well as inconvenience, involved in ferrying Cumberland haematite for the

---

(1) J S Neish, History of Newport and the Parish of Forgan (Dundee 1890) 125, 131, 166

(2) Buist, 'Fifies', 163

(3) Stevenson, Report, 13

(4) Ahrons, Locomotive and Training Working, Vol. 3, 73-74

Lochgelly iron furnaces and the great delays involved in shipping coal to Dundee by way of the Tayport ferry (1). In 1868 Dunnikier coal cost 1/=9 to transport to Burntisland and 3/= per ton to Granton (2). At an early period, the existence of the water barrier meant that "the retreat of the citizens of the capital of Scotland is cut off on the north" and that Edinburgh was deprived of grass parks for the grazing of butcher's cattle - conversely Fife was deprived of a potential early tourist trade and an alternative, lucrative, land use (3). In relation to the Queensferry Passage "the west of Fife, is to all economical purposes, as much cut off from the metropolis by a mile and a half of water - carriage, as though it were 20 miles farther off. Its grain is under-sold, its farms and country houses are under-let; and Linlithgowshire suffers in the same way though many degrees less in extent, for it is cut off from the resource which on many occasions it might desire for feeding cattle from Inverkeithing Distillery" (4). The iron hoops from Cramond left in the water for a night at South Queensferry and thrown carelessly below high tide mark on the north side represent probably a small fraction of goods lost or damaged in transit (5).

Erskine Beveridge, a Dunfermline linen manufacturer with looms in Dunfermline and Auchtermuchty, sent most of his goods for Leith and Edinburgh by way of Charlestown as being cheaper than by cart and ferry. As he said, "we are isolated together. Dunfermline is completely so although it has the largest population in Fifeshire we have no direct communication. We have coaches to be sure, to Queensferry and from the other side into Edinburgh but then others have daily accommodation and we look for the same" (6).

However, the ultimate demonstration of the isolation of Fife is probably the fact that the last two duels in Scotland were fought there. Furthermore, in 1822 when Sir Alexander Boswell and James Stuart of Dunearn had their fatal encounter at Auchtertool, both Calais and Berwick-on-Tweed were suggested and rejected as being unnecessarily remote; the Queensferry

---

(1) S R O, BR/PYB(S)/1/50

(2) S R O, BR/NBR/4/233

(3) Aytoun, Observations, 5

(4) McKonochie, Principles of Ferrying, 13

(5) D P L, Wardlaw and Anderson v J Cunningham and others, 1779-80

(6) S R O, BR/PYB(S)/1/25

Passage conferred enough isolation for the affair to be concluded without interference from the authorities (1).

Trading Ports

The corollary of the comparative isolation of Fife was to look beyond the immediate vicinity, the county developing a multiplicity of small ports trading around the East Coast, the North Sea and Baltic and occasionally to the Mediterranean and West Indies. Graham lists over 60 harbours in the county, and these do not include the later developments, giving an indication of the fragmentation of trade and the desirability of access to a harbour (2).

Charlestown is the prime example of the port serving a comparatively small hinterland in an adequate manner. Mention has been made in Chapter 4 of its lime trade (Fig. 4.8); as the nineteenth century advanced this became secondary to the coal-exporting trade, an activity shared by such other ports as Inverkeithing, St David's, Dysart and West Wemyss. In the first half of the nineteenth century the maximum size of cargo moved was about 200 tons and typical destinations were Cronstadt, Hamburg, Copenhagen, Rouen, London and Wisbech. Dundee, Aberdeen, Inverness and Hull were frequent customers nearer home while occasional cargoes went to Archangel, Alexandria, Rio de Janeiro and Quebec (3). Charlestown had the reputation of silting more slowly than other parts of the upper Forth and had a considerable passenger trade with Dunfermline people coming down to the Forth steamers by the Elgin Railway - on which steam replaced the horse in February 1852 (4). The railway and harbour passed successively to the West of Fife Mineral Railway (1859) and the North British (1862) (5). Tapping the Lochgelly area as it did, as a result of the amalgamation, Charlestown was a useful partner to Burntisland and sustained its traffic when the North British gave a uniform rate to Charlestown and Burntisland (6). In 1863 Thomas Bouch designed and erected coal drops on a large new

---

(1) W Millar, 'A Scottish duel of last century', Chamber's Journal (1914), 760

(2) Graham, Archaeological Notes, 200 - 285

(3) N L S, MS 9628, MS 9630

(4) Henderson, Annals of Dunfermline, 667

(5) Thomas, North British Railway, 212

(6) D P L, Proceedings in reference between the North British Railway Company and the Magistrates and Town Council of Burntisland (1880), 21

extension to the harbour (1). As a result of these new improvements, over 190000 tons were exported in 1869, 1879 and 1880, but the limitations of the upper Forth meant that Burntisland and Methil, with their docks for larger steamers, gradually excluded all but the smallest vessels from Charlestown (2).

St David's was a similar type of port but with a different history. Since its Scotch gauge kept the Fordell Railway separate from the rest of the railway network, it was able to function as a simple feeder to the harbour until after the Second World War, although to a very limited extent after 1914 (3). Through the Henderson of Fordell papers there emerges an interesting picture of a coal port at a time when bigger ships were beginning to pose major problems of berthage and loading. "15:12:1879 - 15 vessels in harbour and roads to load 3130 tons"; "24:11:1880 - special meeting to consider making a wet dock with a gate to admit vessels of 3000 tons;" "27:12:1880 - by making the Harbour two feet deeper would give 16 - 17 feet at neaps, 20 - 22 at springs - ample for all our requirements;" "10:1:1881 - 2 vessels loading 290 tons;" "27:9:1881 - 17 vessels presently in Harbour and Roads to load about 4334 tons;" but by confining themselves to the existing tidal harbour the manager and owner of the Fordell enterprise allowed other ports to get ahead, leaving only the smaller vessels for Fordell. Thus Cairns, the sales manager, reported on 5 January 1898 - "At Leith

> found no sailing vessels or suitable steamers could be got for immediate shipment .... Sailing vessels are getting fewer every year, Steamers are taking their place and as Owners of Steamers state that quick despatch in loading is of the greatest importance to them, it will be imperative in order to induce the Owners to agree to their Steamers loading here, that the utmost attention is given after the Steamer is berthed, in promptly despatching the cargo coals from the colliery and thereby enabling us here to give Steamers the despatch required and expected.... In the past year I had to refuse 29 Steamers with a carrying capacity of 16300 tons of coal ...." (4)

---

(1) N L S, MS 6357

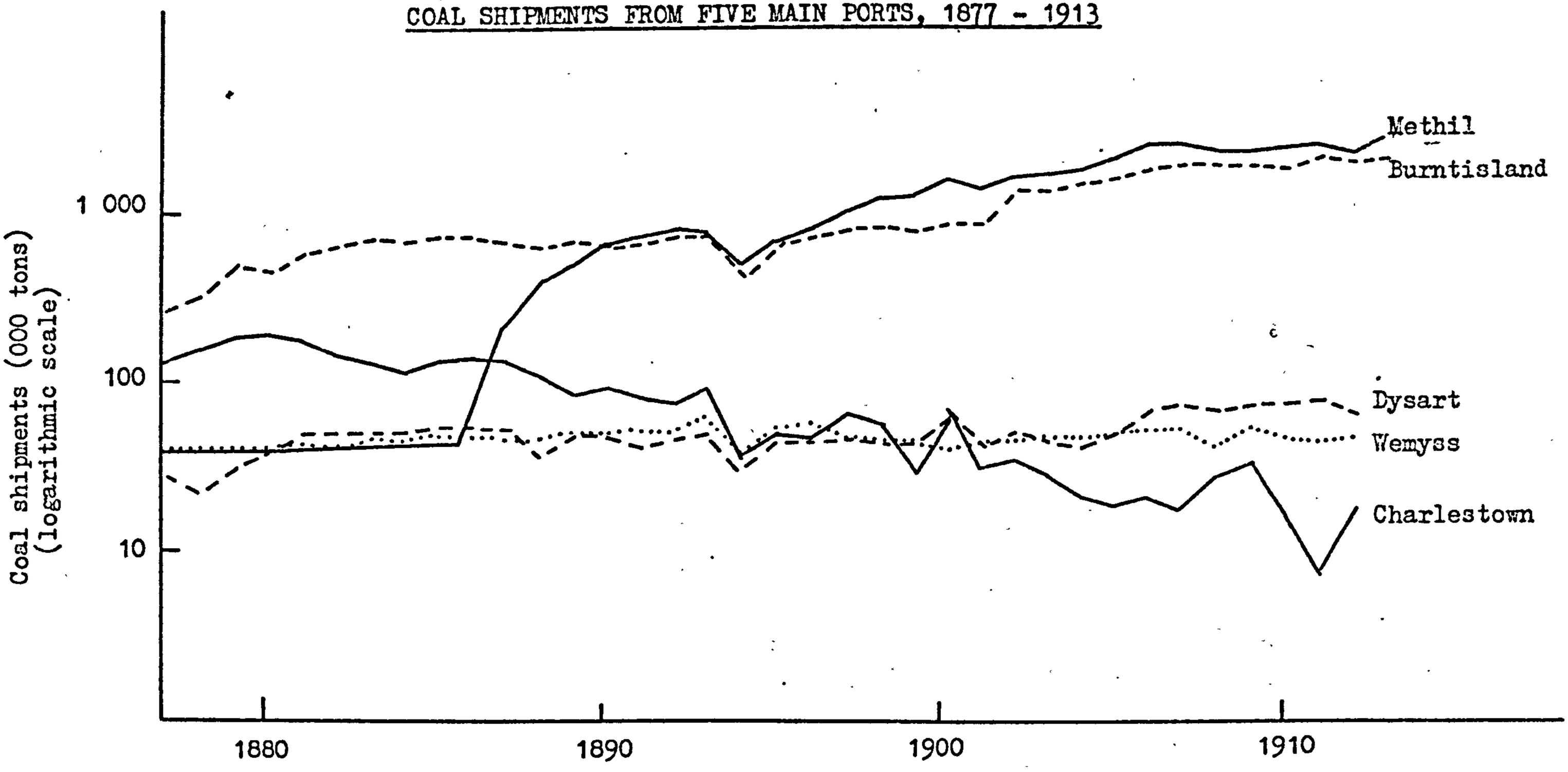
(2) W Caulfield, 'Baltic Traders in a Scottish Port', Country Life, v CXLII, 17 Aug 1967

(3) J C Inglis and F Inglis, The Fordell Railway (Larbert 1946), Appendix A

(4) S R O, GD 172/932

FIG. 9.2

COAL SHIPMENTS FROM FIVE MAIN PORTS, 1877 - 1913



Clearly, the chance of reconstructing the harbour was beyond such a small enterprise as Fordell. Yet by not doing so, St David's was unable to compete with Burntisland, Methil, Leith and Bo'ness and had to be content with whatever trade could be picked up.

The complaints of coalowners with regard to rail access to Burntisland have already been mentioned in the context of railways. In terms of the increasing size of ships and of their specialisation, it is significant to note than in 1875, prior to the opening of the West Dock, the average coal cargo loaded was 274 tons, with the largest 504 tons, a cargo of Cowdenbeath coal for Cronstadt (1). After the opening of the dock, with its 1950 feet of quay and its entrance depth of 18½ feet at neap tides, bigger vessels could be accepted and, with the erection of three coal hoists each capable of handling 25 - 26 waggons per hour, these could be turned round more rapidly than before (2). Fig. 9.2 shows the steady increase of coal exports from Burntisland to a level at about 800000 tons annually. Typical of the situation after the opening of the new dock were the weeks ending 4 January 1883, when 13 steamers loaded 13901 tons (average 1069 tons) and 7 sailing vessels 3398¾ tons (average 485 tons) and 5 March 1883, when 14 steamers loaded 10528½ tons, an average cargo of 752 tons, and 3 sailing vessels 585 tons, average 195 tons (3). Clearly, Burntisland was already catering for a larger size of vessel than could be handled at ports like Charlestown and St Davids, and this disparity was emphasised by later developments at the railway ports.

Kirkcaldy harbour was reached by a gradient of 1 in 20 with a 4 m p h restriction, down which only 8 loaded mineral trucks, with brake vans, could go at any one time. West Wemyss had a wet dock contructed in 1870 but this was outpaced by the growing size of ships (4). It was near the mouth of the Leven that the main developments took place. Leven Dock was built during the period 1876-79. It was linked to the existing East of Fife Railway and passed, with it, to the North British in 1877. Leven Dock was limited by sand bars, and only 44000 tons of coal were exported in 1886, its peak year (5).

---

(1) S R O, BR/PYB(S)/1/50

(2) T Meik, 'Views and Descriptions of the Dock and Harbour Works at Burntisland, Ayr, Bo'ness and Silloth', The Engineer, 11 Oct 1878

(3) S R O, BR/NBR/4/290

(4) A S Cunningham, Rambles in the parishes of Scoonie and Wemyss (Leven 1905) 239

(5) T Moffatt, 'Railway Development in Fifeshire', Railway Magazine, v XXXIV (1914), 398

From Thornton to Burntisland the distance is ten miles, to Leven six, but to Methil only five and a half. Randolph Gordon Erskine Wemyss, in the development of his Wemyss estate, promoted the Wemyss and Buckhaven Railway in 1879, later extended to Methil, and opened on the day No 1 Dock was opened (1). The Wemyss Coal Company obtained Parliamentary powers to build a large wet dock at Methil in 1883, and this was opened in 1887. Randolph Wemyss bought the Leven Harbour Company in 1883, and concentrated the coal traffic on the four hoists at Methil (2). In its first year Methil handled almost 220000 tons of coal, 253 steamers and 257 sailing ships. 1889 was the year in which Seafield Dock was begun, and the North British bought Methil from the Laird of Wemyss. In 1891 the North British obtained permission to build Dock No 2 at Methil, partially opened in 1897 and coming fully into operation in 1899. To the 4¾ acres of No 1 another 6½ acres of dock were added, with another three hydraulic hoists. These were fitted with anti-breakage apparatus following a visit by Charles Carlow, manager of the Fife Coal Company Limited, to Hamburg and Copenhagen, where "he was appalled by what he saw, for there was a much greater proportion of small coal than when the wagons had left the collieries"(3). With the two docks in operation both the numbers and tonnage of vessels served and the account of coal exported rose rapidly past Burntisland's figures.

By 1896 it was apparent that Burntisland was lagging behind in accommodation for larger vessels, especially those trading with the Mediterranean. The Burntisland Harbour Act of that year, in creating six Harbour Commissioners from the North British and three from the Town Council and allowing the railway company to lend up to £300000, virtually turned Burntisland into North British property, and the East Dock opened with a depth of water of 28½ feet in 1901 (4). With 9 miles of siding and three hoists each capable of loading 2000 tons of coal in a ten-hour day and the three 1000-ton hoists of the West Dock, Burntisland

---

(1) J F Gairns, 'The Fife Coast Line of the London and North Eastern Railway (North British section), 'Railway Magazine, v 52 (1923) 267; County of Fife, ed Smith, 560

(2) Cunningham, Rambles, 280

(3) Gairns, Fife Coast Line, 268; A Muir, The Fife Coal Company Limited, a short history (Leven 1953), 12-13

(4) T Moffat, 'Railway Ports - Burntisland', Railway Magazine, v 30 (1912) 53

was able to increase its exports dramatically, 68100 tons - the maximum ever reached in one year at a place like West Wemyss - being loaded in one week. In August 1910 the Indian Monarch loaded 1596 tons of bunker coal and 5425 tons for Buenos Aires - a dramatic comparison with the thousand tons of less than thirty years previously (1).

The Laird of Wemyss began agitating once more, through the Wemyss Coal Company, for a third dock at Methil in 1905, announcing plans for his own harbour at Buckhaven when the North British turned him down. They then obtained, in 1907, an Act for a third dock, begun in December of that year, formally opened in 1913, but closed because of trouble with the entrance gates from 1915 till 1919 (2). Dock No 3 was of 16½ acres, with 6000 feet of quay and six hoists capable of loading 10000 tons of coal, each per week, the whole system served by 103 acres of sidings and 32 miles of railway track capable of storing 3000 tons of coal (3).

From this development Methil became Scotland's leading coal port and, in the words of a contemporary observer, "it is fully anticipated that the works which have been provided will meet the demands of the Fifeshire coal trade for many years to come" (4). With the completion of No 3 Dock the integration of coal producer,railway and exporting port had become virtually complete, and the smoothness of the operation was continued into the foreland where agreements were made with owners of regular coal trading vessels that they could obtain special berthing facilities at Methil so long as they ran regularly and exclusively between Methil and one of the ports specified in the arrangement - such as London, Hamburg or Copenhagen - for a period of at least 9 months in the calendar year. This traffic was characterised by vessels carrying 3000 tons outward, returning in ballast. Other exports were negligible, and imports - over half of which were pit props - were only 2.5% of exports in 1913 (5).

Ironically, the superb provision at Methil was only obtained just before World War 1 with its upheavals and consequences for the coal export trade. Although Methil continued as a major exporter after 1918, in 1923 and 1935

---

(1) Ibid, 54-55

(2) F Stoton, 'Railway Ports - Methil Docks, North British Railway', Railway Magazine, v 45 (1919), 82

(3) Ibid, 81

(4) Ibid, 84

(5) Ibid, 79

PLATE 9.a

SIGNAL HOUSE, NORTH QUEENSFERRY (131803)

PLATE 9.b

FORMER PETTYCUR INN (269861)

- now converted to housing

again reaching three million tons and, indeed, exceeding the 3224299 tons of 1913, the various factors rendering the export trade hazardous - political strife at home and abroad, government policies, the impact of other forms of power generation - have resulted in both Methil and Burntisland not only registering today as ghosts of their former hectic activity but as suitable springboards for oil-rig construction work, with all the implications that bears for the student in the past.

Archaeology

Graham meticulously describes the archaeology of over 60 pre-industrial ports; many of these have changed little, only to deteriorate since the conclusion of the period he considers. Other ports are virtually new creations, the three greatest, Burntisland, Methil and Rosyth, being on such a scale as to have obliterated any harbour than happened to be on the site previously but themselves showing surprisingly little of their own earlier history in their appearance today. The coal-hoists have gone (with one exception at Methil), the acres of sidings have been, or are being, built over and Burntisland West Dock has been filled in to made a foundation for oil-rig construction.

The most rewarding ports to study are probably those which have been by-passed by modern traffic. Of the ferry ports Pettycur and North Queensferry complement each other well (1). At Pettycur the ferry pier is supplemented by the low-water loading slip provided in 1820-21 for the use of steamers at low tide. The scouring basin immediately north-west of the pier has been filled in, this being the third one constructed at Pettycur. The first two were so small as to have little effect; the third - recommended by Rennie - was of 2422 square yards and took in at least four feet of water at neap tides at a cost of £600 (2). The toll-house, at which the landing traveller paid as soon as he set foot in the county (3), has gone but there still remains on the pier the capstan inscribed "Anderson Leith Walk Foundry Fecit 1813" (4)

---

(1) Graham, Archaeological Notes, 261-263, Plate 25b

(2) 32 Geog III, c 93, sec 8; Rennie, Report .... Pettycur, 10

(3) Anon, Notes of a tour, 4

(4) John Anderson was an original director of both the National and the Commercial Banks, and a director of Edinburgh Chamber of Commerce, two Insurance companies and the Australian Company of Edinburgh and Leith, supplying the Australian colonies with boilers, furnaces, grates, ovens, stoves, anchors, ploughs, plough-irons and iron cartwheels. (D S Macmillan, Scotland and Australia (Oxford 1967), 12, 19, 145, 149, 183 249, 380; D S Macmillan, 'Scottish Enterprise in Australia 1798-1879' in Studies in Scottish Business History ed PL Payne (London 1967), 327).

PLATE 9.c

PETTYCUR HARBOUR (265861)

Note (left to right):- low water landing stage,cars parked on site of former sluicing basin, pier with landing ramp and capstan.
The toll-house was on the site now occupied by the public conveniences.

Uphill from the harbour is the neat neo-classical building built after 1792 as the Pettycur Inn, where the time of waiting for the next ferry could be passed pleasantly and where stabling was provided, the total cost of the site and construction being £900 (1).

At North Queensferry are the three ferry piers used by the sailing vessels after Rennie's report had been implemented. Graham is in some doubt as to the dating of these, but it seems clear from the report of the committee appointed by the Managing Trustees of the Queensferry Passage that they were raised and enlarged by 1813 (2). At the head of the Signal House Pier is the lighthouse (3), probably brought into service when the mail became regulated to pass in the night, and immediately to the west is the Signal House "Mounthooly", which functioned as a waiting room as well as for the meetings of the trustees (4). 400 yards west of the Signal House Pier, at 128804, is the Long Craig pier, provided for in Rennies' plan but only built as the ferry terminal for the Dunfermline and Queensferry Railway in the 1870s. This pier was used for the ferry traffic until 1964.

Of the former trading ports it is Charlestown which best conveys the impression of former vigour. The inner harbour shows evidence of having been constructed in at least two phases, showing how the Bruces were willing to respond to increasing traffic (5). The outer harbour was constructed by the North British Railway and, although the building of speculative housing will remove these soon, still shows traces of the extensive sidings and coal hoists. At the east end of the harbour the neatly arched culvert formed an outlet for the scouring basin which like Pettycur's, is now infilled. The extension of the railway along the north side of the harbour obliterated the outlet of Landale's canal from the Lyne Burn, although a trickle of water in the north-west corner suggests that it may not entirely have disappeared. Fig. 4.8, based on advertising literature produced for French customers in 1836, gives a clear impression of the concentration of ancillary industrial activity around the harbour (6).

---

(1) 32 Geo. III, c 93, sec 20

(2) Graham, Archaeological Notes, 259-260; Report .... Committee .... Queensferry Passage, 10

(3) Graham, Archaeological Notes, Plate 29c

(4) Report .... Committee .... Queensferry Passage, 16

(5) Graham, Archaeological Notes, 223-224, Plate 28a

(6) Papers in possession of Earl of Elgin

Finally, in Chapter 2 it was established that Fife's navigable canals were only two in number, Sir Andrew Wood's small canal from Largo House to the parish church in Upper Largo and a small pair of canals at Burnturk, whose existence was very much in question. Acting on the description in Thomson, the area in Kettle parish around Coaltown of Burnturk was examined carefully in the early part of 1970 for evidences of the canal. Much of the likely route of the canal was under the plough and had been so for many years, at the northern end lime working had disturbed the ground while the same had happened at the southern end as a result of coal workings. However, at 322069 a ninety-yard stretch of the former canal was found, about twenty yards being still partly filled with water. The canal track was eighteen feet across at the top and five feet at the former bed. The depth to the top of the banking was six feet. This stretch followed the contours round a hill and the spoil from the digging of the canal had been used to form the embankment. It appeared that the bursting of this embankment had resulted in the draining of the canal and presumably the fact of its not being restored to use is an indication of the very marginal nature of the venture. (1).

---

(1) J Thomson A General View of the Agriculture of Fife (Edinburgh 1800) 403-406

PLATE 9.d

SEAFIELD HARBOUR (280893)

APPENDIX A

LIST OF MILLS IN FIFE

Name	Grid Reference	Feet Above Sea Level	Type
Burrowine	975896	150	Horse
Ashes	981871	250	"
Muirhead	983879	270	"
West Grange	984896	150	"
Blairhall Mains	989874	240	"
Middle Grange	989892	100	"
North Pitdinnie	043877	220	"
Muirside	044859	140	"
Mire End	052859	140	"
Waukmill	059847	80	Water/Horse
Foothies Mill	062846	70	Water
Mid Mill	064849	90	"
Logie	078862	140	Horse
Sheephousewell	107884	450	"
Touch Mill	112874	250	Water
Benarty House	157965	500	Horse
Chapel Farm	167962	320	"
Bouprie Banks	176859	240	"
Kirkland	181977	360	"
Navitie	181981	400	"
Inchgall Mill	185956	300	Water
Mill Farm	186855	100	"
Old Barley Mill	195093	250	"
Balram	195871	390	Horse
Manorleys	195986	340	"
Humbie	196863	270	"
South Pitkinny	196967	350	"
Corston Mill	200097	240	Water

Name	Grid Reference	Feet Above Sea Level	Type
South Bogside	201976	280	Horse
Balmule	203882	400	"
Drumdreel	206089	330	"
Redhouse	209969	320	"
Linhead	210888	420	"
West Mill	211101	200	Water
Newton	222021	600	Horse
Balgreggie	222965	300	"
Newton	225129	470	Horse
Easter Bowhill	225958	220	"
West Balbairdie	228896	280	Water
Meikle Balquhomrie	231030	640	Horse
Mairsland	231129	320	"
Little Balgothrie	232045	800	"
Little Balquhomrie	236031	550	"
Ingrie	237021	460	"
Wester Glasslie	237052	950	"
Lindores Abbey	244184	20	"
Parkhill	246186	17	Water
Woodmill	249097	150	"
Ruecruick	258099	140	Horse
Drinkbetween	263884	250	"
Purin	269061	450	"
Grange	270886	150	Water
Pittillock	279050	350	Horse
Kirkforthar	287055	290	Water
Channelhall	287062	200	Water(sawmill)
Waukmill	288054	280	Water
Freuchie Mill	290066	150	"
Johnston	292178	240	Horse
Nottingham	295055	330	"
Annsmuir	313112	120	"
Hiltonhill	215067	380	"
Tullybreck	315986	150	"
Carphin	319195	290	"

Name	Grid Reference	Feet Above Sea Level	Type
Jennystown	324110	120	"
Ramornie Mill	326092	130	"
Ballomill	330107	120	"
Luthrie	331196	200	Water
Fronthill	332076	500	Horse
Pitlessie Mill	334101	110	Water
East Hall	339154	250	Horse
Cults Sawmill	341109	100	Water
Cults Mill	342108	100	"
Hospital Mill	344112	100	"
St. Mary's	346150	140	Horse
Wester Balgarvie	348156	250	Horse
Upper Bunzion	349082	620	"
Starr	349201	190	Water
Cults	353093	250	"
Horselaw	356148	145	Horse
Kilmaron Castle	358162	230	"
Rathillet House	359208	160	"
Banbeath	366005	100	"
Kirkland	368015	20	Water
Dalgairn	373154	200	Horse
Leven Mills	374006	10	Water (oilcake/bone)
Burn Mill	374008	30	Water
Kingask	381161	270	Horse
Whitehill	386124	470	"
Peacehill	389252	210	"
Wormit	394258	110	"
Ceres Mills	405124	230	Water (sawmill)
Wester Pitscottie	405126	270	Horse
Little Pilmuir	407039	140	Water (sawmill)
Pitcruvie	414047	150	Horse
Wester Dron	416170	120	"

Name	Grid Reference	Feet Above Sea Level	Type
Lydox Mill	417164	20	Water
Largo Home Farm	421036	190	Horse
Dron Mill	422169	10	Water
Northfield	429288	140	Horse
Nydie Mill	430170	-	Water
Lahill Craig	435048	600	Horse
Lahill Mains	442044	400	"
Ladeddie	443129	520	"
West Coates	447041	300	Horse
East Coates	450039	300	"
Wilkieston	450121	470	"
Cumberland	457067	560	"
Bowhill	459083	660	"
Nether Radernie	459105	530	"
Cassindonald	465122	510	"
Nighorn	469095	660	"
Cameron	473117	510	"
West Cassingry	475072	500	"
Denbrae	475151	200	Water (sawmill)
Winthank	478133	480	Horse
Brewster Wells	480098	570	"
Kilconquhar Mill	482025	50	Water
North Cassingry	483084	590	Horse
Ballone	484151	210	"
South Cassingry	487075	640	"
Lathockar Mains	489095	520	"
East Cassingry	490070	590	Horse
West Lingo	492087	590	Horse
Bogward	492156	105	"
Law Mill	492158	90	Water
Lathockar Mill	292095	490	"

Name	Grid Reference	Feet Above Sea Level	Type
New Mill	496160	60	Water
Inch	534038	90	Horse
Grangemuir House	538042	110	"
Falside	544054	160	"
Clepbanton	550050	110	"
Burnbrae	556108	310	"
Scocrily	557102	316	"
Carburly	563097	280	"
Hillary	578097	240	"
Hillhead	579140	60	"
Corrnceres	580053	110	"
Hillhead Mill	580141	30	Water
Caiplie	590052	20	Horse

APPENDIX B

Toll Houses

	Grid Reference	Area (square feet)
Dalquhamie	930894	360
Kincardine	936874	400
Hillend	036955	470
Gask	106933	410
Demperston	224111	550
+* Baidlin	228907	385
+* Kirkton	231863	465
+ Pitcairly	237141	460
Cluny	247953	460
Rossie	249118	460
Bowhouse	319955	665
* Carslogie	361144	530
+ Cupar South	374134	625
+ Cupar East	378147	540
∴ Teuchats	406073	480
Ferry - Port-on-Craig	455275	480
Argyle, St Andrews	503165	465
Kelly	518046	410
Anstruther	562038	390
Caiplie	587056	240

Photographs (*) and plans (+) of the above are to be found, respectively, on pp. 240-241 and 250-251 of Industrial Archaeology vol. 4, 1967

APPENDIX C List of Milestones and Wayside Markers in Fife.

Incomplete survivals are shown in brackets, thus (241182)

Type A - A823

NT 273912
(259911)
(243909)
(227907)
(212907)
(198897)
(122883)

- A955

NT 292926
(347978)

- A916

NO (348016)
(373052)
384066
382082
380098
378111
367125

- A921/A917

NO 430036
444031
460029
475034
490037
509037
520030
533027
551027
574045
585054
598063
610074

- B939 /

- A910

NT 275920
(271957)
(258941)
(244963)
(244979)
(241992)

- A915

NO 402025
415031
435042
444055
453065
465073
474085
479099
487111
(489127)
493141
503155

- B940

NO 389142
404141
417133
420126
(428115)
(440108)
453099
468096
483091
497083
512079
526081
543083

- B939

NO 492162
474159
460155
444152
(430147)
(421133)
409125
398115
382109

- Peat Inn to Leuchars

NO 450219
455208
450193
458187
461172
459156
463141
460128
(454113)

- A918

NO 532150
545141
560135
574135
587132
593118
600104
605090

Type C - A91

NO 330131
314127
198127
282189 /

555089
573091
584087

- B941

NO 458085
466072
488034
485020

- A959

NO 518157
527145
533130
535115
542100
546085
554070
556055
562041

Type B - A913

NO 363153
352163
337170
323174
307179
292183
278181
267169
253172
241182
(188165)

Type D - A983

NO 252170

Type E - A909

NT (179900)

282189
(269125)
253120
237116
222110
210102
195097
180091
165081

Type G - A92/A91/A92
NO 419278
423273
431261
436246
439231
435219
427206
421193
419178
406167
396155
375137
365125
355113
344102
332092
318083
305073
293061
NT 293957
(260863)

Type L - A92
NO 439233

(236861)
- A90
NT (145871)
153935

Type F - B916
NT 115862
131858
143851
- A994
NT 079870
063865
046863

Type H - A823
NT 088906
059950
045952
035958
027972

Type I - A918
NO 608083
524153

Type J - A921
NO 461030
509037
- A92
442228

Type K - A915
NO 475093
475094
- A921
NO 425035
518048
- A959
NO 535114

Illustrations of these milestone types are to be found as Plates 20-22 in vol. 100, Proceedings of the Society of Antiquaries of Scotland.

APPENDIX D

Gazetteer by parishes

Many of the industrial archaeological remains have been catalogued elsewhere, in J Butt, The Industrial Archaeology of Scotland (Newton Abbot, 1967) 254-260, A Graham, "Archaeological Notes on some Harbours in Eastern Scotland", Proc. Soc. Ants. Scot., v 101, 1968-69, 200-285 and in Appendices A - C above.

The following notes give the location of other sites in Fife.

Aberdour 158901 - former Fordell coal depot.
162889 - Cuttlehill pit, bing, railway track.
167895 - Donisbristle pit and bing, village and school.
191869, 192883, 193861, 209862 - sandstone quarries
166870, 171881, 198862 - limestone quarries.

Auchterderran A parish abounding in relics of the recently-defunct coal industry, generally to the exclusion of the slighter remains of the nineteenth century industry. Much recent clearance and rehabilitation have taken place.

Auchterderran - Bowhill (2195) exemplifies the central Fife mining settlement with drab streets, Gothenburg s and cooperative store, pit, bing and coal-fired power station, railway tracks and subsidence hollows.

Auchtermuchty Many weaver's cottages, a few thatched, some with characteristic windows.
234128 - remains of Auchtermuchty Bleachfield
237119 - former distillery, now grain store
238119 - former brewery, now grain store
240116 - gasworks, with gasometer.

Auchtertool 175906, 176915 - old coal pits
217906 - former distillery, now bonded warehouses
2290 - railway bridges, cuttings, embankments

Ballingry Like Auchterderran, full of remains of the recent coal industry.
171962 - preserved headgear of former Mary Colliery.

Major reclamation scheme around 1795.

Crosshill, Glencraig and Lumphinnans are former mining villages with Gothenburgs, cooperative stores and much subsidence.

186938 - former Lochgelly Iron and Coal Company School.

Beath Another parish with many survivals of the recent coal industry.

1395 - 1396 - old Great North Road

1494 - Kelty - mining village

1594 - former Lindsay pit, bing, railways, subsidence.

1791 - centre of a large area of pitheads, gasworks, bings and subsidence.

Burntisland A small parish full of remains, many of them referred to in the main body of the thesis.

213861 - Newbigging Limestone mine and sandstone quarry.

216859 - Canon Harbour, fossil railway sidings, incline haulage, pay office, tunnel entrance.

2186 - Great North Road (Burntisland branch).

223867 - Grange Quarry.

225867 - Grange distillery.

231856 - dock area - Burntisland Station, ferry terminal, Forth Hotel, subway.

2487 - remains of Binnend Oil Works, Low and High Binn villages.

Cameron A rural, sparsely peopled parish.

455129 - former Drumcarro coal-mine

470096 - small-scale mining relics

Carnbee 519048 - minor mining remains with small day-level.

Carnock 020897, 022897, 028901, 031886 - old coal pits.

Ceres Village and parish abound in textile remains.

362124 - Tarvit Mill on the Eden, water- and steam-driven, much decayed.

3710 - old roads, Craigrothie - weavers' cottages.

3911, 4011 -Ceres and Bridgend - weavers' cottages.

Bishop's Brig (17th century), brewery

398108 - St Ann's Bleachfield

4113 - Pitscottie - weavers' cottages.

Collessie 290112 - Giffordtown - weavers' cottages.
3009, 3010 - Ladybank, railway village with rectangular layout, hotel, warehouses, engine sheds, sidings.

Crail 609074 - former railway station. Former single-track railway line, with bridges, level crossings etc., traverses the parish.

Creich 322208 (Brunton) and 331197 (Luthrie) are agglomerations of former handloom weavers' houses.

Culross 002905, 008901, 008907, 010900 - old ironstone pits.
993899, 997896, 012898, 016899 - old coal pits
336096 - Pitlessie maltings.

Cults 345113 - Hospital Mill, originally a corn mill, enlarged and converted to a flax-mill in 1821. Later a bobbin mill, partly estate sawmill. Ruinous Workers' houses nearby.

Cupar The town had two small industrial areas, along the Eden and the tributary burn joining it on the north.
353120 - Russell Mill, former flax mill with two-storey workers' houses nearby.
374146, 372148, 374147, 375147, 375148, 377144 - workshops, small factories, former tannery.
376144 - former linen works.
377143 - Cupar Station is an attractive mid-nineteenth century building.

Dairsie 415175 - many handloom weavers' cottages, the majority modernised.
4218 and the northern parish boundary - footpaths, farm tracks and field boundaries mark the Monks' Road.

Dalgety Fordell, its railway, and St David's (148825), its harbour, are the chief factors of this parish. Traces of the Fordell Railway can be followed from Cuttlehill (160895) south and from Rathouse (144884) east to the main line.
149850 - Fordell Day Level outlet
155885 - ruins of Elm Row, Quality Street of village.
150855, 150875, 154884 - old coal pits.

Dunbog 280190, 282170 - kirk roads.

Dunfermline Despite extensive demolition and considerable urban expansion this large parish has a great wealth of industrial monuments.
054949, 079901, 090913, 120908, 141881 - old coal pits.
058945, 058936 - old ironstone mines.
066946 - engine house, tram road, day level outlet.
0683 etc - Charlestown, limestone quarries and mines, village, harbour, railway etc.
0892, 0992 - lime quarries and works.
064858, 081868, 125886 - day levels with air shafts.
064848, 082880, 088879 - flax spinning mills, the first (Mid Mill) still have water-wheel, used till 1969.
087877, 087878, 092876 - handloom weaving workshops.
Cairneyhill (0486), Crossford (0686) and Pattiesmuir (0983) have many weavers' cottages. In Dunfermline there has been much clearance of this kind of house but examples still exist in 0887 and 0987. Andrew Carnegie's birthplace is a much-altered example of the type.
089879,090877, 091877, 091878, 092879, 096879, 098867 - former linen weaving works converted to other uses. The original-single-storey - part of the last (St Leonards - 097868) was demolished in 1974 to provide space for a hypermarket.
0886, 0887 - line of the Coal Road and Elgin Railway.

Elie 480001 - remains of former coal-mining.
496002 - former station on abandoned railway line.

Falkland A parish formerly dominated by handloom weaving, the main centres being Falkland itself and Freuchie (2806)
247053 - entrance to lead-mine, water-courses.
250101 - Dunshelt gasworks, a small rural plant.
250102 - Dunshelt bridge, 1820
256071 - former S C W S linoleum works.
267070 - Newton of Falkland brewery
284066 - market stones relating to Freuchie Common.
284067, 285069 - linen works closed 1912 and 1962. The latter is now a mushroom factory.

Ferry-Port-On-Craig 461277, 463281, 463282, 465277 - modest nineteenth century factory buildings adapted to modern uses.
4627 etc - the single-track railway from Leuchars to Tayport and thence to Wormit is abandoned.

Inverkeithing 1386 - old Great North Road.
132832 - former distillery, now papermill warehouse.
1384 - track of Halbeath Railway
135806 - Port Laing - pier and tram road for transfer of materials during construction of Forth Bridge.

Kemback 4114 - fragments of mills remain in Dura Den with some housing.
4215 - Belbocraigs is a dispersed weavers' settlement.

Kennoway 3402, 3502 - village street of weavers' cottages bypassed by modern road and swamped by post-war building.
3602 - line, cuttings, embankments of East Fife Central Railway.
362043 - bings of former coal-workings.
363043 - Kilmux engine house.

Kettle Kingshettle (3008) and Kettlebridge (3007) have large numbers of former weavers' cottages.
287053 - Mill Tail Bridge, 1834
309080 - former linen works.
3006 - track of former tram road.
3107 - kirk road.
321069 - course of Burnturk Canal.
323068 - old coal pits
3307 - former lime quarries

Kilconquhar 4607 - Largoward, old coal pits, Miners Institute.
470048 - old coal pits.
Colinsburgh (4703) and Kilconquhar (4802) both have weavers' cottages.

Kilrenny 5807 - spoilheaps at nineteenth-century shale-mines.

Kinghorn 261881 - old Burntisland-Kirkcaldy road.
263872 - initially a flax mill, converted to candleworks in 1885, now a leather works.

265872 - Binnent oil works railway.

265902 - Hole Mill - flint for Links Pottery, Kirkcaldy

268869 - till 1955 Gibsons Golf Club Factory

269866 - Damey's glue works 1856-1906, later a bottle works, now Rosslands Tea Gardens.

270869 - Kinghorn station has gas lamps with the posts inscribed "Edinburgh and Northern Railway".

270872, 271871, 271872 - flax spinning mills dating from 1790s.

272871 - shipway of Abden shipyard.

279891 - Tyrie bleachworks, partly demolished 1967, threatened by dumping at Seafield Colliery.

280893 - uncompleted Seafield Harbour.

Kinglassie 238960, 243963 - old coal pits.

2398, 2498 - recently abandoned pit with bing, pithead gear, buildings and railway.

Kingsbarns 566133, 567133, 570114 - railway relics on line closed 1965, first and last are stations with North British nameboards, second is a fine 5-arched viaduct.

Kirkcaldy Like Dunfermline, this is a parish with a long industrial history and with a rich array of survivals. Nevertheless, the scale of urban redevelopment in the Linktown/High Street and Pathhead/Gallatown areas has been considerable and whole districts have been swept away.

291967 - Little Dysart, old coal pit and access to day level.

293973 - engine house, 18390.

295964 - old coal pit.

302959 - former Randolph Colliery.

265901 - Balwearie Mill, grinding flint for Links Pottery.

273904 - pottery tramway under former Edinburgh and Northern railway.

278905 - storage buildings of Links Pottery.

278902 - bus workshop was Tiel Engineering Works.

273913, 276902, 276910 - flax spinning mills.

278900 - ropewalk with traditional machinery

279911, 279913, 279925, 280907, 294936, 295937, 304933 - former linen works adapted to other uses eg bowling alley, cash and carry warehouse, furniture shop, engineering works.

2892 - linoleum works

275902 - West Bridge, eighteenth century widened in the nineteenth century.

283924 - former power station, Kirkcaldy tramways.

297942 - tram depot (1903)

2790, 2791 - stretches of handloom weavers' housing remain in this area.

2993 - on St Clair Street are still a few weavers' houses, behind these are still some streets of the rapid expansion of the workers' quarters in the 1870s and 1880s.

295981 - Lochty Bleachfield.

2997 - Thornton Junction - feeder railways, former coach works, cattle markets.

Largo 400023.- evidence of early coal workings.

Leslie 235012, 241012 - former flax and linen mills.

243013 - industrial housing.

Markinch The paper industry along the Leven has tended to conceal much of the former water-based industry. Nevertheless much remains.

288012 - for many years Balbirnie was the county's only wool mill, now a community centre.

298010 - former flax mill.

298010 - ten-arched viaduct on Edinburgh / Aberdeen main line.

304009 - Balgonie Bleachfield, overgrown but extensive remains.

302007 - Balgonie Ironworks, much decayed.

Monimail 3014 - many fine weavers' cottages.

Newburgh 2318 - Newburgh is particularly rich in weavers' cottages and loomshops.

Pittenweem 534024 - the hollows in the arable land on Coal Farm are the result of coal workings in the seventeenth and eighteenth centuries.

St Andrews 504166, 507165 - buildings previously used as breweries.

St Monance 533017 - stump of windmill built to raise seawater for making salt.

533021 - old coal pit.

Saline 015904, 020899 - old coal pits with sidings and railways.
050931 - Steelend mines and tram road.

Scoonie 380024 - ochre mine and grinding mill.
383005 - former salt works.

Strathmiglo 2109, 2110 - Strathmiglo and its weaving suburb, Cash Feus, abound in weavers' cottages.
189092 - former flax spinning mill, now a bobbin mill.
214099 - small weaving factory tapping the labour of Cash Feus.

Torryburn 015885, 018885, 019884 - old iron pits.
020888 - old coal pit with railway.

Tulliallan 934871 - former rope works.
934875 - former canvas factory.
Around 940870 are many old coal or air shafts.

Wemyss Much evidence has been submerged with the spread of local authority housing.
324948 - Lady Victoria pit with tramway and viaducts to harbour, now silted up.
312952 - track of Wemyss tramway across country. Coaltown of Wemyss (3295), East Wemyss (3396) and Buckhaven (3698) have rows of late nineteenth and early twentieth century collier housing in vemacular style.

Bibliography

1) Manuscript sources

a) Scottish Record Office, Edinburgh

i) family papers

Aytoun of Inchdairnie	(GD 1/42)
Boswell of Balmuto	(GD 66)
Hamilton Bruce	(GD 152)
Henderson	(GD 76)
Henderson of Fordell	(GD 172)
Kinross House	(GD 29)
Kirkness	(GD 1/49)
Leven and Melville	(GD 26)
Morton	(GD 150)
Pitreavie	(GD 91)
Rosslyn	(GD 164)

ii) business records

British Railways Board	(BR)
Carron Company	(GD 58)
National Coal Board	(CB)

iii) Government records

Department of Agriculture and Fisheries statistics	(AF)
Records of Board of Trustees for Fisheries, Manufacturers and Improvements in Scotland	(NG)

iv) legal records

Scottish Record Office Deed Warrants

v) maps

Register House Plans	(RHP)

b) New Register House, Edinburgh

Census Enumerators' Schedules, 1841-1891

c) National Library of Scotland, Edinburgh

National Library of Scotland manuscripts (MS)

d) University of Glasgow

Edinburgh and Dundee Railway minute book
26:4:1836 - 31:8:1837

e) University of Strathclyde

I A Glen, An Economic History of the Distillery Industry in Scotland, 1750-1914 (unpublished Ph D thesis, 1969)

f) Guildhall Library, London

Sun Fire Insurance Company policies (GH)
County Department series.

g) local authority records

i) County Roads Department, Cupar - Minute Book of Dunfermline District Committee, 1879-1889

ii) Dunfermline - Dean of Guild Court Records

iii) Dunfermline Public Library - List of Registered Voters for the County of Fife, November 1832; J W Robertson, Linen Manufacturer, early recollections

iv) Edinburgh - City Archives (ECA)

v) Kirkcaldy - Dean of Guild Court Records

vi) Kirkcaldy Public Library - Kirkcaldy Harbour Shipping Record, 12:11:1832 - 20:6:1834

h) papers in private ownership

Bruce-Jones papers, Camsie House, Charlestown, Fife.
Earl of Elgin's papers, Broomhall, Charlestown, Fife.
Howie of Grange papers, Kinghorn, Fife.

2) Acts of Parliament

1 Ch 11 c. 284	Act for planting and inclosing of ground
1 J. VII. c.49	Act in favour of Planters and Incloser of Ground
30 Geo. III c. 93	Act for further regulating and converting the statute labour in the county of Fife and for more effectually making and repairing the highways.
32 Geo. III c. 93	Act for improving the communication between the County of Edinburgh and the County of Fife by the Passages or Ferries cross the Firth of Forth
37 Geo. III c. 52	Act for making and repairing the road from Newmiln Bridge by Foodie's Mill .... to Crail and other roads in Fife.

53 Geo. III c. 125 — Act for further improving the communication between the County of Edinburgh and the County of Fife by the Ferries cross the Firth of Forth.

1 and 2 W. IV c.43 — Act for amending and making more effectual the laws concerning turnpike roads in Scotland.

3) British Parliamentary Papers

III, 1813-14 — Statement of the Origin and Extent of the Several Roads in Scotland, make wholly, or in part, at the Public Expense.

III, 1816 — Report of the Select Committee on the Elgin Marbles

III, 1816 — Report on the State of the Children employed in the Manufactories of the United Kingdom.

IX, 1817 — Eighth Report of the Commissioners for Roads and Bridges in the Highlands of Scotland

XV, 1831-32 — Report from the Select Committee on Children in Mills and Factories

VI, 1833 — Report from Select Committee on Manufacturers, Commerce and Shipping

XX, 1833 — First Report of Factories Inquiry Commission

XXI, 1833 — Second Report of Factories Inquiry Commission

X, 1834 — Report from Select Committee on Hand-Loom Weavers' Petitions

XIX, 1834 — Factories Inquiries Commission (Supplementary Report, Part 1)

XX, 1834 — Factories Inquiry Commission (Supplementary Report, Part II)

XXXVII, 1836 — Accounts and Papers

XLII, 1839 — Reports from Assistant Hand-Loom Weavers Commissioners.

XLII, 1839 — Report on the Effects of the Educational Provision of Factories Act.

XLII, 1839 — Return of Mills and Factories

XV, 1842 — Childrens Employment Commission - First Report of the Commissioners (Mines)

XVI, 1842 — Appendix to the First Report of Commissioners (Mines)

XV, 1843 Childrens Employment Commission (Appendix to Second Report - Part 2)

XLII, 1850 Accounts and Papers; Factory Returns

XLIX, 1850 Abstract of Return .... of each Statute Labour Trust in Scotland 1843-47

XLIV, 1852 Accounts and Papers; Turnpike Roads

XVIII, 1854-55 Report of the Commissioners .... Bleaching Works

XI, 1857 (Session 2) First Report from the Select Committee on Bleaching and Dyeing Works

XI, 1857-58 Report from the Select Committee on Bleaching and Dyeing Works

XXXVIII, 1860 Report from Commissioners on the Public Roads (Scotland)

XXII, 1864 Childrens Employment Commission (Second Report)

XII, 1865 Report from the Select Committee on Mines

XIV, 1866 Report from the Select Committee on Mines

XVIII, 1871 Report of the Commissioners .... Coal in the United Kingdom

X, 1873 Report from the Select Committee on Coal

LVIII, 1873 Accounts and Papers; Turnpike Trusts in Scotland

LXV, 1876 Accounts and Papers; Railways

CVI, 1904 Accounts and Papers; Minerals statistics

Royal Commission on Local Government in Scotland, 1966-69, Appendices; Edinburgh, H M S O, Cmnd 4150

4) Printed Records

Department of Agriculture and Fisheries for Scotland, Agriculture Statistics, 1967, Scotland; Edinburgh 1969. Census of Scotland, 1801 - 1961. Meteorological Office, M O 635, London 1958; Averages of Rainfall for Great Britain and Northern Ireland, 1916-50; Meteorological Office, M O 735, London 1963; Averages of Temperature for Great Britain and Northern Ireland, 1931-60. Meteorological Office, M O 743, London 1963; Averages of Bright Sunshine for Great Britain and Northern Ireland, 1931-60

5) Newspapers and periodicals

Dundee Advertiser

Evening Telegraph

Fife Free Press

Fife Herald

Fifeshire Advertiser

Railway Magazine

Scots Magazine

The Scotsman

6) Maps

Ordnance Survey 1:63360, Seventh Series, sheets 55, 56, 61, 62

O S 1:10560, 1:1250, First Edition, 1855-57.

7) Articles and Pamphlets

W Adam, Letter to the Earl of Wemyss on the subject of the Great North Road, 1832

J H Adams, "The Salt Industry of the Forth Basin", Sc Geog Mag, v 81, 1965

J Anderson, Report relative to a Design for a Bridge of Chains, 1818

T Anderson, "On the composition of the flax-liquor obtained by Watts' patent process for preparing flax", Trans High Agric Soc Scot, series 3, v 5, 1851-53

J Aytoun, A Letter to the inhabitants of Dunfermline on the Queensferry Passage Bill, 1848

R Aytoun, Observations upon the Means by which the Communication betwixt the Countys of Fife and Midlothian might be improved, 1827

G H Ballantyne, "Ballast Aliens in South Fife, 1820-1919", Trans Bot. Soc Edin, v 41, 1971

N I Beckles, "Textiles and Port Growth in Dundee", Sc Geog Mag, v 84, 1968

I A Bowman, "Culross Colliery: a sixteenth-century mine", Ind Arch, v 7, 1970

D K Brister, "The Little Pits of long ago", Scots Mag, new series, v 84, 1965

British Museum, Historical Guide to the Sculptures of the Parthenon, London 1962

G Buchanan, Report on the erecting of low-water landing places on the coast between Kinghorn and Pettycur, 1827

J S Buist, "Last of the Fifies", Scots Mag, new series, v 85, 1966

J Butt, "The Scottish Oil Mania of 1864-66", Sc J of Pol Econ, v 12, 1965

J Butt, "Technical Change and the growth of the British Shale-Oil Industry (1680-1870)", Econ Hist Rev, 2nd series, v 17, 1965

J B Caird, "The Making of the Scottish Rural Landscape", Sc Geog Mag, v 80, 1964

R H Campbell, "The Industrial Revolution", Scot Hist Rev, v 46, 1967

J Carmichael, "Account of the Principal Limestone Quarries of Scotland" Trans High Agric Soc Scot, Series 2, v 5, 1837

J Carmichael, "Account of the Principal Marble, Slate, Sandstone and Greenstone Quarries in Scotland", Trans High Agric Soc Scot, series 2 v 5, 1837

W Caulfield, " Baltic Traders in a Scottish Port ", Country Life, v 142, 17 Aug 1967

A S Cavallo, "To set a smart board; Fashion as the decisive factor in the development of the Scottish linen damask industry", Bus Hist Rev, v 37, 1963

J C Dewdney, "Changes in population distribution in the county of Fife", Sc Geog Mag, v 71, 1955

D W Doughty, "Tullis Press, Cupar, 1803-49", Abertay Hist Soc Publications, v 12, 1967

J Farquharson, "On the Cultivation of Flax", Trans High Agric Soc Scot, series 3, v 5, 1851-53

Foster and Cranfield, Particulars, Plans,Views and Conditions of Sale of the very valuable Freehold Estates and Mining Properties in Fifeshire, 1901.

J F Gairns, "The Fife Coast lines of the London and North Eastern Railway (North British Section)", Railway Mag, v 52, 1923

E Gauldie, "Mechanical aids to Linen Bleaching in Scotland", Textile Hist, v 1, 1969

R Goodwin, "Some physical and social factors in the evolution of a mining landscape", Sc Geog Mag, v 75, 1959

A Graham, "Archaeological notes on some harbours in Eastern Scotland", Proc Soc Ants Scot, v 101, 1968-69

J Grieve, J Taylor and W Vazie, Reports of a survey for making a Tunnel under the River Forth at or near Queensferry, 1806

A R Griffin, "Bell-pits and soughs: some East Midlands examples", Ind Arch v 6, 1969

Sir C Halkett and others v J Harrower, 1815-16

Captain Basil Hall, R N, Account of the ferry across the Tay at Dundee, 1825

W Hall, "On the Floating Railways across the Forth and Tay Ferries", Proc Inst Civil Eng, no. 1036, 16 Apr 1861

U R Q Henriques, "An early Factory Inspector: James Stuart of Dunearn", Sc Hist Rev, v 50, 1971

F A Henson and R S Smith, "Detecting early coal workings from the air", Colliery Eng, v 32, 1955

R Hodgson, "On the cultivation of flax", Trans High Agric Soc Scot, series 3, v 5, 1851-53

A Jefferies, "John Wesley in Scotland", Sc Geog Mag, v 83, 1967

A Jesperson, "Watermills of the River Eden", Proc Soc Ants Scot, v 97, 1963-64

Kirkcaldy Ferry - facts connected with the claims of the Pinnacemen (Kirkcaldy 1835)

B Lenman, "Mechanised Ferries on the Tay - from first to last", Transport Hist, v 2, 1969

J Leslie, Report of a Survey of the south Coast of Fife, (Cupar 1839)

J Leslie, Report to the Town Council of Kirkcaldy on the state of the Harbour and on a plan for its extension and improvement (Kirkcaldy 1840)

P W Lewis, "Changing factors of location in the paper-making industry, as illustrated in the Maidstone area", Geography v 82, 1967

CC Littlejohn, "Some curious Scottish train services", Railway Mag, v 44 1919

D Logan, Remarks on observations by Robert Stevenson, Engineer (Dundee 1820)

J Macdonald, "On the agriculture of the county of Fife", Trans High Agric Soc Scot, series 4, v 8, 1876

D S Macmillan, "Scottish enterprise in Australia, 1798-1879" in Studies in Scottish Business History, ed P L Payne (London 1967)

T F McIlwraith, "The adequacy of rural roads in the era before railways", Canadian Geographer, v 14, 1970

Captain McKonochie R N, Principles of Ferrying (Edinburgh 1828)

D M Makgill, Statement in reference to the improvement of the Fife and Midlothian Ferry (Cupar 1838)

T Meik and Sons, "Views and Descriptions of the Dock and Harbour Works at Burntisland", The Engineer, 11 Oct 1878

W P Meikle, "Highwat Repairs in the eighteenth century", Trans Newcomen Soc, v 21, 1940-41

Memorandum for the consideration of the Fife Ferry Trustees, 1826

W Menzies, "Report on the Embankment and Ferry Piers on the Estate of Tulliallan, near Kincardine in Clackmannanshire", Highland Society Prize Essays, v 12, 1839

W A Millar, "A Scottish duel of last century", Chambers' Journal, pp 758-764, 1914

J Millar and W Vazie, Observations on the proposed Tunnel under the Forth, (Edinburgh 1807)

J Milne, Reply to the Observations of Mr Thomas Grainger on the proposed railways through Fife (Edinburgh 1841)

Minute for Alexander Greenhill Esq from the Fife Ferry Trustees, 1826

T Moffat, "Railway development in Fifeshire", Railway Mag, v 34, 1914

T Moffat, "Railway ports - Burntisland", Railway Mag, v 30, 1912

D G Moir, "The Roads of Scotland, 11 Statute Labour Roads", Sc Geog Mag, v 73, 1957

J A M Muir, "Post-haste to Pettycur", Scots Mag, v 61, 1954

National Coal Board, Memorandum on the Fordell Day Level (Lochgelly 1950)

R N Osborne, "The movements of people in Scotland", Sc Studies, v 2, 1958

J Petty, Fife and Midlothian Ferries and Seafield Harbour (Kirkcaldy 1839)

A Pinnaceman, Remarks on a Report of the Committee of the Town Council of Kirkcaldy on the chains of the Pinnacemen and Burgesses (Kirkcaldy 1835)

Prospectus of the Seafield Harbour 1840

Proceedings in reference between the North British Railway Company and the Magistrates and Town Council of Burntisland (1880)

W Reid, "On the cultivation of flax", Trans High Agric Soc Scot, series 3, v 5, 1851-53

J Rennie, Report respecting the proposed improvements at Pettycur and intended Ferry-Boat Harbour at Newhaven (London 1808)

J Rennie, Report relative to the improvements proposed to be made upon the Harbour of Burntisland (London 1809)

Report by the Committee of Management on the Plans of the new Ferry Harbours proposed by Mr Telford (Dundee 1821)

Report of the Committee of the Managing Trustees of the Queensferry Passage, 1828

Resolutions of a General Meeting of the Fife and Midlothian Ferry Trustees, 1809

E Richards, "The mind of Patrick Sellar (1780-1851)", Scot Studies, v 15 1971

E Richards, "The prospect of economic growth in Sutherland at the time of the Clearances, 1809-13", Sc Hist Rev, v 49, 1870

R Ritchie, "On the comparative advantages of fixed and portable Steam-Power for the purposes of a Farm" Trans High Agric Soc Scot, series 3, v 5, 1851-53

M Rix, Industrial Archaeology, Historical Association Pamphlet 6.65 (London 1967).

C J A Robertson, "The Cheap Railway Movement in Scotland: the St Andrews Railway Company", Transport Hist, v 7, 1974

D Rosie, "The Mining Folk of Fife", County Folk Lore, v 7, 1912

J W H Ross and Company, Report relative to the mineral position under and adjacent to a site at McDonald's Buildings, Culross (Glasgow 1968)

D J Rowe, "The Victoria Tunnel", Ind Arch, v 7, 1970

Select Committee, Report on the Great North Road Trust 1832

B C Skinner, "The Heugh Mills at Dunfermline", Sc Studies, v 10, 1966

G Smith, Burntisland Ferry, 1837

R F Smith and N M Johnson "Quarry to Abbey: an ancient Fife route", Proc Soc Ants Scot, v 83, 1948-49

RH Spiro Jun, "John Loudon McAdam and the Metropolis Turnpike Trust", J Trans Hist, v 2, 1955-56

Statement by the Queensferry Passage Trustees respecting the Queen's - Ferry Passage and the Great North Road (London 1811)

Statement by the Committee for conducting the Amended Bill for improving the Ferries of the Tay, 1822

Statement regarding the Bill now in Parliament entitled "A Bill for further improving the communication between the Counties of Edinburgh and Fife" (Dundee 1826)

Statement concerning the whale-fishing trade at Dundee in reference to its proposed introduction into Burntisland (Burntisland 1830)

W M Stephen, "The impact of the Forth Road Bridge on social habits in Fife and Kinross", The Dominie, v 12, 1968

W M Stephen, "Milestones and wayside markers of Fife", Proc Soc Ants Scot v 100, 1967-68

W M Stephen, "Toll-houses of the Greater Fife area", Ind Arch, v 4, 1967

W M Stephen, "A Toll-schedule at Struthers, Fife", Proc Soc Ants Scot, v 100, 1967-8

W M Stephen, "Two Flint Mills near Kirkcaldy, Fife", Ind Arch, v 3, 1966

R Stevenson, Report relative to the Improvement of the Communication by the Ferries betwixt Fife and Forfar (Edinburgh 1818)

R Stevenson, Observations on Mr Telford's Plan (Edinburgh 1820)

M C Storie, "The Census of Scotland as a source in the Historical Geography of Islay", Sc Geog Mag, v 78, 1962

F Stoton, "Railway Ports; Methil Docks, North British Railway", Railway Mag, v 45, 1919

T Telford, Report on the Lower Ferry (London 1828)

E P Thompson, "Time, work-discipline and industrial capitalism", Past and Present, no 38, 1967

A Trustee of the Fife and Midlothian Ferries, Observations on the Ferries upon the Firth of Forth (Edinburgh 1827)

W H K Turner, "The concentration of jute and heavy linen manufacture in East Central Scotland", Sc Geog Mag, v 82, 1966

W H K Turner, "The textile industry of Arbroath since the early eighteenth century", Abertay Hist Soc Publications, v 2, 1954

W H K Turner, "The textile industries of Dunfermline and Kirkcaldy, 1700-1900", Sc Geog Mag, v 73, 1957

W H K Turner, "The textile industry of Perth and district", Trans Inst Br Geog, 1957

W H K Turner, "Some eighteenth-century developments in the Textile Region of East Central Scotland", Sc Geog Mag, v 69, 1953

J Wallace, "Account of the Method of calcining Limestone in some of the limestone quarries in Scotland", Trans High Agric Soc Scot, series 2, v 5, 1837

J T Ward, "Landowners and mining" in Land and Industry, ed J T Ward and R G Wilson (Newton Abbot 1971)

Wardlaw and Anderson v J Cunningham and others, 1779-80

Captain Warren, R N, Remarks by Captain Warren R N on the Observations of Mr Stevenson on Mr Telford's Plan (Dundee 1820)

G Whittington, "Land utilisation in Fife at the close of the eighteenth century", Sc Geog Mag, v 82, 1966

T Young, "Flax-growing in Scotland", Trans High Agric Soc Scot, series 5, v 32, 1920

8) Printed Books

E L Ahrons, Locomotive and train working in the latter part of the nineteenth century, v 3 (Cambridge 1952)

W Albert, The turnpike road system in England, 1663-1840 (Cambridge 1972)

Allen Lithographic Co Ltd, Our progress in print (Kirckaldy 1959)

Anderson (One of themselves), The Croft House Andersons (Cupar 1933)

Anon, Notes of a tour through the shires of Fife, Forfar, Perth and Stirling in 1800 (printed for private circulation 1898)

R Bald, A general view of the coal trade of Scotland, (Edinburgh 1808)

G W Ballingall, Historical collections (with notes) regarding the Royal Burgh and Parish of Kinghorn (Kirkcaldy 1893)

A Barnard, The whisky distilleries of the United Kingdom (London 1887)

W T Barr, For a web begun: the story of Dunfermline (Edinburgh 1947)

B Baxter, Stone blocks and iron rails (Newton Abbot, 1966)

R Beatson, General view of the county of Fife with observations on the means of its improvement (Edinburgh 1794)

S Beckett, Waiting for Godot (London 1956)

A Bennet, The Old Wives' Tale (London 1964 edition)

W H Bett and J C Gillham Great British tramway networks, 4th edition (London 1962)

W G R Brodie, Glenrothes and its environs in days gone by (Kirkcaldy 1960)

W G R Brodie, Some light on the past around Glenrothes (St Andrews 1968)

A Bonthrone and Sons Ltd, The Story of Bonthrone of Newton 1600-1950 (Kirkcaldy 1950)

J Boswell, Journal of a tour to the Hebrides with Samuel Johnson Ll D (Oxford Standard Authors, 1930)

H W Brace, History of seed crushing in Great Britain (London 1960)

D Bremner, The Industries of Scotland (Edinburgh 1869)

British Association for the Advancement of Science, Dundee and district (Dundee 1968)

R Brodie, The reminiscences of a civil engineering contractor (Bristol 1943)

P W Brown and A Westwater, History of the early Lochgelly coalfield, (Lochgelly 1954)

J Bryson, Industries of Kirkcaldy and district (Kirkcaldy 1872)

W S Buchan, The Parish of Dunbog, its history, kirk and people (Cupar 1953)

J Butt, The industrial archaeology of Scotland (Newton Abbot 1967)

D Bythell, The Handloom Weavers (Cambridge 1969)

H M Cadell, The Story of the Forth (Glasgow 1913)

R H Campbell, Carron Company (Edinburgh 1961)

R H Campbell, Scotland since 1707 (Oxford 1965)

R G Cant, Central and North Fife (Cupar 1965)

S D Chapman, The early factory masters (Newton Abbot 1967)

S G Checkland, The rise of industrial society in England (London 1964)

A Cochrane, 9th earl of Dundonald, Description of the estate of Culross, (Edinburgh 1793)

H Cockburn, Journal, v 1 (Edinburgh 1874)

D C Coleman, The British paper industry 1485-1860 (Oxford 1958)

M F Conolly, Biographical Dictionary of eminent men of Fife (Cupar 1866)

M F Conolly, Fifiana, or Memorials of the East of Fife (Glasgow 1869)

J C Craig, Sangs o' Bairns and Hame (Edinburgh 1909)

A S Cunningham, Culross past and present, and Torryburn and Valleyfield (second edition, Leven 1906)

A S Cunningham, Dundonald Collieries and their development (Dunfermline 1903)

A S Cunningham, The Fife Coal Company Limited (Leven 1922)

A S Cunningham, Inverkeithing, North Queensferry, Rosyth the Naval Base, (Dunfermline 1903)

A S Cunningham, Markinch and its environs (Leven 1907)

A S Cunningham, Mining in the "Kingdom" of Fife, (second edition, Dunfermline 1913)

A S Cunningham, Rambles in the parishes of Scoonie and Wemyss (Leven 1905)

J T Davidson, "The Gullets" and Kirkness (Lochgelly, no date)

J T Davidson, The Linktown of Abbotshall (Kirkcaldy 1951)

J T Davidson, The Road of the "Bluidy Feet" (Kirkcaldy 1942)

Davidson's Illustrated Guide to Kirkcaldy (Kirkcaldy 1903)

G Dott, Early Scottish Colliery wagonways (London 1947)

F Douglas, A General Description of the East Coast of Scotland from Edinburgh to Cullen (Paisley 1782)

H Douglas, Crossing the Forth (London 1964)

R W Dron, Coalfields of Scotland (Glasgow 1902)

B F Duckham, A History of the Scottish Coal Industry, volume 1, 1700-1815 (Newton Abbot, 1970)

C L D Duckworth and G D Langmuir, West Highland Steamers (third edition, Preston 1967)

R Dunnett, East Lothian farm buildings (Haddington 1968)

K Durland, Among the Fife Miners (London 1904)

W J Eggeling, The Isle of May (Edinburgh 1960)

W English, The Textile Industry (London 1969)

W Erskine, Glimpses of Modern Burntisland (Kirkcaldy, no date)

Sir W Fairbairn Burt, Treaties on Mills and Millwork (fourth edition, London 1878

J Fernie, History of the Town and Parish of Dunfermline (Dunfermline 1815)

Fife and Kinross Register, County Lists and Business Directory for 1872 (Cupar 1871)

J A Fleming, Scottish Pottery, (Glasgow 1923)

R Forsyth, The Beauties of Scotland, v 4 (Edinburgh 1806)

E H Francis, The Economic Geology of the Fife Coalfields, Area 11 (second edition, Edinburgh 1961)

L Gardiner, Stage-coach to John o' Groats, (London 1961)

E Gauldie (ed), The Dundee Textile Industry 1790-1885 (Scottish History Society, Edinburgh 1969)

Sir A Geikie, The Geology of Central and Western Fife and Kinross (Glasgow 1900)

Sir A Geikie, The Geology of Eastern Fife (Glasgow 1902)

Sir A Gibb, The Story of Telford (London 1935)

S Gregory Statistical methods and the Geographer (London 1963)

F Groome (ed), Ordnance Gazetteer of Scotland, v 1 - 6 (Edinburgh 1882-84)

Guardbridge Paper Company Limited, Guardbridge Panorama (Dundee 1951)

A R B Haldane, Three centuries of Scottish posts (Edinburgh 1971)

D Haldane and J K Allan, The Economic Geology of the Fife Coalfields, Area 1, Dunfermline and West Fife (Edinburgh 1931)

H Hamilton, An Economic History of Scotland in the Eighteenth Century (Oxford 1963)

H Hamilton, The Industrial Revolution in Scotland (Oxford 1932)

J E Handley, The Irish in Scotland, (Cork 1945)

E Henderson, Annals of Dunfermline (Glasgow 1879)

R Holman, Behind the diamond panes (Cowdenbeath 1952)

R Holman, Character studies of the miners of West Fife (Dunfermline 1909)

R Holman, History of Cowdenbeath (Dunfermline 1941)

A N Houston, Auchterderran - a parish history (Paisley 1924)

K Hudson, Industrial Archaeology (London 1963)

W D Hunt, The Story of the Century (Dunfermline 1961)

J C Inglis and F Inglis, The Fordell Railway (Larbert 1946)

S Johnson, Journey to the Western Islands of Scotland (Oxford Standard Authors 1930)

H Keddie, Three Generations (London 1911)

C D M Ketelbey, Tullis Russell (Markinch 1967)

A C Lamb and A N Millar, Annals of Dundee (Dundee 1908)

J Laver, The House of Haig (Markinch 1958)

A L Levine, Industrial Retardation in Britain 1880-1914 (London 1967)

H G Lewin, The Railway Mania and Its Aftermath (London 1936)

J P Lewis, Building cycles and Britain's growth (London 1965)

M Lewis, Napoleon and his British captives (London 1962)

J Lindsay, The Canals of Scotland (Newton Abbot 1968)

P K Livingstone, Flax and linen in Fife through the centuries (Kirkcaldy 1951)

P K Livingstone, A History of Kirkcaldy 1843-1949 (Kirkcaldy 1955)

D Loch, A Tour through most of the Trading Towns and Villages of Scotland (Edinburgh 1778)

N Lockhart and Sons Ltd, Textile manufacturers 1797-1947 (Kirkcaldy 1947)

L Macbean, Patrick Don Swan, Provost of Kirkcaldy 1841-86 (Kirkcaldy 1893)

D F Macdonald, Scotland's shifting population 1770-1850 (Glasgow 1937)

A McGeorge, The Bairds of Gartsherrie (Glasgow 1875)

A J G Mackay, A History of Fife and Kinross (Edinburgh. 1896)

D S Macmillan, Scotland and Australia 1788-1850 (Oxford 1967)

W N Marwick, Economic development in Victorian Scotland (London 1936)

W N Marwick, Scotland in modern times (London 1964)

W Mitchell, Tables converting the Fife Standard Grain Measures into Imperial Grain Measure (second edition, Cupar 1829)

R Mitchison, Agricultural Sir John (London 1962)

A Muir, The Fife Coal Company Limited, a short history (Leven 1953)

A Muir, Nairns of Kirkcaldy (Cambridge 1956)

C Murray, St Marie's Parish, Kirkcaldy (Kirkcaldy 1965)

J S Neish, History of Newport and the Parish of Forgan (Dundee 1890)

C A Oakley, Scottish Industry today (Edinburgh 1937)

W Pagan, Road Reform (Edinburgh 1845)

S Pollard, The Development of the British Economy 1914-1967 (second edition, London 1969)

G S Pryde, The Burghs of Scotland (Glasgow 1965)

J Ray, A Compleat History of the Rebellion (York 1755)

A Reid, Limekilns and Charlestown (Dunfermline 1903)

E Richards, The Leviathan of Wealth (London 1973)

J M Richards, The Functional Tradition in early industrial buildings, (London 1958)

W G Rimmer, Marshalls of Leeds, flax spinners, 1788-1886 (Cambridge 1960)

L J Rintoul, Largo Village Book (Cupar 1932)

J Robertson, General View of the Agriculture in the Southern Districts of the County of Perth (London 1794)

J Robertson, General View of the Agriculture in the County of Perth (Perth 1799)

T Robertson, J B Simpson and J G C Anderson, Special reports on the mineral resources of Great Britain v 35 - the Limestones of Scotland (Edinburgh 1949)

W St Clair, Lord Elgin and the Marbles (London 1967)

S B Saul, The Myth of the Great Depression 1873-1896 (London 1969)

L J Saunders, Scottish democracy 1815-1840 (Edinburgh 1950)

R S Sayers, A History of Economic Change in England 1880-1939 (Oxford 1967)

M Searle, Turnpikes and toll-bars (London, no date)

J B Sissons, The Evolution of Scotland's Scenery (Edinburgh 1967)

B C Skinner, The Lime Industry in the Lothians (Edinburgh 1969)

R Southey, Journal of a Tour in Scotland in 1819 (London 1929)

A Smith (ed), The County of Fife (Third Statistical Account of Scotland, Edinburgh 1952)

T G Snoddy, Afoot in Fife (Edinburgh 1950)

W M Stephen, The Binnend Oilworks and the Binn Village (Kirkcaldy 1969)

Rev W Stephen, The Story of Inverkeithing and Rosyth (Edinburgh 1938)

J Stuart, Reminiscences (London 1911)

W E Tate, The Parish Chest (third edition, Cambridge 1969)

J Thomas, The North British Railway, vol 1 (Newton Abbot 1969)

J Thomas, A Regional History of the Railways of Great Britain, vol 6 - Scotland, the Lowlands and the Borders (Newton Abbot 1971)

J Thomas, The Tay Bridge Disaster (Newton Abbot 1972)

D Thomson, The Weaver's Craft (Paisley 1903)

J Thomson, Directory of Kirkcaldy, 1834 (Kirkcaldy 1834)

J Thomson, A General View of the Agriculture of Fife (Edinburgh 1800)

T Walrond, Memoir of James, Eighth Earl of Elgin (London 1872)

A J Warden, The Linen Trade, Ancient and Modern (London 1964)

J Westwood, That Portion of Scotland (Dunfermline 1948)

J H Whitehouse, Problems of a Provincial Town (London 1905)

G M Wrong, The Earl of Elgin (London 1905)

Sir John Sinclair, The Statistical Account of Scotland, vols 1 - 21, (Edinburgh 1791-98)

New Statistical Account of Scotland, vols 9 - 10 (Edinburgh 1845)