COVENTRY AND COUNTY HERITAGE

26

ENGINEERING THE DEVELOPMENT OF COVENTRY

by

BRIAN REDKNAP

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Coventry and County Heritage Series
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ENGINEERING THE DEVELOPMENT OF COVENTRY

Brian Redknap

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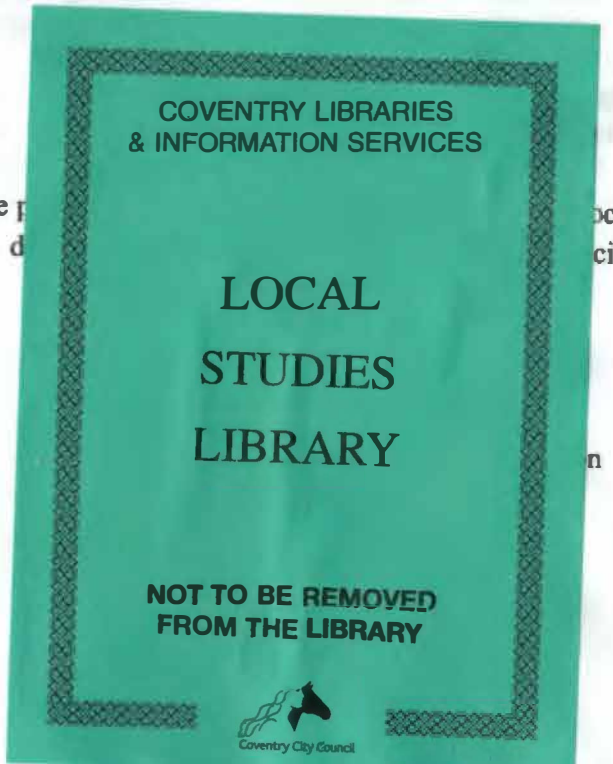

CONTENTS

EDITOR'S NOTE

It is with great pleasure that the Publication Committee of the Coventry Branch of the Historical Association presents this study of the history of Coventry's modern infrastructure in the year that its author, Mr. Brian Redknap, is President of the Coventry Branch. It is a comprehensive survey of the development of the infrastructure which enabled Coventry to grow and evolve into a great industrial city of the twentieth century. It is a welcome addition to the modern section of our publications series and covers aspects of the city's history which have been little researched. The author's own comments are in themselves a valuable source for the history of the modern city. They throw fresh light on a period of reconstruction and development during which Coventry pioneered new ideas and techniques which made the city an outstanding example of modern town planning. Editing this pamphlet has been both an exciting and rewarding experience during which I have learned a great deal about twentieth century Coventry.

The publication of the Coventry and County Heritage series is due in no small amount to the generosity of Mrs. Eileen Gooder who donated funding in memory of her husband, Dr. Arthur Gooder.

Mr. Redknap acknowledges the many contributors who have helped him in his research and I conclude by thanking Mr. Leslie Hulton for his invaluable help in scanning this manuscript for printing, editing and arranging the maps, plans and photographs, which add so much to the text, and for bringing the final version to publication.

Eileen Castle, Series Editor

ACKNOWLEDGEMENTS

My thanks to all those who have contributed in various ways. Members of the former City Engineers Department. Robin Ashby, Brian Bliss, Garth Flint, Bert Griffiths, Ken Griffiths, Ted Hiscocks, Peter Scott, Jack Simpson.

Pam, widow of Bert Aizlewood and Lois, widow of Tony Hoare.

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Andy Pitts,

Ken Lomas.

Vivian Levett, Department of Architecture & Planning

Mark Singleton, Department of Development.

John Rattigan, a prolific writer himself, of local affairs and a member of the well known Rattigan pavior family (I include as Appendix I his letter to me, which contains in a few words so much rich material).

The staff at the City Library and the Coventry Archives Office, who gave me much help.

The Coventry Evening Telegraph.

Also my son, Mark Redknap, who helped with my spelling, inter alia.

Sources of Illustrations

It has proved impossible to get copies of the photos, shown on p17, of the tunnelling work - we apologise for the quality of these illustrations which have been taken from a microfiche copy of the article quoted.

ILLUSTRATIONS

FOREWORD

Some time ago, I was invited to give a number of talks on the development of Coventry and my modest involvement in it. I took this opportunity to undertake, albeit belatedly, due to the pressures of retirement, an earlier intention to write something of the history of the engineering and engineers, employed in the City for the development of its modern infrastructure.

I am now delighted that the Coventry Branch of the Historical Association have taken my early endeavour to produce this publication as No. 26 of their Coventry & County Heritage series.

The following account is a largely non-technical description of engineering works in Coventry from the mid nineteenth century onwards. It is intended only as a broad review but it is hoped that it brings together a useful narrative that will assist other more dedicated researchers in the future as well as being of some interest to the more general reader.

As a former City Engineer, I have allowed myself the privilege of focusing on civil engineering and the work of the City Engineers department. It would be remiss of me however not to acknowledge, from the outset, the contribution made by others: the politicians who over the years, argued, fought and made the final decisions; the other professionals involved and the workforce who turned our bits of paper into reality. Most importantly of all, I acknowledge the part played by the citizens of Coventry who have had to put up with our mistakes.

Brian Redknap

October 2004

INTRODUCTION

By the beginning of the nineteenth century Coventry had a population of approximately sixteen thousand - a good-sized industrial town of the period. The city was a classic example of contemporary town development, grown haphazardly from the vicissitudes of its earlier trade and history. Despite its medieval prominence, Coventry had not established itself as a regional centre during the following centuries. After a period of comparative wealth from 1800, the city was to see the catastrophic collapse of its ribbon weaving industry, 1861-2[1], followed by the slower decline of its watchmaking trade. Yet while its rate of population growth slowed, the overall population of the city did increase and maintained constant pressure on the city's overcrowded physical environment.

Against a background of social and economic instability, Coventry, in common with most urban concentrations of the period, proved unable to protect its population from the hazards of epidemic disease that resulted from an entirely inadequate public health infrastructure. The City had both an absence of a clean water supply and little in the way of an efficient drainage system. Similarly, the road system was narrow, inconvenient and poorly maintained.

On a national level, it was finally recognised by the Government and the nation's employers that public health reform was needed to maintain an effective working population. Such reform was necessary if the impetus of Britain's increasing wealth and power in the world was to be maintained. An essential element in achieving reform must be the introduction of stronger and more effective systems of local government to effect necessary changes at local level. The great battles for parliamentary reform, 1830-1832, resulted in the first major Parliamentary Reform Act and the Municipal Reform Act of 1835. The latter legislation provided powers to rationalise a number of local government boundaries and systems; the introduction of election by local ratepayers and the granting of additional powers to the new local authorities though such powers were still largely exercised through Parliament.

In Coventry, the residual powers still vested in its ancient Court Leet[2] and the 'closed corporation' that controlled the city's affairs, were removed. From 1835, the City Council has been elected by the ratepayers of Coventry. Yet paradoxically, Coventry was to suffer a costly and humiliating setback in 1842 when it lost its county status and reverted to the county of Warwickshire[3]. Litigation costs of some ten thousand pounds were awarded against the City, a very substantial sum of money. It is to the great credit of Coventry, that despite this setback, it embarked on an energetic programme of public works which by the end of the century had effectively halted the annual ravages of cholera, typhoid and other waterborne diseases.

On a less sanguine note, it must be stated that the flooding of property and the pollution of local rivers, fortunately with less dire consequences, continued for another one hundred and twenty years. It was only in 1973 that the massive Sewer Duplication Scheme was completed and finally provided Coventry with an adequate drainage system. Ironically, the Scheme came into effect when the population of the city was about to decline for the first time since the 1860s. Initial success being overtaken by periods of rapid population growth is a constant theme in the history of public health in Coventry. Table One illustrates well the great challenge which confronted the City for many years, to meet the ever increasing demand for services.

Table One

POPULATION GROWTH	
1801	16,034
1851	36,812
1901	69,978
1940	252,000
1971	336,000
2000	303,000

ENGINEERING THE DEVELOPMENT OF THE CITY

DRAINING THE CITY

The Problem

Coventry lies at the head of two river catchment areas. To the north, from Bedworth, all water flows to the River Trent and the Humber Estuary. To the south, from Bedworth, the flow is to the River Avon, the River Severn and then to the Bristol Channel. It is like the Great Divide in Canada, but on a much more modest scale.

The city and its immediate surroundings are drained by three river systems. All three local rivers are comparatively small in size. The River Sherbourne flows through the centre of Coventry. The larger River Sowe flows north/south on the east side of the city. The west side of Coventry is drained by the Canley Brook which joins the Finham Brook. All three minor rivers join in the Finham area and then flow into the River Avon at Stoneleigh.

In medieval times, the water supply available to Coventry's citizens came from individual wells and springs. Inhabitants in the Earls Half had been given licence in 1332[4] to '*erect common conduits in their streets as considered to their benefit and convenience*'. These common conduits were probably in stone, some twenty feet long by ten feet wide, forming an underground water tank and presumably fed by wooden drainage pipes, hollow logs, which have occasionally been uncovered. All noxious matters were disposed of in cesspits[5], dug within the curtilage of properties, many to be discovered in later periods of reconstruction. Alternatively, waste was discharged into the nearest river, brook-course or town ditch, sometimes through short lengths of sewers.

The Coventry Court Leet Book records many attempts to regulate the disposal of waste. Many measures were tried: prohibitions of interfering with the common conduits, brewing with conduit water, uncovering the common sewers, interfering with flood gates or controlling the discharge from commercial processes such as dyeing. Such measures were produced piecemeal and though

well intentioned were of little efficacy; to quote one example from the Coventry Court Leet Book for April 21st 1551:

'It is ordained at this presente and by the authority of this present Leete that all inhabitantes that dwell within this citie and have gardeynes and grounds adioynge to the River Shyrbourne from Saints Johns Bridge to the Sponne Brooke in Pudding-Crofte shall clense and scoure the same every man his porcian - - - - - -upon payne every man to forfayte for every defaulte vjs viijd (6s 8d or 33p) *and noo perzoon at any thyme hereafter to cast any donge or fylthe into the River upon like payne - - - - -'.*

The 1610 John Speed map and the Bradford Survey of 1748 show gardens at the rear of the majority of Coventry houses. Spon Street and Far Gosford Street appear to be the only appreciable areas of building development outside the city wall. The facades on Kirby House, Little Park Street and a few houses in Priory Row are examples still remaining[6]. By the mid nineteenth century however, the spacious gardens had gone, being replaced by narrow, dark and congested courts with crowded populations. Some of these courts remained in occupation until the 1950s; in Jordanwell, Spon Street and Poddycroft. Yet one meager benefit their inhabitants enjoyed was the proximity of open air and meadowland, within a few minutes walk. Such a paradox arose in part from the restriction on growth imposed by the former presence of the town wall: *'the invisible barrier'*[7]. More significant was the historical barrier to development imposed by the Michaelmas and Lammas lands, the common lands which surrounded part of Coventry. Common land grazing rights belonged to the Coventry freemen who vigorously upheld them and opposed any notion of enclosure.

At that time the city was entirely contained within the drainage area of the River Sherborne. Coventry depended on this modest stream to remove all flood waters and the noxious products of a thriving and growing urban community. It was also the river that provided the power to a number of important mills, yet another problem to be solved.

A Start is Made

It was the seminal contribution of Sir Edwin Chadwick[8] to persuade urban authorities to undertake the provision of a clean water supply and adequate drainage, to reduce *'the privations to the working classes causing injury, moral and physical'*, reforms which were made possible by the creation of a national Board of Health.

Prior to the first Public Health Act, a parliamentary commission of inquiry reported in 1844 on 'The State of Large Towns'[9] which had an annual death rate of twenty three per thousand. Coventry was recorded as having twenty six deaths per thousand and among others, Birmingham twenty seven and Manchester thirty four per thousand respectively. In 1840 life expectancy in the country as a whole was about forty years and in Coventry probably thirty five. One hundred and thirty years later the annual death rate in the city had reduced to 9.3 per thousand and is around that today. An extract from the report, relating to Coventry, reads as follows:

'Amongst the worst localities are Dog Lane or Leicester St, together with Brewery St, Swan St, Tower St and Henry St - - - - all decidedly unhealthy - - - - and bear a high proportion chiefly epidemic fevers - - - - typhus being prominent, along with dysentery, cholera and diarrhea. Palmer Lane - - - one entire mass of rubbishy houses - - - - all densely occupied by very poor people - - - - The neighbourhoods of Cow Lane, Warwick Lane, Greyfriars Lane, parts of Spon St, Barracks Yard, Much Park St and St Johns St, are all neglected and unhealthy'.

Coventry had clearly been identified in the premier league of unhealthy cities. In the endless list of urgent problems for the city to solve were a surfeit of dead bodies for burial, regular river flooding and water borne diseases. With the new powers granted to local authorities, the city accepted the *'imperative necessity to deal with these great grievances suffered by many of its citizens'*.

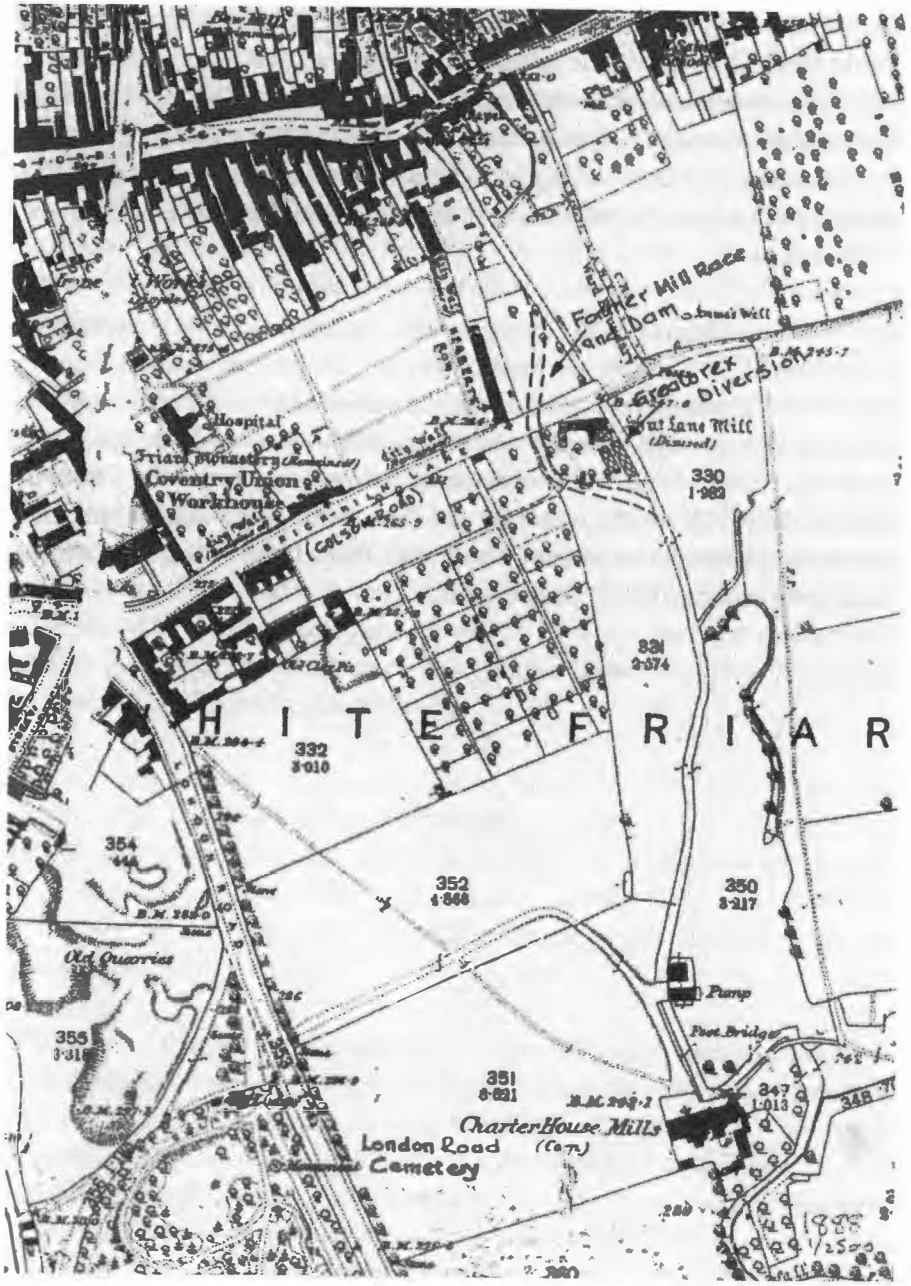
Coventry churchyards being full to bursting with *'the stench of dead bodies'* underlined the urgency of public health reform. The Coventry Cemetery Act of 1844[10] got things going and resulted in the construction of the splendid London Road Cemetery, designed by none other than the celebrated Joseph Paxton[11], an indication of the City's determination and ambition.

The Coventry Water Act of 1844[12] facilitated the sinking of Coventry's first deep well in Doe Bank Lane, Spon End. It was completed in 1847, only a mile from the city centre. This well had a daily yield of one million gallons to the City and, like many public works of the nineteenth century, remains an important source of water to this day. Of equal importance was the laying of water mains, with service pipes to property boundaries. Yet the perversity of human nature did not lead to their immediate use. Understandably, the citizens were suspicious of the water's comparable quality (water through lead pipes?) and more compellingly, existing water supplies could be obtained free of charge from a number of sources.

The considerable additional water discharge created by the new waterworks, added to other problems and increased the urgency of addressing the City's drainage arrangements. The River Sherbourne was entirely unsuitable for a new drainage system and heavy rainfalls regularly caused flooding on adjoining land, a situation worsened considerably by the obstruction caused by narrow bridges and water mills.

There had been water mills on the River Sherbourne from medieval times. Small though the river might be, with the risk of flooding so close to valuable property, the power it provided to the water mills had been considered essential to economic growth. By 1840, three water mills remained[13]. The 1844 Act gave the Corporation power to acquire these mills and remove them as obstructions. An 1847 report indicates that these mills had yet to removed and described them as '*a nuisance, the magnitude of which nothing but long habit or sheer necessity could render supportable*'. It is perhaps this attitude of fortitude and apathy which was to inhibit progress on many more occasions in the future, apart, of course, the age old issue of money.

In 1855 some progress was reported in river cleansing and bridge improvements but it was not sufficient to cope with the serious flooding in Coventry which occurred at the end of December 1900[14]. It must be acknowledged that floods were to occur in parts of the city for many years. The last major flood relief scheme, in Spon End, was carried out as recently as 1972.



Map showing the location of two of the Mills

In 1849 the Corporation petitioned Parliament, under the terms of the 1848 Public Health Act, to have the authority to establish a Local Board of Health. As a preliminary measure, William Ranger[15], a Superintending Officer of the Board of Health, produced a vastly important and comprehensive report on Coventry's infrastructure. As may be expected, he presented a desolate picture of '*the present depressed moral and physical conditions of the thousands residing in its alleys and yards*'.

His recommendations were extensive and far-reaching. He advised the acquisition of the Lammas and Michaelmas lands to provide space for building and recreation and the construction of a comprehensive system of drainage and sewerage; the sewage manure would be treated and utilised for agricultural purposes. An arterial sewer was proposed, to run through Coventry from the Charterhouse Mill on the east side and then to the north side of the River Sherbourne, through Hales Street, Poddycroft, Crow Lane; to Sherbourne Street - a distance of one and a half miles (2.4km).

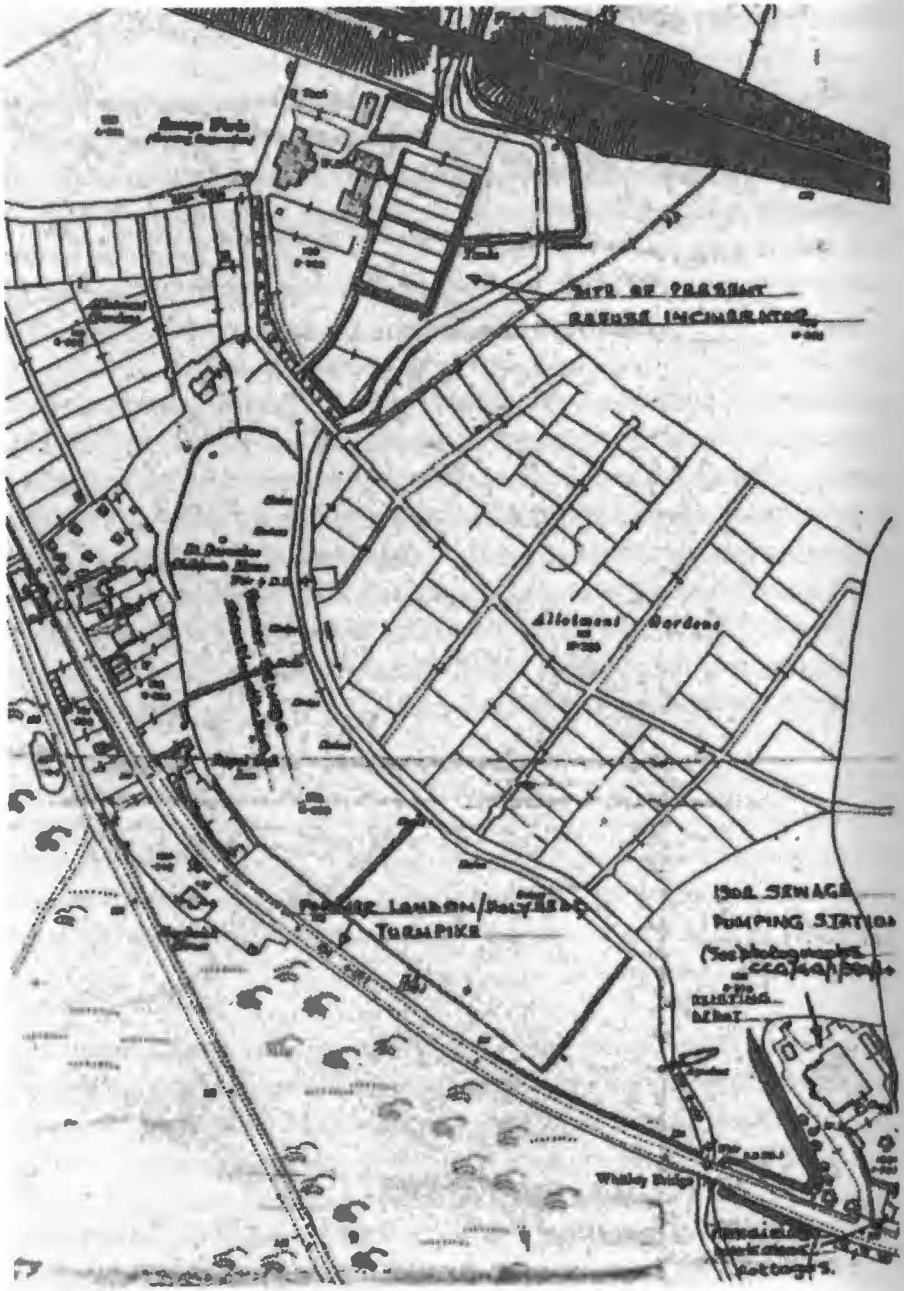
Main Drainage and Sewage Treatment

In 1851, William Ranger presented a further report to the newly created Local Board of Health, with details for the implementation of his earlier proposals. These were accepted and between 1852 and 1858 the work was carried out. It was a major and innovative project for the City at the time and it involved great cost and frequent delay. The first step was taken in 1851 when an accurate survey of the city, with levels, was undertaken and completed by the Board of Ordnance[16].

A mortgage of £20,000 was required to finance the project and this caused a flurry of correspondence between Mr. Ranger and the Board of Health in London. The mortgage was turned down because the size of the sewers had been increased, from a diameter of two feet to four by three feet. Mr. Ranger anxiously explained that the original size was based on the assumption that the storm water flow could be excluded, something which had proved impossible. The Board of Health relented and the money for the project became available. The project could not have been helped when the contractor, David Murgatroyd of Chester, had his contract terminated.

When completed, the main trunk sewers served the City well, draining the Sherbourne Valley and the city centre until the 1970s. At that time they were still in good condition and are still used in part today. It may have been luck but it is interesting to note that in 1849 cholera claimed three hundred lives in Coventry; in 1854 the City escaped a cholera epidemic whereas ninety nine people died in Warwickshire.

For a period of some twenty years, Coventry's sewerage system discharged into the River Sherbourne with only inadequate deodorising chemical treatment. This was clearly unsatisfactory for it was known that the River Avon was an important source of drinking water for downstream communities, such as Warwick. In 1870, a writer commented '*this sewage is foul, and coloured by the dyes which are thrown into the sewers*'. In 1874 an injunction, issued by the Court of Chancery, restraining Coventry Corporation from continuing to discharge untreated sewage into the river, was served on the City.



Location of Treatment Plant 1874

The first Treatment Plant was constructed in 1874 on a site adjacent to the London-Birmingham railway line (shown on the left in the photo, below, with the River Sherbourne under the bridge.) It is now the site of the Waste Reduction Unit in the London Road. Ranger's report had earlier suggested, in line with contemporary thinking, that this treatment could be provided at little or no cost to the Corporation. The facility was based on settlement tanks to collect the heavier sludge for agricultural purposes. Further purification was achieved by discharging the effluent through irrigation ditches on eight acres of adjoining land. The process contained the same basic principle of sewage treatment as used today. It only failed to meet adequate standards over the successive decades from consistent overloading, the result of the city's ever increasing population outstripping any improvements which were made. In addition, the process included the now abandoned deodorising practice of adding a mixture of lime, copras and sulphate of alumina.

The plant was constructed and financed by the General Sewage and Manure Co. Ltd. The production of a commercially viable manure however proved more difficult than anticipated, as it has to this day, and the company soon got into financial difficulties and was taken over by the Corporation[17]. It is of interest that these precipitation tanks remained in use until the site was finally cleared for the construction of the Waste Reduction unit in the 1970s.

Sewage works under construction 1874

Despite the treatment process, the effluent continued to deteriorate in quality as the population and development of Coventry continued to grow apace. A series of actions were brought against the Corporation between 1890 and 1900, costing the City thousands of pounds in damages and costs.

In 1884 Coventry benefited from the royal commission's report on Metropolitan Sewage Disposal which came down on the side of precipitation tanks and irrigation; it was rather more evasive on the subject of chemical treatment. In the same year the General Works Committee received a report by J.C. Millis[18] which not surprisingly stressed the need to enlarge the Whitley Plant. It referred to the problem of excessive infiltration of water into the town's sewerage system - a huge problem which bedevilled treatment for many years. It recommended that chemical treatment be continued though it concluded that the process of precipitation and irrigation was still the preferred method.

The report also for the first time addressed the issue of pumping sewage to a higher elevation, away from the river valley, rather than depending on gravitation. Pumping clearly would add to the cost of the treatment. The Corporation's financial instinct responded immediately and perhaps unwisely, with an instruction to have a survey made of the Avon valley, from Ryton Bridge to Cloud Bridge, close to the Stoneleigh Estate, to avoid the need for costly pumping.

In 1890, Coddington, the hard pressed Sewage Works Manager, requested an additional thirty acres for additional land irrigation[19] but his request was deferred for decision. A further consultant's report in 1892[20] confirmed that there was an urgent need to acquire six hundred acres of land to deal with the estimated six million gallons per day, now calculated to be the dry weather flow to be treated. The General Works Committee was now convinced that the urgent need for improvements would be most effectively and economically dealt with by gravity discharge on land in the Avon Valley, as far down as Stoneleigh.

The verbatim report of the Local Government Board of Inquiry[21], held between February 21st and March 2nd 1893, for the compulsory acquisition of this land, is still available. The Corporation, despite rigorous cross-examination and argument, was successful in obtaining a provisional order. However it would seem that the influence of the City stopped at its boundaries, for when it came to

the House of Commons, Coventry's application was rejected, to the Corporation's dismay. The influence of well-connected county landowners was probably decisive. Substantial costs were awarded against the hard pressed applicants and even more damaging was the loss of three year's hard work and time.

The Corporation stoically prepared yet another gravity-based scheme, involving land as far as Baginton, with the same predictable opposition from the landowners likely to be affected. However the opposition, on this occasion, came up with an alternative area of land, east of Baginton, at Rock Farm, on higher ground; farmland which was entirely suitable for sewage treatment by broad irrigation.

Pumping to Rock Farm at Baginton

The Corporation was less than enthusiastic about the new scheme as the greater elevation at Rock Farm meant that all the sewage would have to be pumped a substantial distance, both horizontally and vertically. In addition, it was a significantly larger area than the acreage considered essential at the time; the land available amounted to some four hundred and eighty acres. Yet Coventry, a generation later, was to receive a deserved piece of good fortune when its surplus land was to provide a site for its municipal airport.

No doubt wearied by its protracted attempts to solve its sewage treatment problem, the Corporation employed Mansergh and Stockton to prepare its third scheme, based on a pumping station at Whitley and a large sewage farm at Rock Farm, Baginton. By this time perhaps it was felt that Coventry had depended on outside consultants for long enough and it was decided that the City needed an in-house adviser to guide the Corporation through the complex range of services for which it had become responsible. In 1899 the first City Engineer and Surveyor was appointed. Joseph Eaves Swindlehurst was very successful in this post and was to serve the Corporation well until he retired in 1924.

The Whitley Sewage Pumping Station came into operation on February 3rd 1901[22] at a point some half a mile from the treatment works. The settlement tanks, built in 1874, were to be retained and used for storm overflow purposes.

(See the centre fold map for the location of Rock farm and that of the Whitley Sewage Pumping Station.)

The Pumping Station was based on four triple expansion steam engines, operating three twenty one inch ram pumps, capable of pumping one and a half million gallons per day against a head of seventy feet. This pumping station was to operate day and night until the 1970s. The rising mains to Baginton Farm were twenty one inch and twenty seven inch diameter and made of cast iron.

Finham Sewage Treatment Works

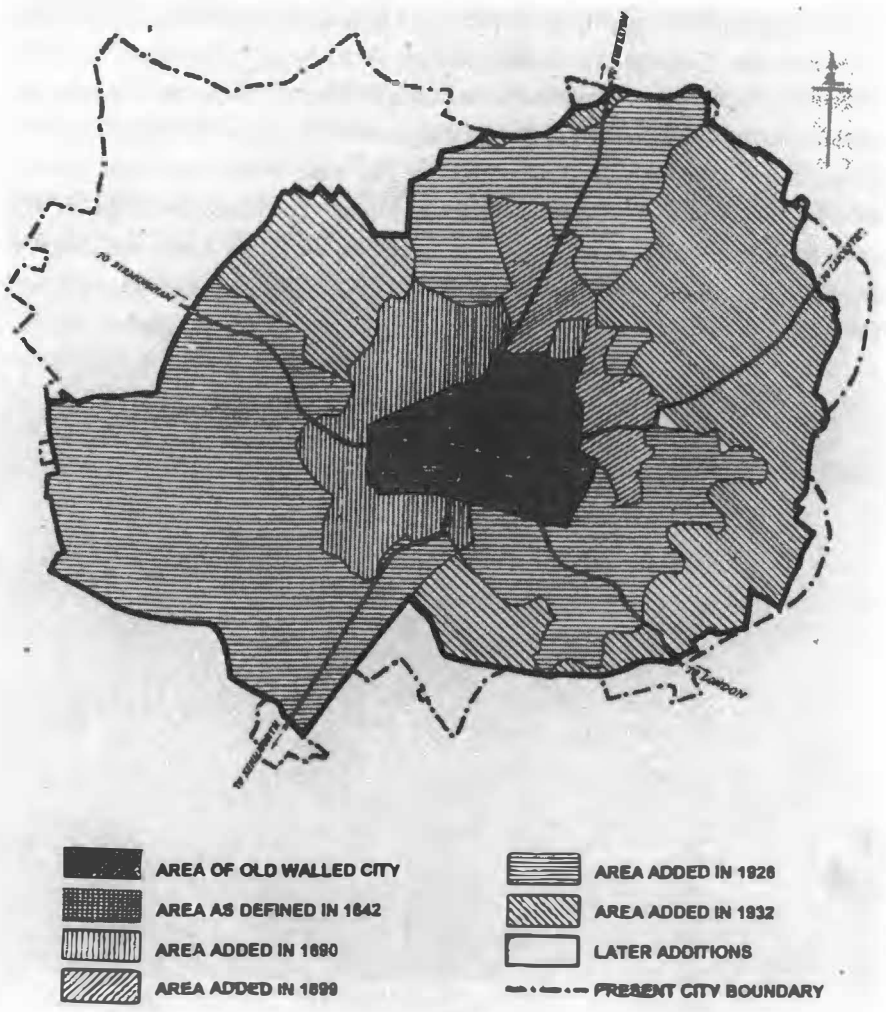
The new arrangements worked well for some years and the Corporation felt for a time some relief from the burden of this long term problem but this relief was only to be short lived. With the continuing rapid growth of industrial Coventry, conditions again began to deteriorate. In particular, the nature of the sewage began to alter as a result of the changing manufacturing processes taking place. The period of the First World War, with its huge industrial demands, again drew the Corporation's attention to the fact that a further major investment of resources was needed.

The Berry/Deeley Paper to the Institution of Civil Engineers in 1956[23] sets out well the sewage treatment process in Coventry up to that date, beginning with the introduction of bacteria beds at Rock Farm, Baginton in 1919. By the late 1920s, the dry weather flow had risen to six million gallons per day and it became clear that the Pumping Station and Rock Farm could no longer cope. The Corporation must have derived considerable satisfaction, when, despite opposition in the past, it was able to acquire, in 1928, an area of land at Finham for a sewage treatment plant, at a location capable of draining the greatly expanded areas of Coventry, including the Sowe Valley to the east and the Canley area to the west.

The new sewage treatment plant at Finham was opened in 1932 and has been in the process of continual change and development since that date. The most recent upgrading took place in 1998-2001 at a cost of thirty five million pounds. Described as a 'Nutrient Removal and Asset Renewal Scheme', it was a far cry from primary settlement and broad irrigation at the earlier Whitley Plant but it embodied the same biochemical processes.

Extending the Main Drainage System

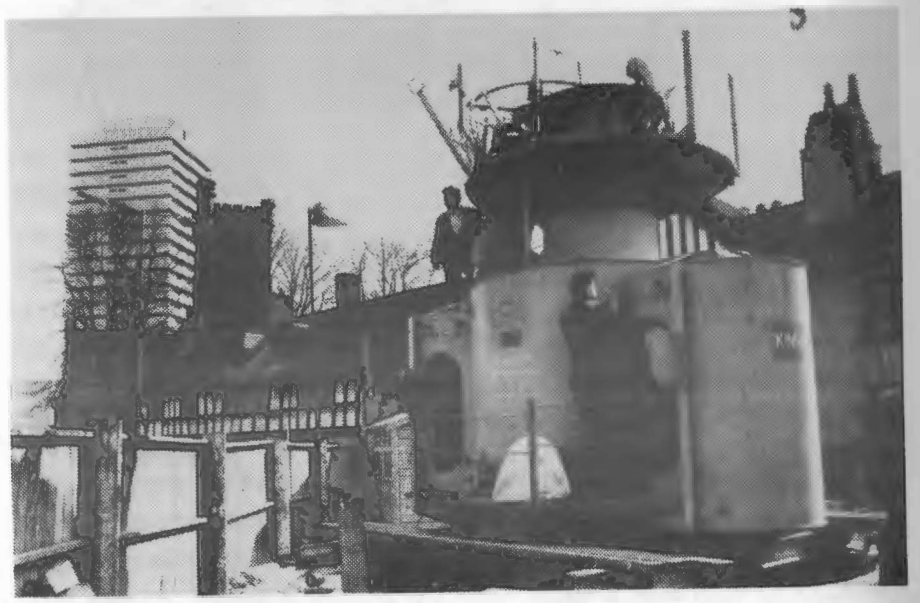
Over the same period, the sewerage systems operating in the city had been experiencing a similar substantial overloading. In 1900 the new City Engineer, Joseph Swindlehurst, reported on his first main sewer extensions[24], initially to Foleshill and Stoke, to deal with the expansion that had taken place in those areas.



Coventry's Boundary Extensions from the old walled city to present

Further boundary extensions in 1926 and 1928 led to the construction of the Sowe Valley Sewer to the east of the city, between 1934 and 1937[25]. Considerable sections of the Sowe Valley Sewer were laid in steel piping, to deal with the problem of mining subsidence. To the west of the city, the Canley Intercepting Sewer was constructed over some five and a half miles, the largest civil engineering project ever undertaken in Coventry at the time.

The sewering of the greatly expanded city was now completed, draining by gravity to the Sewage Treatment Works at Finham. Coventry however continued to grow at an even faster rate than had been envisaged. In 1956 yet another, and possibly the last, important and costly High Court judgement went against the City in the Lenton's Case[26]. The case arose from foul sewage flooding and property pollution in the Eagle Street area after heavy rainfall. The Sowe Sewer by this time was flooding daily into the River Sowe and this was also damaging to Coventry because further development in certain areas was restricted.



Entrance to the compressed air shaft, Bond Street

The Lenton Case Judgement led the corporation to authorise the preparation of a massive programme of duplication of all the Main Trunk Sewers in the city. Between 1960 and 1983, some forty four miles of sewers were constructed at a cost of sixty five million pounds. The most expensive and challenging part of the scheme involved the four major contracts carried out between 1966 and 1973, involving the Canley, Sowe Valley and Sherbourne Valley Sewers, Phases 1 and 2. Contracts for these phases involved nineteen miles of work at a cost of fifty million pounds.

The geology of the Coventry area is complicated and involves formations of rock variable in consistency and hardness. The ice age, together with drainage erosion, has created considerable depths of river and glacial deposits under Coventry. Gorges were formed to create water bearing hidden valleys. The majority of the work therefore was carried out in tunnel and compressed air, involving construction in difficult ground conditions.

In addition more recent man made problems had to be dealt with. In the central area for instance, large diameter sewers had to be threaded in tunnels, using compressed air, through the piles of the newly constructed Lower Precinct. In the Cook Street/Swanswell Pool area, escaping air brought to the surface petrol vapour believed to arise from a long standing leak from a local petrol station. It caused dangerous risks to the tunnellers and to adjoining buildings which included the newly built Ambulance Station.

Although two tunnelling machines were used, the majority of the tunnels were driven by hand methods. The use of explosives was allowed as necessary to deal with rock strata throughout the residential, commercial and industrial areas of the city. Compressed air was used in approximately half the tunnels driven to control the considerable amounts of water encountered.

The uncertainties, risks and very real dangers are described and wonderfully understated in Garth Flint's paper to the Institution of Public Health Engineers June 1983[27].

By an interesting conjunction of historic film making and sewer construction, the excitement of this work was indirectly captured in the classic Michael Caine film 'The Italian Job', when a Mini and a Fiat are seen in a dramatic chase through concrete tunnels. This was the only scene shot outside of Italy, and took place in the 10 feet diameter Sowe Valley Sewer at Stoke Aldermoor, before the flows were diverted for their final use.

From:- Coventry Evening Telegraph, Wednesday, April 21 1971, p7.

The Tunnel

It means hard work, danger and £85 a week.
MANHOLE 26. A yawning chasm falling 55ft. through sandstone at Cook Street, Coventry. Clatter down four long ladders, and it has swallowed you as surely as a gorilla gulps peanuts. Straighten your safety helmet, and wait for a huge hissing and a wall of steam as the compression chamber door swings open. Step inside, unlock the pipes and wait for ten minutes. Stabbing pains (for the inexperienced) as an extra 13lb. air pressure - the equivalent of water pressure at 30ft - forces in the ear-drum. Then click-click as the ears "pop" and the other chamber door is released. Squelch out and into a blast of air that reaches a temperature of 110°F. A crazy line of electric light bulbs reveals a muddy, round concrete tunnel. You're inside a sewer, part of the £3m. Sherbourne Valley duplication scheme.

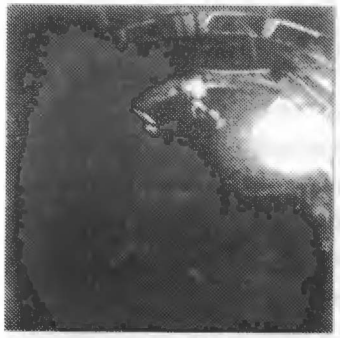
It snakes five miles from Finham to Spon End, and has taken over three years to construct. Now it is almost complete. "What makes me laugh," pants Mr. Garth Flint bent double in a 4ft. 6in. high section under Bishop Street, "are those war films where you see men tunnelling 50ft. in a couple of days."

Tough. *His men have averaged 8-12ft. a day. And that is with the latest equipment. Mr. Flint, resident engineer with Coventry Corporation for the project, knows exactly how tough the work can be. "It's a man's job," he says simply. "Not what you would call a palatable task." The miners can work five 12-hour shifts a week. For that they get £85. They earn it. Sometimes, crouched in 4ft. 6in. high tunnels all day, they must hoist 3½cwt. slabs of concrete - the sewer walls - into position. And the job that gives even the biggest men butterflies in the stomach is connecting the new sewer to the old. "Someone must build the new pipe into the sewer side. There is a tendency for the stuff to come at you. If something goes wrong a man can drown down there," said Flint. "So miners wear safety harness for that job."*

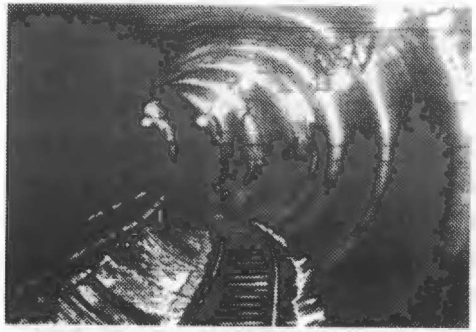
"Not everyone will do this type of work. But some find satisfaction in it. It is a challenge for them." At present, the miners are drilling through a solid line of sandstone "easy going compared to some" - just 14ft. beneath the 'Evening Telegraph' basement. "That's the nearest we have got to any building," said Mr. Flint. "But we only just missed the old sewer twice."

Richard Dove

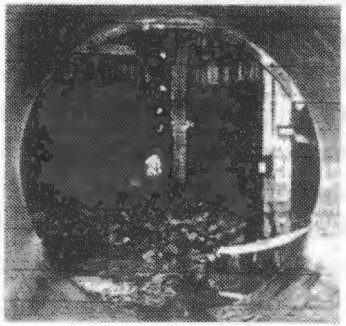
Tunnelling Work



Measuring the tunnel face. A miner measures up before laying new slabs which form the sewer's sides.



Like a tube line, the sewer tracks - used to haul rock and earth blasted and drilled away from the face - make a way under a zig-zag of electric light bulbs.



RIGHT:
A brief glimpse of daylight at the bottom of a shaft and a link on the sewer-line.

ROADS AND DEVELOPMENT

The Background

Order of Leet, enacted May 10th 1552

That every inhabitante of thys citie shall sufficiently repayre and amend ther payments in the strete lyenge befre ther houses - - - before the feaste of Easter next upon peyne to forfeyte for every defalt vjs viijd.

Order of Leet, enacted October 7th 1552

All honeste Comyners, within this citie yerlie from hensforthe from the feast of All Saynts untill the feaste of Purification of our Ladye shall cause a lanterne with a candlelight to be sette or honge at his doore to gyve light to the streyt every night when the moone doeth not shyne.

Until the eighteenth century chartered boroughs were most commonly governed by their aldermen in their capacity as Councilmen and Justices of the Peace. In Coventry any public works considered essential for the fabric of the city were brought to them as presentments of work from the town constables appointed to the city's wards. Such work might include the repair of causeways and bridges or the provision of some form of street lighting. A levy would be imposed on householders to pay for the cost of services provided.

In 1762 the first locally promoted Act of Parliament for Coventry was passed to establish twenty two Street Commissioners with power to levy rates for paving and street lighting, a device deriving from the Turnpike Acts. In 1812 another Local Street Act established short term Street Commissioners for twenty one years with novel powers for widening certain city streets. These powers were used first to widen Broadgate to commodious proportions and of equal value was the construction of Hertford Street, providing a much needed improvement in access to the south of the city. Until then the only access to the south side from the centre had been Greyfriars Lane; much to the discomfort of a visiting Royal on one famous occasion. Money for the work was paid partly in tolls but also, rather neatly, by a sixteen thousand pound fine taken from the Weavers' Provident Union[28]. One might suspect some underhand machination on the part of the local employers at work.

Most important roads leading into Coventry were turnpiked in the eighteenth and early nineteenth centuries. Competition from the railways later placed turnpike trusts under increasing pressure and a process of deturnpiking began. One of the last roads to be opened was the Kenilworth Road, as late as 1872. Worth a special mention is the building of the first national highway route in the country, from London to Holyhead, constructed from the need to keep control of Ireland. A new and straight section of this road was built from Coventry's city centre to Allesley, the present day Holyhead road. Yet there was a penalty to pay for this as the increasing volume of traffic added to the congestion in Coventry's narrow, central streets

The Highways Act of 1835 imposed for the first time a duty on the Local Authority to appoint a paid Surveyor to deal with its roads; additional powers were granted in the Highways Act of 1862. Yet progress in road improvement remained slow, largely due to the cost of funding it. An important and essential contribution was made when at least the administrative responsibilities were more clearly defined by the Local Government Act of 1888. This Act made counties and county boroughs the Highway Authorities for most of the country's roads. Coventry was fortunate to squeak into the county borough category at the last moment by virtue of its increased population. Significant progress however was only made when the Government finally conceded the fundamental sticking point of adequate funding and introduced a limited grant system in 1909. The Ministry of Transport was established in 1920 and in the 1930s the dynamic Hore-Belisha[29] introduced a nation-wide classification system which attracted a realistically generous grants system, from 25% to 100%.

Trunk Roads attracted a full grant and this provided the funding to meet the need for a new road to deal with the increasing volume of traffic travelling between London and Birmingham. In 1940 the Coventry Bypass (A45) was started and became open to traffic at the end of the Second World War; during the war it had been used as a tank park. The main roads in Coventry were slowly improved in a piecemeal way, particularly when benefited by government grant. Yet many of the city's roads remained stubbornly rural in character for, though they were 'ancient highways', they were not selected for the magical grant status. Eastern Green Lane is probably one of the last examples of busy roads which had to languish, unimproved, for many years. Similarly many 'private streets' were

unmade up when developers avoided street construction costs. By the late 1970s however most of the city's roads had been improved and from that date legislation was sufficient to ensure that all roads were adequately constructed.

The Central Area Pre-War Development

During the first part of the twentieth century, improvements were carried out on the town's radials to deal with the developments arising from successive boundary extensions. This process was external to the centre of Coventry which still retained its medieval street pattern. Here change was slow for while the streets were narrow and inconvenient they were prosperous areas with high fronting site values. This central dichotomy of street congestion being viewed as an indicator of prosperity remains at the centre of resistance to change today, particularly among many of the business community. It was certainly at the centre of peoples' concern, at every level, when Coventry started seriously to consider the concept of traffic-free precincts.

In 1925 Ernest Ford was appointed to replace the industrious Joseph Swindlehurst. The latter had served the community well in his role as architect and engineer to the many public service facilities provided during his time in office. Apart from roads and sewers, he had built public housing, a public abattoir, a central fire station and many other ground breaking services that became available to the citizens of Coventry.

Ernest Ford when he was appointed was not only a civil engineer of some experience but he was also a qualified town planner and made responsible for architectural services. He was immediately required to produce a Town Planning Map to deal largely with the suburbs but he was required specifically to exclude the city centre at this stage. In 1920 Coventry had promoted a Local Act involving a number of city centre improvements and Ford was given responsibility to undertake these works.

His brief led to the major reconstruction and clearance programme started in 1930, involving the construction of first Corporation Street and then, Trinity Street, and the widening of High Street and The Burges. These streets were considered very progressive for their time not only for their role in providing a commodious bypass for traffic around the city centre but also for at least two

other important reasons. The new streets provided the opportunity for prestige shops and offices to be built along the newly created frontage. Furthermore, the substantial population displaced by the clearance involved, was moved out to join the huge numbers of immigrant workers arriving in Coventry at the start of an economic boom which was to drive up the population of the city to over 300,000 in the next four decades.

The start of this irrevocable change and particularly the loss of parts of the old city was not to occur without some expression of regret. Levi Fox[30] must have expressed the feelings of many old Coventrians when he reminded them of, *'the narrow cobbled streets, with central gutters flanked with irregularly shaped shops, with their half timbered gables and finely carved barge boards'*.

Butcher Row c.1930

In looking back on these pre-war endeavours, two conflicting points may be made. In their favour, Trinity Street and Corporation Street were both successfully incorporated in the post-war plan of the central area. Less certain however was the destruction of streets and buildings between the Cathedral and Broadgate; Butcher Row, Little Butcher Row, the Bull Ring etc. Called at the time, 'Shambles', like York's, the destruction may be regarded as the first step in Coventry's failure to exploit the city's history, so contributing to the substantial failure to establish this ancient city as a major tourist attraction today[31].

In 1935, the City Council, in order to face their mounting town planning problems, set up a Civic Sub-Committee, to deal not only with increasing congestion but also to address the problem of inadequate municipal buildings. The list was endless; the need for a central police station, courts of justice, an art gallery and museum, a bus station and polytechnic facilities. The Town Clerk, Frederick Smith, expressed the less than pro-active view that the best policy was '*to prepare, as occasion arises, town planning schemes - - - -*'. At the time, the main problem was seen to be the prohibitive costs of compensation

The problem however was becoming acute, exacerbated by Coventry being chosen by the Government as a major part of its urgent armament programme, to meet the growing threat of war. Some thirty thousand workers and their families had driven the city's population up to two hundred and fifty thousand by 1939. The city was running out of ideas. Problems were felt to be too great. A Mayor of the time joked, it is said, that it might be as well to wait for the bombing to solve this problem! This solution was only too tragically to be fulfilled in Coventry's near future.

At national level, the attitude towards town planning was still largely dominated by the overwhelming problems of improving the impoverished and insanitary conditions prevailing in many of the country's industrial cities. The thinking of the professional establishment, in the relatively new specialism of town planning, had been dominated by the ideas of Ebenezer Howard[32] and the Garden City principle, now seen by most as fairly remote from the realities of city problems at that time. There was one area of agreement however and that was the urgent need for new comprehensive planning powers and legislation, starting at national level, to halt the continuing industrial sprawl of our cities.

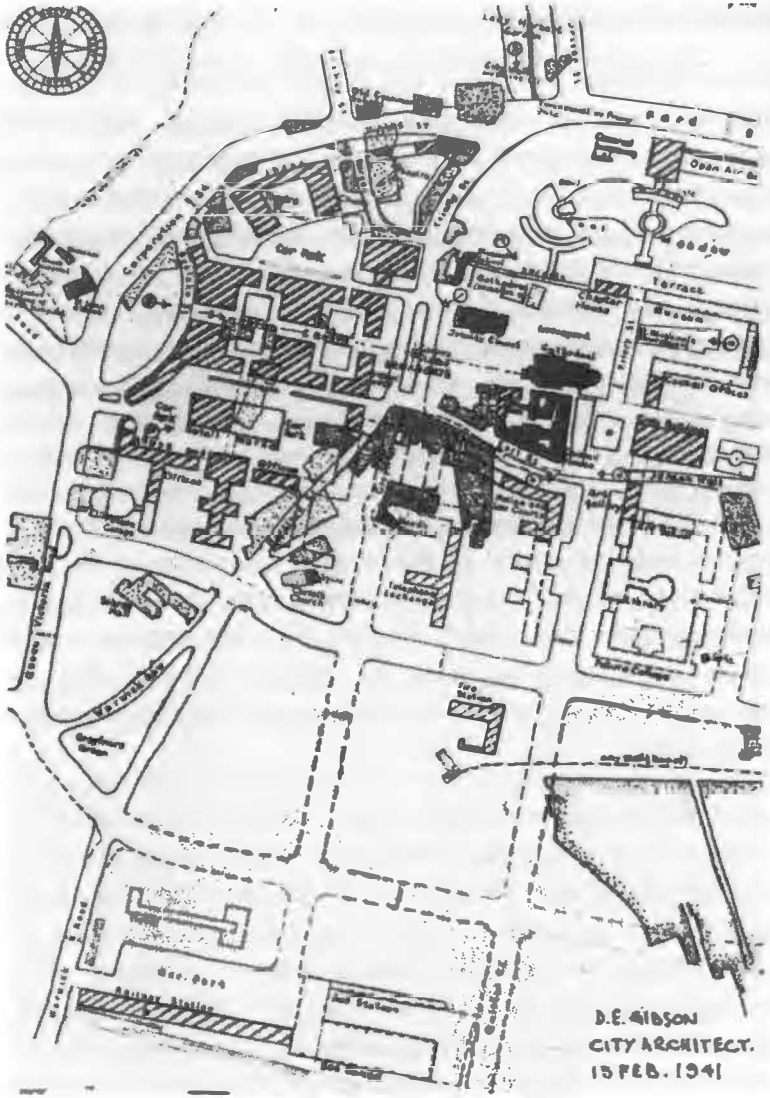
In 1938, Ford introduced a prototype Master Plan for the Central Area. He referred to '*quieter and more intimate places*' with '*broad vistas and grand spaciousness between Broadgate and the Cathedral*'. His plan envisaged, among other things, a large traffic island in a substantial cleared space in front of the Cathedral, with a statue of Lady Godiva, on a raised dais, in the middle. This proposal, of marked similarity to what was constructed after the war, was rejected at the time as too costly.

In 1938 an important new figure was to enter the debate on Coventry's re-development; an arrival which would change everything. Donald Gibson, a young graduate of Liverpool university was appointed to the new post of City Architect. Until this appointment Ernest Ford had been responsible for the city's architectural work. Gibson recruited a new department of young architects, determined to establish their newly acquired role. A team was formed, headed by the city's first Principal Planning Officer, John Marshall, with a brief to produce a co-ordinated scheme of new civic buildings; a model was included in the brief, for display purposes. He also set about raising public awareness of 'planning and design consciousness' and succeeded in holding an exhibition in the summer of 1940.

This new drive and enthusiasm was communicated to certain of the key Councillors and was crucial in the struggle for power in the respective departments of Ford and Gibson and ultimately in the choice of the final post-war Redevelopment Plan. When the Blitz destroyed large parts of the city mainly on the nights of November 14th 1940 and April 8th 1941, the City Engineer and the City Architect were invited to join forces to produce a new plan for the city centre.

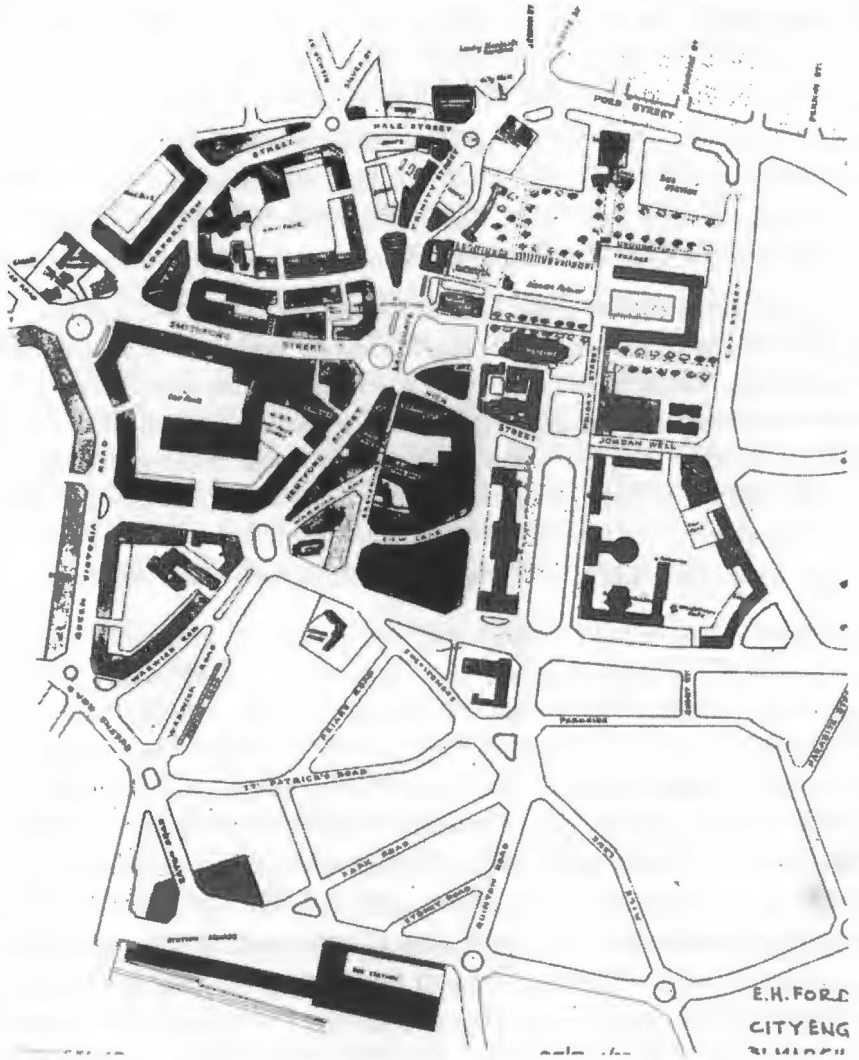
Post-War Reconstruction

Within a month of the first Blitz, 7a deputation from Coventry went to London to see Lord Reith, Minister of Works and Housing. The meeting was on the initiative of Alderman Hodgkinson[33] whom most regard as the principal political driving force behind the innovative proposals contained in the central area



Gibson's Plan for City Centre 1941

planning of the city centre over the years to come. The deputation took with them two sets of proposals. The two Chief Officers had tried hard to work in harness as their political masters had requested but found in the end that their differences were too great to be reconciled. Two observations, from this distance in time, I think deserve comment. A powerful Labour Party allowed two plans to be presented to a Minister which shows the genuine uncertainty at



Ford's Plan for City Centre 1941

the time; and the men responsible for a city devastated on Stalingrad proportions, tired and emotionally drained, undertook the journey to London nonetheless. They surely deserve our admiration and respect for such a tremendous effort.

It would seem that Ford, no doubt still smarting from the appointment of a City Architect, placed great emphasis on the rapid restoration of business and rateable values. His proposals were based on his 1935 plan which favoured the retention of the street pattern to the west of Broadgate, incorporating the widening of Smithford Street, with a widened Hertford Street leading to the railway station. He also placed greater emphasis on the preservation of old buildings such as Ford's Hospital which he wished to retain in its original position. The City Architect, on the other hand, favoured the broad brush approach, incorporating entirely new ideas.

The Ministry's comment at the time on the two plans was, '*one suffered from some lack of imagination and the other too much*'. An Inspector advised that a compromise, based on the best of each, would be acceptable. Lord Reith, however, shortly after the meeting indicated his inclination with a letter which included '*proceed with your wider plan and not just your conservative one - - - - you are entitled to form an optimistic conclusion about future help*'. In his autobiography he was to write '*I would not allow this high-powered delegation return to their battered city with a tale of Whitehall grunting and waffling*'[34].

Hodgkinson returned to Coventry with enthusiasm and zeal and assured his colleagues '*we shall get every assistance from London*'. On February 15th 1941 the Council adopted Gibson's plan, by a large majority. Two days afterwards, The Midland Daily Telegraph (later The Coventry Evening Telegraph) sought to convey the plan to the citizens, or to confuse them, with an article headed, 'What did the City Engineer Propose? Alternative to the City Dream Scheme'[35]. It stated that Greyfriars Lane and West Orchard would have been retained in Mr. Ford's plan. Even the line of Derby Lane and Hill Top would have been preserved, if only in the form of paths through ornamental or terraced gardens on the site of the old Priory ruins. The City Engineer also retained Warwick Row, Greyfriars Green and The Quadrant. Importantly, Ford could not countenance the loss of Hertford Street. Gibson described the proposals disparagingly as '*street improvements*'.

It was the City Architect's contention, according to the report, that the new Coventry should not permit itself to be handicapped by the vagaries of haphazard medieval planning. Under the sub-heading, 'Improvement or Clean Sweep' the article concludes, '*The Architect has tolerated no barriers, has refused to concern himself unduly with the preservation of ancient features, has disregarded the line of ancient streets insofar as they complicate his scheme and has not permitted question of cost to cramp his inspiration*'. Almost certainly this article is deliberately provocative, but it probably does contain the essence of feeling, at the time, behind the contrasting concepts.

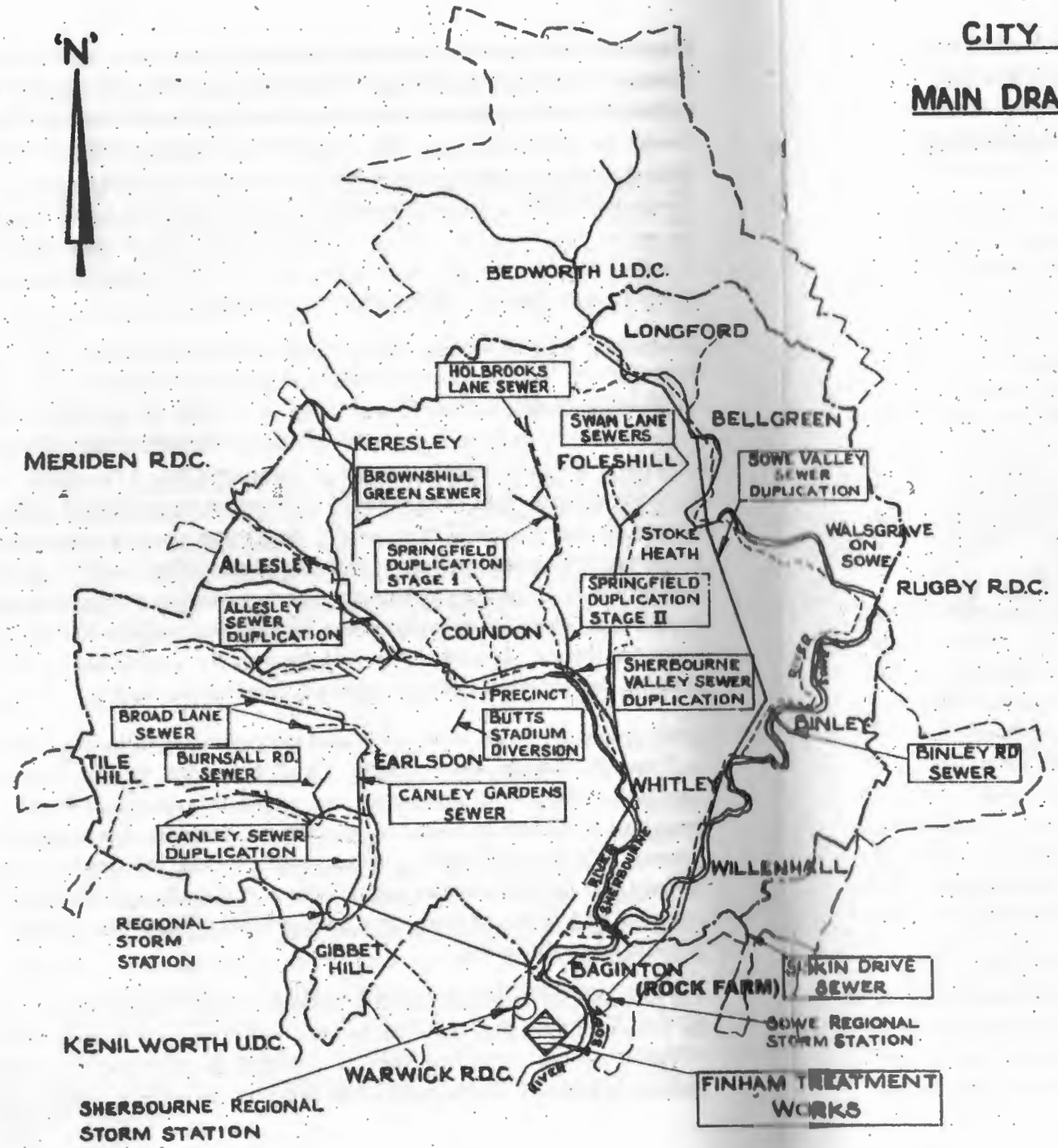
In retrospect, it can be seen that Gibson's overall plan for the city was modified over time. A great number of the features recommended to be preserved by Ford were indeed retained and can be seen today. It is ironic that the Millennium Project, currently under construction, even contains the gardens and site of the old Priory. Kenneth Richardson writes in 'Twentieth Century Coventry', '*It is important not to see E.H. Ford as a man merely trying to put the clock back, to rebuild the old city around its services*'[36]. Ford's plan was to be regarded as conservative; his prime purpose was to rebuild the city so that it would work and also be 'noble'. He had no problem accepting the pedestrian precinct principle contained in Gibson's plan but the rest of his proposals had been on a far less monumental scale. It must also be said that once the Council had made its decision, Ford loyally carried out his duties as Joint Planning Officer[37].

Ford's proposals bore the same professional stamp of those which were adopted in Plymouth, Southampton and Bristol. In all these towns the City Engineer remained in charge. All of these schemes served their purpose in their way, applauded or derided, according to taste, but one thing they now all have in common. Their main shopping streets are traffic free and like Coventry, they suffered from the dreary architecture of the time. Perhaps the wise old Ministry Inspector, back in the war days, knew his suggestion of 'best of both schemes' would be adopted in the end.

The Blitz angered the nation and the devastation wrought awakened interest in the process of town planning as an essential part of post-war reconstruction. Coventry was one of the first towns to be hugely damaged and it attracted nationwide attention. Yet the path to redevelopment was not to be a simple one.

CITY OF COVENTRY

MAIN DRAINAGE CAPITAL WORKS



KEY

CITY BOUNDARY

ADDITIONAL AREAS DRAINING TO COVENTRY SEWAGE WORKS

EXISTING MAIN SEWERS

RIVERS AND MAIN BROOK COURSES

RECENTLY CONSTRUCTED AND PROPOSED TRUNK SEWERS

SCALE

0 ¼ ½ ¾ 1 1½ 2 MILES.

REVISED JANUARY 1967

Problems started immediately with the sacking of Lord Reith shortly after Coventry's deputation, largely because Churchill did not like him. This dismissal of an able and interested Minister, followed by the replacement, Lord Portal[38], did not help the cause of town planning, at a time, understandably, when so many other more urgent problems had to be tackled.

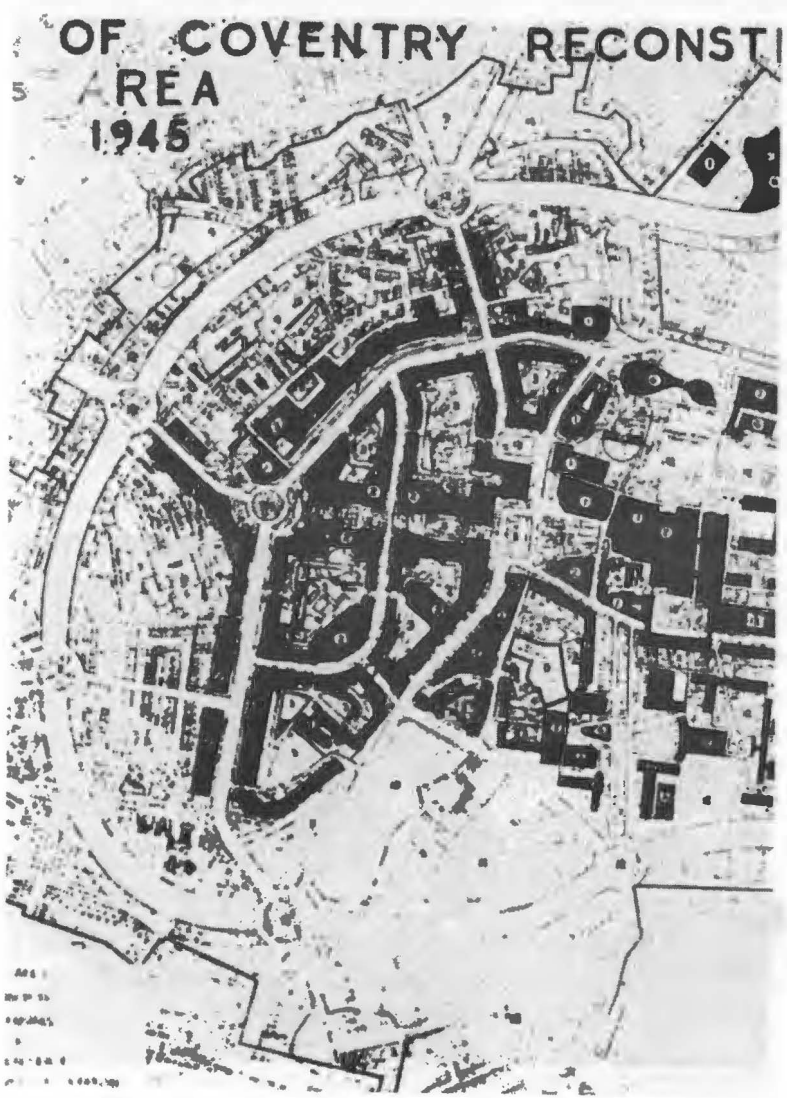
Coventry's proposal had not been received entirely uncritically in London. Concern was felt at the scale and boldness of the proposals and the apparent lack of consultation with the business community. On the other hand, the Government did not wish to be seen in any sort of public confrontation with heroic Coventry. In 1945 the Minister's Planning Officer commented, '*They spent years trying to convince Coventry that a long term plan can't be produced in three months, at the height of the Blitz, without consulting outside interests*'. A few words are also needed to describe the Government's move from rash wartime support and promises to a rather more measured one of economic prudence and concern for private interests, at the end of the war.

Another Government concern was the lack of professional technical consensus on how to tackle the rebuilding process. Town Planning was a young profession, finding its way and often torn between modernists and traditionalists, as evidenced in Coventry.

In the city confidence remained high, the Council rightly discerning that a unique opportunity had been offered by the fates and there was a will to ensure that it would not be missed, none more so than among the local politicians, led by Hodgkinson and the professionals, led by Gibson and his team. Additional professional allies had come on board; the newly appointed Town Clerk and City Treasurer, Barratt and Marshall, both men of great ability and stature and both anxious to proceed with the bold proposals. This support was quite contrary to their predecessors, Smith and Larkin, both men of outstanding ability who had made a great contribution to local government. They had opposed the proposals, largely on the grounds of cost, and presumably had supported the more conservative proposals of Ford. Both, no doubt, were men of their time.

It must be reiterated that a more cautious approach was quite understandable, having regard to the dire straits of the country immediately after the war. There was an immense shortage of building material and eleven thousand people were on the housing list in Coventry alone. The Government was increasingly

showing a lack of enthusiasm at such a time to Coventry's plans which were perceived to be on such a lavish scale. The Council however was sustained by knowing that national interest remained at a high level. Even more important was the perception that the citizens were still behind the building of their 'dream City', updated by 1945.



Dream City 1945

Work started in 1946 and in 1948 Princess Elizabeth opened Broadgate Island, complete with Lady Godiva on her dais. Shortly after this triumphant occasion, the Council embarked on the first phase of development. Although the Council plan had been firmly established, the Government continued to carp at its lavish scale for many years to come. Many compromises had to be accommodated. In the beginning a requirement to have a north/south road across the precinct was a major issue. Yet as implementation of the scheme proceeded, the massive programme of works was applauded and praised. Commercially the Precinct was a success. The photograph below shows work in progress[39]. The Council had astutely kept control of most of the freehold and kept ownership of much of the development. The Multiples came and added to the success. Arthur Ling, Gibson's successor, even defeated the north/south road at the last moment and the controversial Block B was built over Hertford Street.

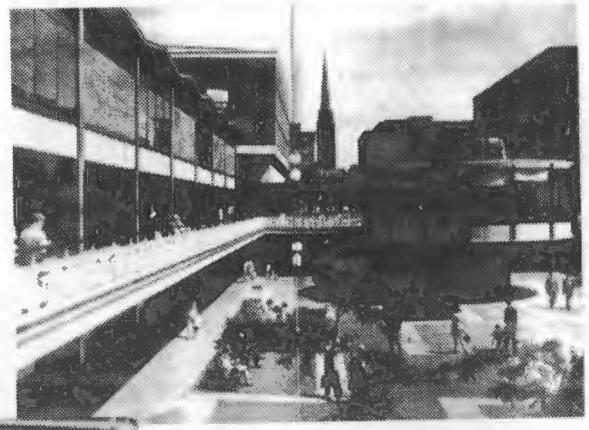
One of the final arguments was over the alignment of the Inner Ring Road which prescribed the limits of the Central Area. Even this issue, in the end, went the City's way when the exhausted Government department agreed that it was a traffic matter and therefore should be dealt with by the Ministry of Transport. It was finally agreed to accept the Council's Central Plan.

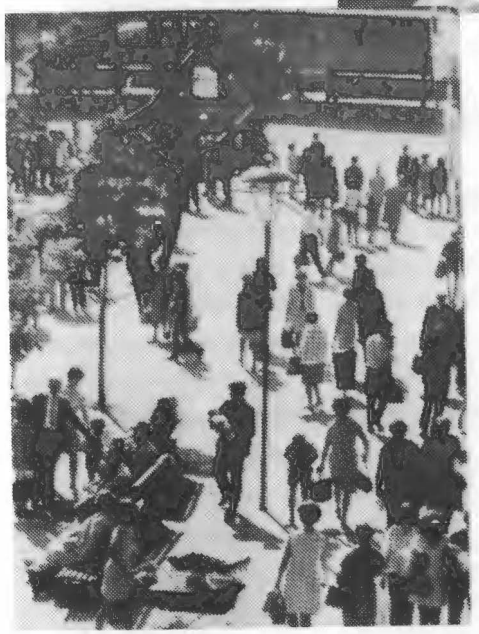
The last view of Smithford Street and culverting the River Sherbourne

Broadgate Island opened 1948

From the perspective of 2004, a cooler view may now be taken of Coventry's postwar redevelopment. It certainly attracted the attention of the nation, even the world and achieved great acclaim. Among its many successes was an Urban Development Plan which caught the public imagination and contributed both to national morale and local civic pride at a time when the nation's spirits needed to be lifted. The plan inspired a great deal of successful innovation; a post-war civic theatre, a cathedral in the 'modern mode' replacing an ambitious design, in Gothic style, by the eminent Sir Giles Gilbert Scott, and a major post-war railway station, ahead of its time.

It must be remembered also that these great successes formed part of the post-war goals of an inspired political machine. It was intended that Coventry should be 'a people's city' not just in the central area but also in its civic housing and its public education system. Coventry won many of the planning and architectural awards of the time.





The Lower Precinct 1970

The great achievement of the period is caught in the two photographs of the Lower Precinct c.1970. The 'Dream' has triumphantly materialised, aesthetically pleasing and accessible to the people. The moving picture of the young man holding his baby (above) in the centre catches the mood of optimism and pride, inescapably nostalgic and innocent.

Saki[40] however said, *'Never be a pioneer. It's always the earliest Christian who gets the hungriest lion'*. Whilst the Precinct System continued to trade with national success for many years, the view by many is that its original aspirations were not fully realised[41]. The architecture failed to live beyond its period. The buff bricks, carefully selected by Gibson as being in keeping with the Midlands of George Eliot, have been described as having a pristine monotony. This monotony and lack of excitement is now shared, in my view, ironically, by the equally lauded Lijnbaan in Rotterdam, conceived and built in the same period. It was a period of poor construction, shoddy finishes and leaks exacerbated by complicated structures which had to be constructed piecemeal, at the various stages.

The ambitious car parking system, taking the cars to roof top level, was flawed. The concept that every car park should be linked at high level, to the Inner Ring Road, was quickly abandoned as economically unrealistic. Security and access became a problem and certainly inhibited any chance of a socially successful night life and café culture, now considered essential to our prosperous middle class lifestyle. Professor Hasegawa, in his book[42] comparing the recovery of the blitzed cities of England, summarises well, in his Foreword, the limitations of the Coventry endeavour:

'The post-war Labour Government had started out, apparently committed to bold city planning and speedily retired into compromise and muddle. But in Coventry it experienced fewer constraints, largely because of a united political machine and experiencing a momentum for change independent of the experience of war. It was a quite untypical near-success story, within the larger narrative of the muddle and conflict in other cities. A New Jerusalem was completed and, on completion, like most such endeavours, was found to be out of time'.

THE INNER RING ROAD

The Joint Planning Officers, Ford and Gibson, had agreed to incorporate in the 1946 City Plan, '*a defensive ring road to make it easier to go round the city centre than through it*'. The Inner Ring Road, at that time, was envisaged as a dual carriageway with cycle tracks and footpaths, one hundred and ten feet wide, encircling the central area. The road included nine surface roundabouts at junctions with external radials and connection to seven internal radial roads. The alignment of the road followed existing highways over a length of one mile and the remaining one and a quarter miles ran through decaying residential and industrial areas which required comprehensive redevelopment. The location of the intersections required new alignment for four external radial roads and three internal radial roads and the severance of fifteen existing roads.

Despite the acceptance of the inner ring road as an integral part of the central area reconstruction, the economic difficulties of the immediate post-war period resulted in delaying its inclusion in the early redevelopment programme. Serious detailed planning did not start until the 1950s. Importantly however building that did take place adjoining the proposed road was adequately controlled and did not significantly prejudice its later construction. It was entirely fortuitous that the additional width required in the final design was achieved by the inclusion of the cycle tracks and generous verges in the early plans.

A retrospective examination of the discussion between Council Officers, elected members and Civil Servants, shows some duality of thought in the development of the scheme. On the one hand the road proposals were justified as a necessary adjunct to current development and on the other hand its justification was in its larger role as an important primary distributor in the city road pattern. As a result it was not until the late 1950s that serious consideration was given to detailed studies of the traffic it would have to carry. Consequently it was no accident that the first two stages selected for construction, on the line of Ringway St. Johns and Ringway St. Nicholas Street, including cycle lanes, 1959 1960, could be related to current redevelopment. They could also be seen in the traditional local context of a local improvement to existing highways which happily was coincident with the line of the proposed ring road.

A comprehensive report was prepared for six stages of construction. This included a highly optimistic programme for a start to be made in 1959 and the whole ring to he completed in six years. The Ministry of Transport, in 1957, reaffirmed the Government's support for the scheme as a whole and recognised that the 'blitzed city' status lifted the scheme above competition for grant.

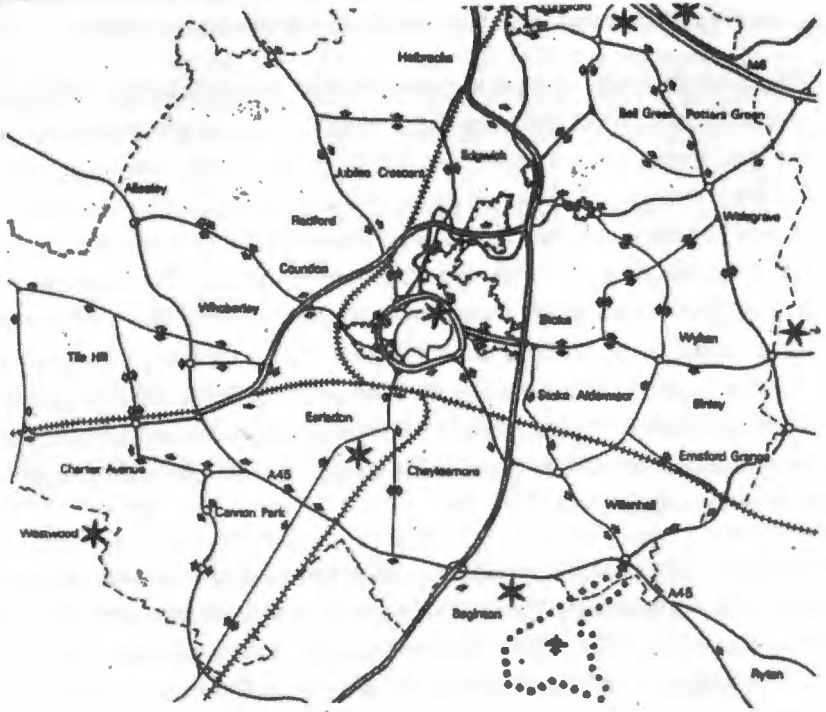
This somewhat tentative start was made against a background of considerable uncertainty which arose from two major factors. No quantitative information was available on the exploding vehicle usage in the city (at least seven and a half percent per annum) and no hard design data was available on the traffic capacity of urban road systems at the time. In the USA some work had been carried out but none was applicable on the scale of Coventry's proposals. It was exciting times! A major scheme involving several million pounds had been embarked upon, involving the extensive demolition of property and peoples' homes, at least seven hundred houses. City Centre roads were being closed to accommodate the development taking place. Something had to be done and done quickly and at the time it was seen as the City Engineer's problem.

In 1960 recognition was given to the need for more adequate traffic information and one of the first Direct Interview Surveys in the country was carried out on a cordon line, immediately outside the line of the proposed inner Ring Road. Drivers were startled to be stopped on this invisible cordon line and asked from where they had come and their destination. From this data a prediction could be made, for the first time, of the likely traffic volume that could be anticipated on the ring road in twenty years ahead, if it were to be built! The details of the Survey were set out in the Technical Report to Committees on December 21st 1960[43]. It provided an assessment of the volume of traffic for a design period of twenty years to 1980. There remained however the need to test an alternative design to roundabouts which would accommodate greater traffic flows and thus reduce journey times.

It was first established that it would be possible geometrically to introduce grade separation (underpasses and flyovers) at junctions but there would be very short weaving distances of three hundred feet between some junctions - as current users well know! It was ascertained that no one in Europe or the USA had attempted such a configuration. By extraordinary good fortune the national

Road Research Laboratory, also desperately trying to come to terms with the national epidemic of traffic volumes and shortly to recognise this by changing its name to the Transportation and Road Research Laboratory, had produced a formula for 'the traffic capacity of weaving sections of roundabouts'. The City Engineer decided the formula was applicable to the weaving sections of the Ring and bravely declared it could be built with grade separation and - it was likely to work[44].

Despite this assurance, in 1960 another serious assault was made on the Ring road concept. The Plannning Department took up the argument, gaining ground at the time, that Ring Roads were outdated and formed undesirable physical barriers around living areas. High capacity roads should be built along 'desire lines' ie: major traffic flows, tangential to the city centre. Leicester is an example of a local authority which accepted this argument at the time and it is an interesting subjective driver judgement that can be made today as to who was right!



Development Plan Review Policy Map 1961.

The Council was confronted with the urgent need to decide the way forward. A decision was needed on the choice between total commitment to the proposals as they stood, with such modifications as might be practicable to improve emergent standards or abandonment of the scheme and its programme, pending the collection and evaluation of further data. The strong factors supporting proceeding with the scheme as planned were:

1. growing traffic demand
2. time lost in delay
3. the availability of resources
4. consequential delay in redevelopment
5. rising costs
6. reduced public safety
7. the public support for the complete Inner Ring Road project on the evidence of the successful completion of Stage 1.

A far more comprehensive city wide traffic survey was undertaken in 1961 to form part of the Quinquennial Review of the Development Plan[45]. It was designed to evaluate alternative road patterns for the whole city and to provide traffic data for highway and other land use planning.

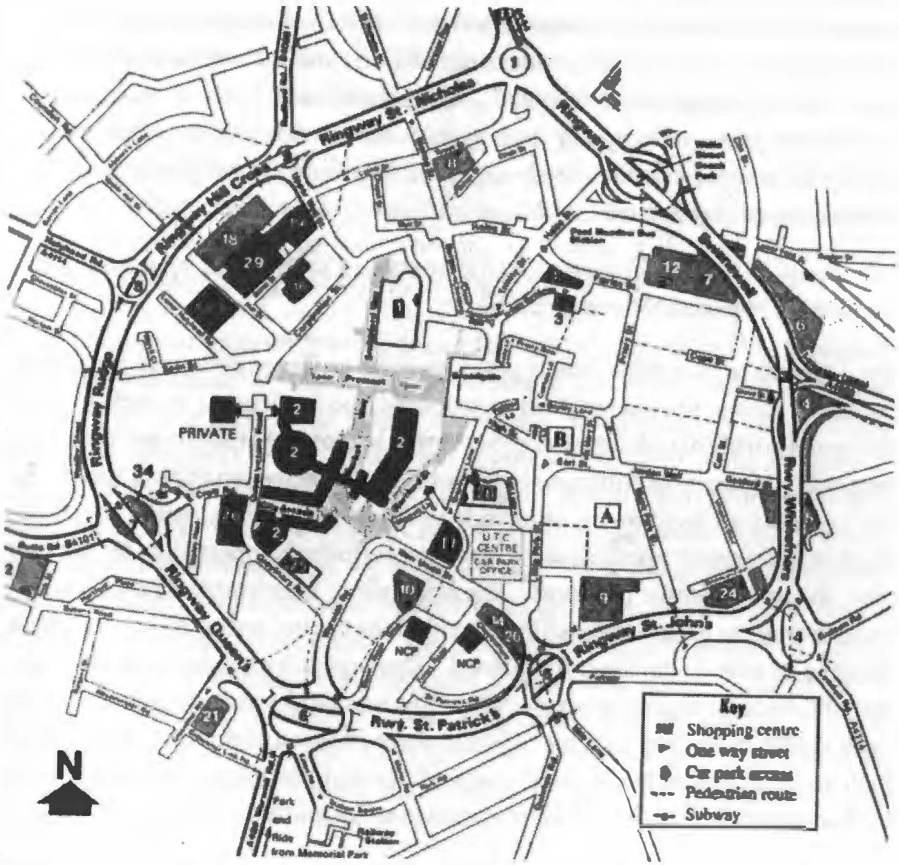
It must be said that the technical development of traffic engineering or its grander title of 'Transportation Planning' had developed with astonishing speed in universities and technical departments. All professions were keen to participate in the excitement of a brand new field of expertise. Economists and geographers saw an opportunity for fulfilment in their otherwise vague profession; planners saw the golden opportunity to demonstrate for the first time the chance to add numeracy to a new profession which up to that time was regarded by some as an intuitive branch of the social sciences. Civil engineers, with few exceptions, plodded behind with their usual Victorian certitude that in the end it would all be demonstrated as froth, obscuring the real task of getting on and building things.

Coventry, always wishing to stay in the forefront of civic endeavour, was to embark on a decade of extensive and expensive traffic studies, including a specialist team and study groups. It led to masses of papers and reports most of which ended up as useful doorstops! The 1961 Survey, however, was an

impressive volume of work and did give the Council the resolve to confirm that a City Road Pattern would be formulated as part of the Quinquennial Review. It would incorporate the Inner Ring Road as an integral part of the road network. At last the agonising was put to one side and a final commitment was made to its construction.

The construction of the Inner Ring Road proceeded to its completion in 1974[46]. It proceeded not as originally planned, in six stages from 1959, at a cost of one and a half million pounds but over fourteen years the final cost had risen to fourteen and a half million pounds. The order of construction was as follows:

Moat Street Flyover, Ringway Rudge & Queens	1962
Ringway St. Nicholas & Foleshill Radial	1963
Ringway Hill Cross & Radford Spur	1964
Butts Radial.	1965
Ringway Swanswell, Ringway Whitefriars, Leicester Radial	1968-9
Ringway St. Johns & Ringway St. Patrick's	1971-4



The Inner Ring Road 1974

THE CITY ROAD PATTERN

A city road pattern was developed from the 1961 Traffic Survey and was incorporated in the Review of the 1966 Development Plan. It included essentially a pattern of new urban motorways in the form of an inverted Y within the arms of which was sited the inner ring road, and also the improvement details for certain existing major roads. The orientation of this Y pattern was determined principally by the heavy peak hour work journeys between a) employment generators situated to a marked degree on the periphery of the city and b) externally generated city-bound traffic.

The totally externally generated traffic contained at the time, relatively small elements of bypassable through traffic.

The Council at this stage was warned by their traffic experts that despite its extensive nature, the road system as proposed was inadequate in itself to cater for the unrestricted peak flows in 1981. It was accepted that additional measures would be necessary to eliminate overloading and congestion at peak times. At this stage, as all good organisations do when in doubt, the Council set up yet another study group to examine the problem, including, importantly, for the first time, the role of public transport. The principle of interconnected roof top and multi-storey car parks was reaffirmed within the central area with access where possible directly to the Inner Ring Road. This was still regarded as an essential part of Gibson's original concept. While this was successfully introduced in the early stages of the Precinct, by 1970 the sheer physical complexity and cost of such an arrangement led to more modest links with the inner Circulatory Road by then established as the main circulation road within the central area.

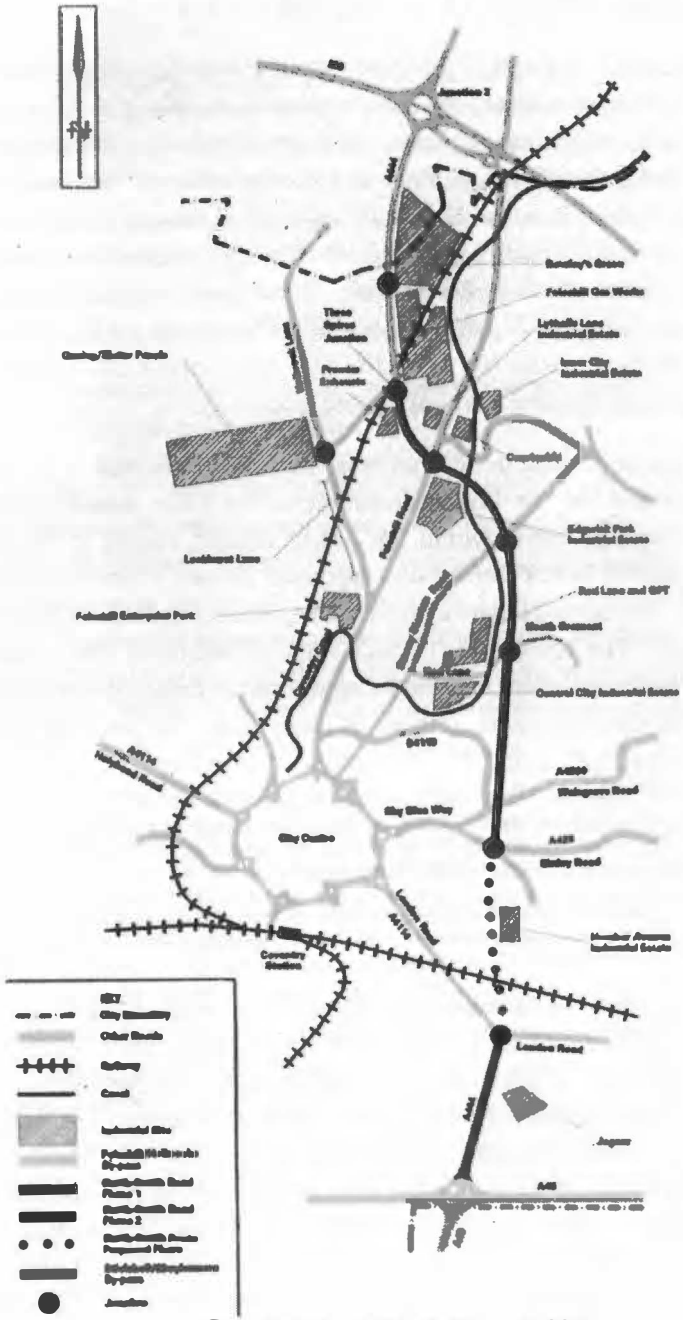
It should be noted that there were critics of the ambitious plans emerging from these traffic studies. More often than not they were accountants, led by Derek Hender, appointed as City Treasurer in 1964 and Coventry's first Chief Executive in 1970. He and others argued, not unreasonably, that the proposals were unrealistic in terms of their cost/benefit to the community and did not take into account the regional and national interests and the economy as a whole. Even more significantly, the public had had enough. The compulsory acquisition of land for the Inner Ring Road, from personal experience, went through with only limited opposition. One was aware of the great public will to complete the redevelopment of the central area and the Inner Ring Road as

quickly as possible.

When the public became aware of the Urban Motorway proposals, however, the goodwill was no longer evident. My recollections of attending public meetings at the time, to make people aware of the road proposals which would affect their homes, were that for the first time there was considerable hostility and anger. The so-called Gosford Spur, the Hearsall Bypass, the University Valley Route were names we had great fun in concocting but they were received with strongly expressed opposition, meeting after meeting. The Council, and particularly the elected members such as Alderman Hodgkinson who had borne the heavy burden of redeveloping the city after the war were, one feels, pained and surprised that the public goodwill had changed in this way.

In fact these warnings were to be even more profoundly realised in Coventry with the enactment of the Local Government Act 1974 which relegated Coventry to Borough status within the newly created county of the West Midlands. Ironically Derek Hender was appointed the new Chief Executive of this Authority. No longer a Highway Authority, Coventry had lost its privileged status for money. The new County Council stretched westward from Coventry and included Wolverhampton, the Black Country and an enlarged Birmingham. All these urban concentrations, starved of funds since the war, now placed Coventry at the back of the queue. The process of relegation went even further when the newly elected West Midlands Councillors attended meetings in Coventry personally to receive some indication from its citizens of their displeasure with the proposals. Only one major scheme, Allard Way, was to be carried out in Coventry during the lifetime of the West Midlands County Council, 1974 - 1986.

Coventry had just been able to squeeze in construction of the Stivichall/Cheylesmore Bypass to the south of the city before the creation of the West Midlands County. It linked the new Kenilworth Eastern Bypass to London Road and the Inner Ring Road. When the Council had regained its Highway Authority status it found a much reduced roads programme. The North/South Route did still exist to a considerably reduced overall capacity. The western arm of the inverted Y, the controversial University Valley Route, had been abandoned.



Coventry North/South Bypass 1997

The Council was able to resume its roads programme with newly defined strategic objectives, the most important of which was the need for job creation, retaining and supporting existing businesses and attracting new enterprises. The start was Sky Blue Way, in 1988, improving access from the Inner Ring Road. In 1989 the Department of Transport opened the Coventry Eastern Bypass for through traffic passing from the A45/46 to the south/east to the M6/M69 in the north/east of the city. To the north, in 1990, an important step was taken to relieve congestion on the Foleshill Road, at last, by linking the Bedworth Bypass Extension (A444) and the M6 to Holbrooks Lane, near the Dunlop Factory. In 1996 and 1997 phases 1 and 2 of the North/South Routes were opened, providing a high capacity route from the north to the centre of the city for the first time.

These major road schemes may well be the last in the city's history. The national mood, for the time being, has turned against road building. The final link between London Road and Binley Road on the North/South Route may never be completed; the predicted traffic on this section was always regarded as having the lowest demand. Yet the overall road pattern of the city that has slowly evolved over time can be regarded by most people as a system which offers the chance of meeting the uncertain demands of the future.

THE CITY ENGINEERS DEPARTMENT 1889 -1992

The Municipal Reform Act and later Public Health Acts, had given Boroughs major powers for the provision of public services whose development I have described in the preceding chapters. To supervise and execute the necessary public works, the City Council established a new post of City Surveyor. Joseph Edmund Greatorex was the first City Surveyor and an interesting example of works carried out by him, no doubt in response to the flooding caused by the city's numerous water mills, is the River Sherbourne Diversion at Shut Lane Mill. His detailed drawings for this work, together with many of his land surveys, are deposited at the City Archives. Edmund Greatorex was followed in 1863 by Edward James Purnell, responsible, among other important public facilities, for the Whitley Isolation Hospital, opened in 1884.

The provision of these services however often required a level of specialist knowledge and experience which could not reasonably be expected of council servants such as Greatorex and Purnell. The Institution of Civil Engineers, founded in 1818, provided nationally experienced engineers, capable of carrying out major public engineering works which until 1818 had been executed by military engineers, hence the new term, 'civil engineers'. The Council had employed this new class of qualified engineers from 1850; Ranger, Mansergh, Stockton, Millis and Collis. They all came from Victoria Street, Westminster, the equivalent of Harley Street in their own calling and no doubt the City Council considered them outrageously expensive to employ. In 1897, therefore, the Council appointed Joseph Eaves Swindlehurst as their first City Engineer and Surveyor, note the retention of the title of Surveyor. Edward Purnell was moved sideways to become the first City Waterworks Manager.

Swindlehurst was confronted with a massive challenge as he entered his new job. Coventry was expanding exponentially, a similar challenge also to be experienced by his successor, Ernest Ford, in 1925. A huge volume of work needed to be carried out; new roads, expansion of the sewerage and sewage disposal systems and almost every type of public building from Fire Station[47] to Town Hall. In his first Report[48] he stated that his Department consisted of Mr Jenkins, Mr Butterworth and a boy, also two foremen, some seventy six men, eighteen horses and some contractors. He would have been startled to know that

by 1965 the Department had grown to some two thousand employees, plus consultants and contractors. Joseph Swindlehurst was responsible for forty miles of streets and fifty miles of sewers to serve a population of sixty thousand. By 1980, this had risen to four hundred miles of roads, eight hundred miles of sewers for a population of three hundred and thirty thousand. In his Report, Swindlehurst went on to state, *'the roads were in a bad state of repair - sanitation leaves much to be desired'* and rather less compellingly *'our horses are too well fed and are too fat'.*

Report then followed Report. Dwellings for the Working Classes[49] set new standards which led to the first Council housing in 1907 and later extensive developments in Stoke Heath and Foleshill. The Foleshill and Stoke Sewerage Extension led to the provision of public sewerage to the new housing development north of the City, prescribed at the time by the limits of the Sherbourne Valley Catchment Area. Sometimes there was considerable delay in implementing the proposals made in the Engineer's reports. In 1903 the widening of Earl Street took place, it seems embarrassingly in advance of the much delayed Council House construction between 1913 and 1917. Similar patience was required in the implementation of Swindlehurst's 1899 Public Abattoir Report[50] the abattoir being finally opened in 1932 on his originally proposed site, off Queens Road, after examination of fifty alternative sites. From 1902, a series of reports led to the acquisition of the Coventry Brewery site in Leicester Road for the Department's main central depot, with stabling for thirty horse[51].

The Council had also by this time caught the bug of 'refuse incineration and power generation', a bug which lay dormant for a period after the Second World War and re-emerged, in its new location, in the London Road in 1975. Earlier the search was on to find a site for a Refuse Destructor with the potential for providing heat for possibly a Public Baths[52]. Initially the site favoured was Webster's Tip with its opportunity for alternative tipping and a rail link to the Coventry/Nuneaton railway line for the disposal of residue. This site was finally discarded in favour of Bishopsgate Green[53], a site near Sandy Lane Electricity Power Station, owned and run by the Council at the time[54]. The Destructor was opened in June 1910 and it is described in wonderful detail in the souvenir pamphlet[55]. The Destructor compares, with astonishing similarity, to

that now operating in the London Road despite the obvious technological advances. The plant generated steam, piped across the canal, very much in advance, by some sixty five years, of the plant now operating and similarly supplying power, to the National Grid. (Appendix III)

The Engineers Department became part of the fabric of the social structure of the City. It developed an esprit de corps which in its modest way was no less colourful than that of any army regiment. To be in the City Engineers Department was cogent and respected at all levels. It became a family occupation where generation followed generation at the many varied trades and jobs. It was an organisation where larger than life characters became well known by everybody and not infrequently, feared. Foleshill was a lively place on a Friday night! Certainly, in 1948, as a junior engineer, I still caught a whiff of earlier, more rumbustious times, as I dealt with very large men who were approached with some awe and considerable respect. John Rattigan's spontaneous letter to me, given in Appendix I, catches effectively some feel for the atmosphere surrounding these proud, hard working men; a romantic view of the past, perhaps, but very real to me and I'm sure, to others, as we now look back.

In 1924, J.E.Swindlehurst retired and Ernest Hone Ford was appointed as City Engineer and Surveyor. He had started in Walsall and had gained considerable experience at Southport. In 1924 the length of roads in Coventry had extended to seventy eight miles and was to expand by 1934 to two hundred and two miles. The area of Coventry in 1924 was four thousand, one hundred and forty seven acres but following the fourth boundary extension in 1932, this area had extended to nineteen thousand, one hundred and sixty seven acres. This was an enormous increase, vigorously opposed by Warwickshire County Council, but successfully won, largely on the basis of an undertaking to construct a trunk sewer to drain the Sowe Valley[36] and connect it to the new Finham Sewage Treatment Plant which had been opened with great foresight in 1928. The sewer construction was carried out between 1934 and 1937, and was the largest ever undertaken by Coventry Council at the time. Soon afterwards, the main drainage of the Canley Brook Valley completed Coventry's three valley catchment area.

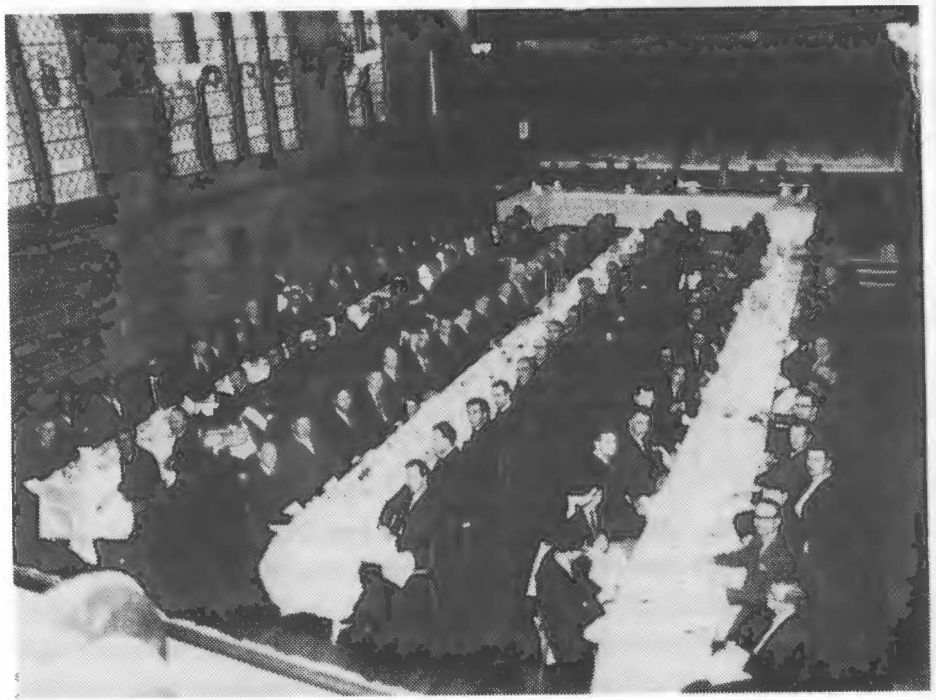
These drainage works, together with major road improvements, and even more impressively, the first city centre improvement of Corporation Street and Trinity Street, represent a huge body of works undertaken within the Department. While the precise numbers of staff have been lost for that halcyon pre-war period, like so much other Council data, following the many post-war Council reorganisations, the technical staff numbers were modest and comfortably housed in the Council House. In 1945, the Council, confident in its aspiration of a City to be reborn from the bitter experience of war, was eager to show that a socialist council was the best means of delivering to the city inhabitants, all public services, by means of its own directly employed organisation. Private sector consultants and contractors were to be employed only for specialist tasks or to deal with the occasional peak of activity. This strategy led to the continuous expansion of the Engineers Department for some twenty years.

In the immediate post-war period, the Design Sections, including a hugely expanded Roads, Bridges and Structures Section, were housed in the old Technical Institute[37] building, standing in splendid isolation on a cleared bomb site, immediately opposite the Council House in Earl Street The building also housed the Joint Planning Department until it moved into offices in Bull Yard. Expansion continued with a Drainage Section established in a terraced house in Cope Street until its demolition to provide a space for the new Lanchester Polytechnic. Between 1952 and 1954, the Leicester Row Depot, including its horses and stables, was abandoned and Bishops Gate Green was expanded with new offices and workshops. The hitherto prestigious Destructor was not fully operated after the war and following a number of incinerated bomb scares it was demolished. By 1988 some seven hundred personnel operated from the Bishops Gate Depot, providing city wide environmental, engineering and security services. Highway Depots were established at Windmill Road, Tile Hill and at Whitley, on the site of the 1902 pumping station.

As major housing estates at Tile Hill, Bell Green and Willenhall neared completion by the late 1950s and the tempo of work on the central area development increased, the Engineers department entered its peak period of activity. The Old Tech was demolished to make way for the extension to the Council Offices and the Department's Design Offices were dispersed around the city centre. The Inner Ring Road team occupied the entire fifth floor of Station

Towers. The Drainage Section, engaged on the massive Sewer Duplication programme filled a floor of Market Chambers. The Traffic Section occupied the first floor of the Gas Showrooms in Corporation Street The City Engineer and his Administration at last overflowed from the Council House and reluctantly migrated to Broadgate House[28]. An interesting impression of numbers can be gained from the photograph taken at the Farewell Luncheon for Granville Berry's retirement in 1968 which was attended by some of the Department's technical staff.

A less successful part of the Department's expansion was the history of its Building Services Division. Set up in the general euphoria of post-war municipal ambitions, a substantial Building Works Section operated from its depot at 961, Foleshill Road and successfully carried out many significant capital building projects. At a crucial time, however, much adverse publicity surrounding some projects, led to a perception of less than successful competition against the private sector. It became something of a political



Retirement Dinner for Granville Berry in St. Mary's Hall.

embarrassment to the Council and to the Department. Certainly, Granville Berry, towards the end of an illustrious career, would no doubt have wished his retirement to have occurred in more relaxed times. The Building Services Division later became a separate Department, to the relief of later City Engineers. It continued to be regarded by many as an unwelcome distraction to the Council for some years.

By 1970, the massive Capital Works Programme, which had made the Department one of the foremost civic design departments, had reached its zenith. Significantly, the Local Government Act, 1974, and the Water Act of 1973 which led to the creation of the West Midlands County Council and the Severn Trent Water Authority respectively, inevitably changed the roles and size of the Department though it continued to have considerable technical functions in its agency role. The West Midlands County Council was disbanded in 1986 after which Coventry resumed its single tier status but the appetite for change in the conduct of public services continued. The strengthening of the central role of the Chief Executive, the creation of de facto full-time Committee Chairmen, together with new legislation requiring public tendering for most services, all contributed to the change which has now taken place. The Department was officially disbanded in 1992. As a nostalgic footnote, it is interesting to record that the Council House switchboard still receives calls asking for the City Engineers Department[29].

APPENDIX I

GENERATIONS OF A PAVIOR FAMILY

Information received in a letter from Mr. John Joseph Rattigan, sent to Mr. Redknap in July 2001.

My grandfather, John Joseph Rattigan, was a Pavior on the Notts and Derby Tramways and towards the end of the First World War, came to Coventry as a foreman Pavior on the Tramways. Three of his sons who were also Paviors, John, his eldest son, my father, joined him when he came out of the army and Jim and Thomas came also. Jim and Tom eventually became General Foreman over the Coventry Maintenance Departments. Two other sons, Herbert and William, were apprenticed as Streetmasons and Paviors to the then Highways Department but later left to become Paving Contractors.

Eldest son (Big Jack), left the Tramways when I was born in 1921. I am John (Little Jack) and he went to work as a Pavior at the Foleshill Gas works. With the development of housing estates around Coventry in Wyken, Radford, Cheylesmore and other smaller ones, there was a great demand for Paviors. My father left the Gas and went for the money as a piece work Pavior for W.H.Jones, Alfred Robinson and many others for as a first rate craftsman he was head-hunted many times. In 1933 at the tender age of twelve years I had to go and work with my father in the school holidays, weekends and evenings, grouting, pointing up and even cutting holes in slabs to fit stopcock boxes. I even got to lay a few courses when the old man went off to the pub, which he did often enough.

After leaving school at the age of fourteen, I went to the Armstrong Siddeley as a shop boy in the body building shop but my dad told mother that I could earn more working with him, so off I went to Paving on the Cheylesmore Estate, I joined the Territorial Army in May 1939 and on September 1st 1939 I was mobilised and the next seven years is history - the Second World War. I was demobilised in May 1946 and went back to paving on the Cheylesmore Estate. The lower part was being developed and prefabs being built; nothing else had changed. Mr. Dean was still Alfred Robinson's Agent, Harold Colgrave was still Clerk of the Works. Yeomans, the haulage contractor, still had horses and carts,

Harrabins were still hauling sand and ashes and the old man was still keeping the brewers busy although he had me now to give him a hand. All construction work was on licence and in November 1946 the licence ran out. We had no more material and the job stopped

Dad and I didn't waste time looking very far for work, the good old Highways Department was always in need of Paviors and we got an immediate start. No question was asked of me, the Rattigan name was good enough and I was accepted as if I was an old mate returning to the Dept. I started on the bus-bay outside the foundations of the previous site for the Herbert Art Gallery and Museum (now Browne's Wine Bar): The Foreman Pavior was Fred Hockton, another old Coventry Paving family and his son Chris was the apprentice. Len Cashmore was the leading Pavior and Ned Eaves an old Coventry prize fighter was our labourer.

In January 1947 we moved to Broadgate to start on the Redevelopment of the city centre and no sooner had we opened up a bit of ground in front of Owen Owen's burnt out store to start on a new line of kerbs, the winter set in. It froze solid and all we could do was to excavate the cellars that had been filled in with wartime rubble and repack them by hand with layers of bricks and hardcore rammed solid to carry the new carriageway around 'Broadgate island'. The bad weather affected most Coventry workers but luckily we were able to employ a lot of them on this cold but welcome task. When the cold period ended and we could use concrete at last, work progressed well.

Fred Hockton, the Foreman Pavior, was a blunt man; no one seemed to like him and he was always leaving things till the last minute and wanting people to work over to get a job done ready for the next day. I didn't mind because with a growing family I needed the money and the job was always something simple, like bedding the cover of a manhole or gully, ready for concreting a bay the next day. I knew that it was for a purpose as Fred always made my time sheet out and I always seemed to have a good overtime pay. I queried it one day in the Council House and found out that Fred wasn't a foreman, he was a penny an hour plus Pavior and if he could get somebody else to work overtime, he was being paid too. I got to like Fred but I never let on. Broadgate was very interesting as we were always digging up the past, finding wells and old middens which old Mr.

Shelton, the City Antiquary, had us dig out while he sorted through the artifacts discovered. One day, while digging through a cellar floor, to reach solid ground, we discovered some tooled sandstone which I thought the old chap would like to see but the engineer said to get it covered with concrete or the job would he held up. So much for archaeology, it could have been part of the old castle?.

When Harry (Bomber) Bromhead came to us from Birmingham (he got the O.B.E. or some such decoration for his work in the Precinct) I left to go contract Kerb Laying on the Coventry By-pass. It was being reconstructed after being used as a Tank Vehicle Park during the latter part of the war which had left it in a right mess. My last Paving work in Coventry was the Stonehouse Estate for Baker Bros before I went to Leamington Spa as a General Foreman for David Thomas and Hill, a subsidiary of A. C. Lloyd a well known Leamington builder. I ended up as Site Manager before ill health drove me into factory maintenance at the Standard Triumph Motors until retirement.

When I look at Broadgate now, I look at the Sett Paving that I did fifty four years ago and its .still there, solid as a rock until progress tears it up and replaces it with something less durable. Thinking back to when I was a child, I can remember dustmen carrying bins on their leather shoulder pads to the horse-drawn carts and the full carts being winched onto the old steam wagons with the fire-box underneath. There is a lot of development on 'Brown Field' sites in progress; the Rolls Royce, Parkside, the Standard Motors, Canley, Alvis at Holyhead Rd, Daimler at Radford, the old Gasworks at Foleshill, the Keresley Colliery and Home fire Plant, and a few smaller ones. The Pheonix Project is progressing quite well even though it is not well received by certain members of the community. I feel that to destroy areas of commerce that bring wealth in taxes, rates and income to utilities and employ people, then replace them with open spaces that bring in no revenue and just become another area to vandalise and strew with rubbish is poor economics.

APPENDIX II

The Lenton's Case Saga.

I joined the City Engineers Department as a surveyor in December 1956. I am sure that the ad' for the post mentioned nothing about sewer survey, certainly Ian Farquhar, the Chief Surveyor, didn't, come to think of it, he didn't ask me any technical questions either! On my first day, assigned to the Main Drainage Section, I was issued with a donkey jacket, overalls, gum boots, but note, no safety helmet! At that time, Mr. Bill Robertson, a senior engineer, was preparing a scheme for the duplication of the Springfield Sewer which more or less followed the line of the Springfield Brook. I went out with him to assist in surveying the manholes along the line of the existing Springfield Sewer, acquiring a few ditties about sewers and sewering e.g. 'They're Digging up Father's Grave to Build a Sewer'. The problem was that the sewer was overloaded. Most days, about midday, a storm water overflow manhole at the junction of Holbrook Lane and Burnaby Road came into action. This resulted in a discharge of raw sewage into Springfield Brook. Downstream of the overflow the brook flowed in open culvert under Eagle Street, at the entrance to Lenton's Factory, bounded by the factory and properties in Springfield Street Further downstream it ran through Cox Street to its confluence with the River Sherbourne in Pool Meadow.

At times of heavy rain, the brook course overflowed its banks and water poured into Lenton's basement, contaminating the textiles stored there. As the riparian owners, the flooding of the brook along their boundary was Lenton's responsibility. The claim they made against the City Council was one of contamination due to the sewage being discharged into the brook which was the Council's responsibility. Lenton's had waited a considerable time for the Council to put things right but eventually decided to take the Council to court. The case was to be heard in the summer of 1959 and beforehand I was directed by Mr. Berry, the City Engineer, to prepare a large scale drawing of the brook-course adjacent to the factory, its forecourt and entrance into Eagle Street It showed the existing manholes on the foul and surface water sewers in the highway and inspection chambers in the forecourt. Cover and invert levels were included but only the cover levels of Lenton's inspection chambers as I hadn't

been able to lift the covers. I also went through old files kept in the Leicester Row Depot and extracted all letters relating to flooding of the Springfield Brook, dating back to the 1930s. These were sent to the lawyers acting for Lenton's on the instruction of Mr. Spurgeon of the Town Clerk's Legal Section.

At the end of each day of the Hearing, the City engineer would telephone Mr. Cloherty, the Deputy City Engineer, for further information. Late one afternoon I was asked to supply the invert levels of the inspection chambers in Lenton's forecourt. The next morning. Mr. Brian Cropp, currently my assistant on the survey, was unable, with two sewermens' help, to lift the inspection covers, even with the aid of a sledge hammer, continuing their efforts into the afternoon. In Court, at the end of the afternoon, Lenton's barrister asked Mr. Berry to explain why his workmen, with police protection (a beat policeman happened to pass the time of day with them) were destroying evidence which was subjudice. An eyewitness said he'd never seen the City Engineer run so fast as he made for the telephone!

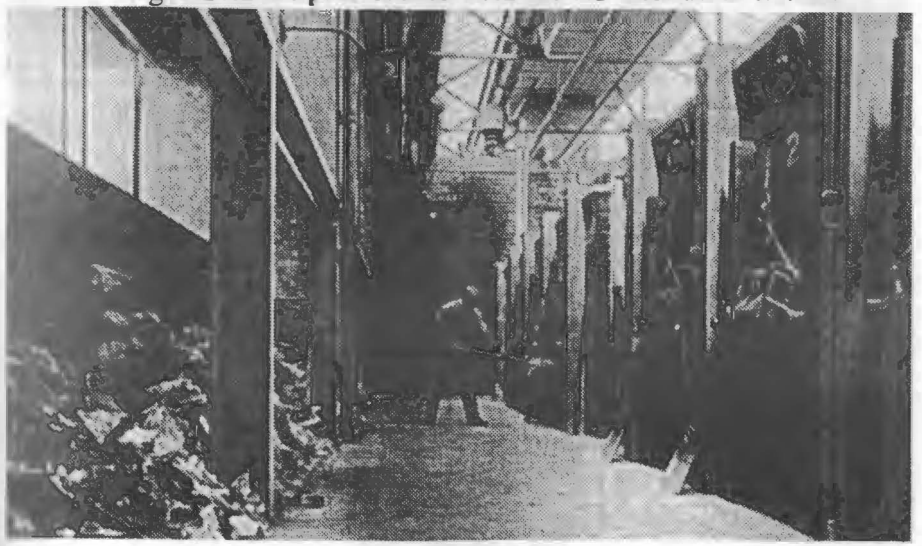
At 5pm I presented Mr. Cloherty with the forecourt drawing which could not include invert levels. I found Mr. Clarke, principal Engineer for the Direct Works Section, protesting to Mr. Cloherty that none of his men had been anywhere near Eagle Street Had I been having a go at Lenton's forecourt? No, but Mr. Cropp had. Who's he? Mr. Cloherty didn't know him but the matter was solved. Shortly afterwards an Evening Telegraph reporter phoned me but I didn't answer her questions very coherently as I was rather worried! Fortunately the newspaper staff were on strike and only a short bulletin was being published daily. The Lenton's case was well reported and my name and Mr. Berry's were prominent but there was no mention of Mr. Cropp!

The next day the judge heard Mr Berry's account of the previous day's events and told us both that we were in contempt of court and could be jailed. 'However', he said, 'Let us say that it was the overzealousness of a local government officer'. Mr. Berry and I would have made funny cellmates! The case was settled out of court. Lenton's received £10,000 damages and the Council was given a year to prepare a flood relief scheme and begin its implementation.

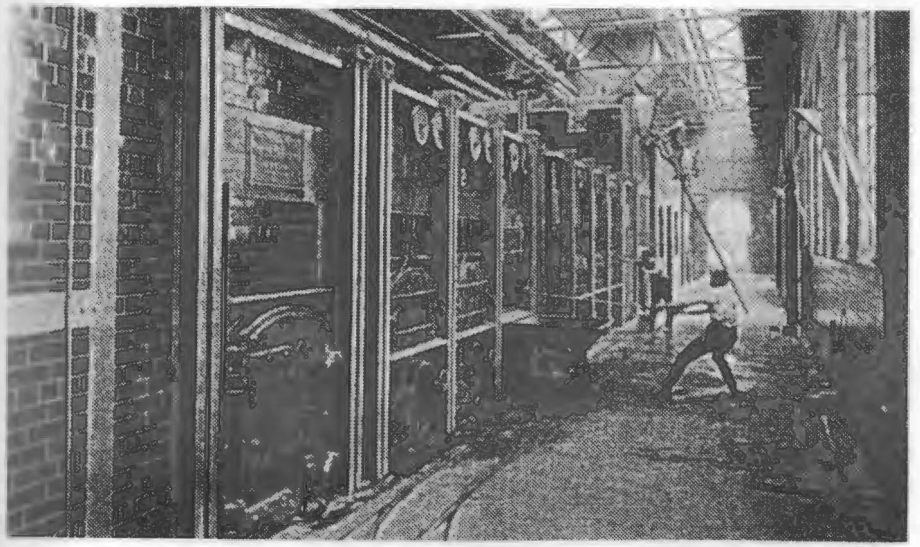
From a report by Ken Griffiths.

APPENDIX III

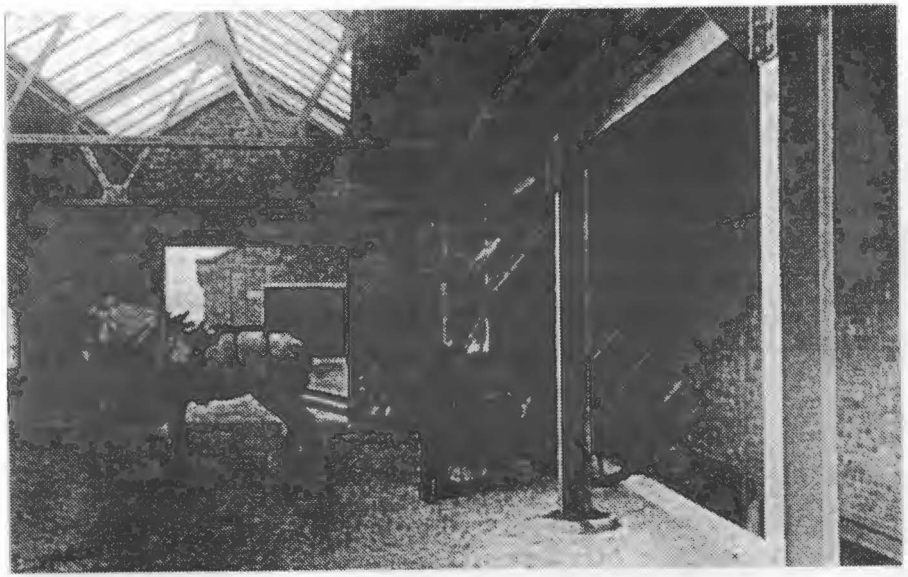
Images from the past scenes from the old Destructor c.1910.



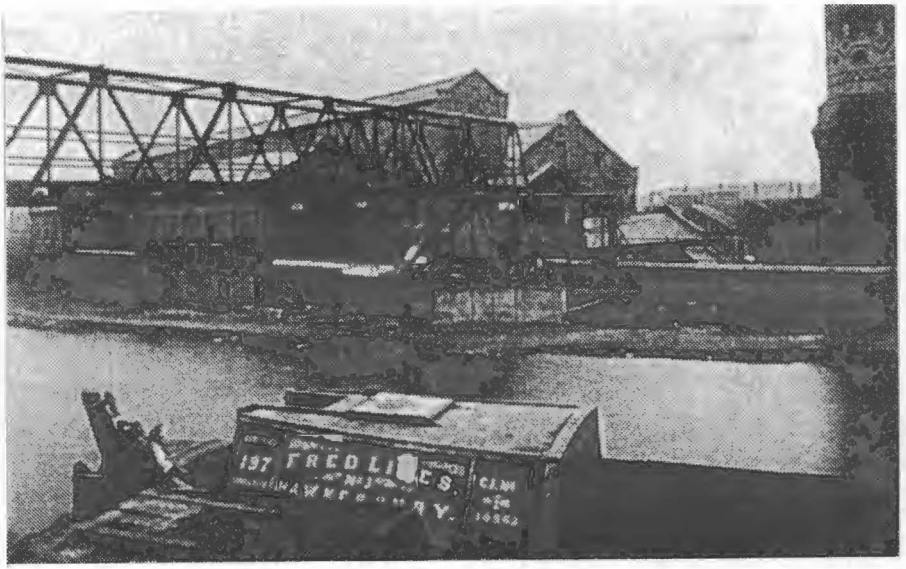
Feeding Hearth



Clinker Hearth



The Tipping Floor



Destructor Buildings and Footbridge

ENDNOTES

1 Searby, P., *Coventry in Crisis, 1858-1863*: Coventry Historical Association, 1977.

2 Harris, M.D.,(Editor): *The Coventry Court Leet Book, 1421-1621*: Early English Text Society, 1907-1913.

3 Smith, F., Coventry. *Six Hundred Years of Municipal Life*: Coventry Corporation, 1945.
A physical reminder of this unfortunate experience is County Hall which stands incongruously in Cuckoo Lane. By 1928, boundary extensions had recovered three quarters of the area lost to Coventry in 1842.

4 Calendar of Patent Rolls 1330-4, p374.

5 I remember standing with John Shelton on a late winter's afternoon, in a snowstorm, in Smithford Street, now the Lower Precinct. He had heard we were excavating through an old cesspit. In the gloom he spotted a well preserved medieval sandal in the spoil pile.

6 These buildings stood a greater risk of destruction from the excesses of post-war redevelopment than from bombardment during the 1939-1945 war. A good description of late 17th/early 18th century Coventry can be found in Whitley T., *The Parliamentary Representation of the City of Coventry*. 1894.

7 Smith, F., *Coventry, Six Hundred Years of Municipal Life*: Coventry Corporation. 1945.

8 Sir Edwin Chadwick. (1800 - 1890) Public Health Reformer, Poor law Amendments Act 1834, Commissioner Board of Health 1848 1854.

9 Report of the Commission of Enquiry into the State of Large Towns in Britain, 1844.

10 Coventry Cemetery Act, 1844, to secure the establishment of a municipal cemetery.

[11] Sir Joseph Paxton. British gardener and architect. M.P. for Coventry briefly. Designed Crystal Palace, 1851. Introduced pre-fabricated materials.

[12] Coventry Water Act, 1844, enabled construction of a deep artesian well, also the laying of water mains to property boundaries. The Act however was flawed in not requiring the owner to connect to the main.

[13] *Victoria County History of Warwickshire*, Vol VIII: OUP, 1969, chapter on the mills of Coventry. Shut Lane/Whitefriars/Altegeder Mill, dated from the 12th century, condemned 1841 but still operating under steam in 1925: Charterhouse/Shortley/ Bisseley Mill, operated until 1888 and buildings still in use until the Blitz: Priory Mill demolished in 1847, its mill race was excavated in 2000.

[14] Beavon & Swindlehurst: Joint Report on the Sewage Farm. 25.7.1903.

[15] William Ranger was also involved with the later progress of supervision and contract administration of the main sewer construction.

[16] Board of Health Maps of Coventry. 1851, originals deposited at the Borough Archives

[17] Liquidation of the Rivers Purification Association, 10.2.1885

[18] Millis, J C., Consulting Engineer, London: Report to the Coventry General Works Committee, 14.8.1884.

[19] Coddington: Report to Coventry General Works Committee, November 1890.

[20] Mansergh, J., Consulting Engineer Report to the Coventry Sewage Committee. 11.5.1892.

[21] Local Government Board of Inquiry, 21.2.1893 - 2.3.1893.

[22] Coventry Standard, 11.5.1901. A sad little story about Mr Coddington's application for the cost of Sewage Works Manager with a salary of £207 p a.

and a house. It was argued, with carefully chosen words, that he was too old and an old fashioned chemical treatment man, by then, no doubt, a discredited technology He did not get the job.

[23] Berry and Deeley, Paper to the Institution of Civil Engineers, April 1956.

[24] Swindlehurst Report on Sewerage - Foleshill and Stoke, 11.7.1900.

[25] Official Opening of the Sowe Valley Sewer, souvenir booklet. 1937.

[26] See Appendix II

[27] Flint, G., Paper to the Institute of Public Health Engineers, 1983

[28] Weavers Provident Union criticism of coercive methods which infringed the Combination Laws, led to a £16,000 fine met by workers and employers.

[29] Hore Belisha, died 1957. Minister of Transport 1934 1937. Defeated by Elaine Burton in Coventry South in 1950.

[30] Fox, L., *Coventry's Heritage.*

[31] It might be added that there was a failure to conduct and record any archaeology on many sites of major historical importance, despite the work of J.B.Shelton during the critical pre-war and post-war periods. During the same periods, a policy of sweeping away the past was initially the adopted development policy. A grave error, in the view of many, was made in locating the very imaginative timber-framed buildings project in Spon Street, instead of a site adjacent to the cathedral.

[32] Ebeneezer Howard, 1850 1927. Pioneer of town planning improvements: introduced the Garden City concept (Welwyn Garden City.).

[33] Alderman George Hodgkinson, 1893 1986. Alderman and former Lord Mayor. Agent to Richard Crossman and Chairman of the Coventry Planning and Redevelopment Committee during the critical post war period.

[34] Reith, Rt. Hon. Baron, *Into the Wind*: Hodder and Stoughton, 1941.

[35] There were two Coventry Development Plans: Coventry Evening Telegraph: 27.2.1941.

[36] Richardson K.: Twentieth Century Coventry: - 1972.

[37] I have read that the differences between these two men caused 'a bitter conflict' between their two Departments which I am sure is true. It was however a professional difference which, on the basis of some personal knowledge and in discussion with Mr. Ford's daughter, I understand was conducted with the minimum of personal acrimony. My knowledge of both men is that they were gentlemen in the best sense of the word. Mr. Ford, unlike the often perceived persona of the engineer, was a gifted musician and had a great interest in antique furniture. In retirement, he became Chairman of the Cathedral Reconstruction Committee.

[38] Lord Portal, 1873 - 1971. Marshall of the Royal Air Force. Minister of Supply, 1946 - 1951.

[39] This photograph taken about 1960 shows a number of especially interesting features: (a) it is the last view of the old Smithford Street, before it disappears below the paving of the Lower Precinct; (b) it shows the new Market Way, built for vehicles, just prior to Arthur Ling persuading the Committee to exclude traffic; (c) the girders over the River Sherbourne were taken from the old Cooperative Store and reused to support the structure of the new Precinct Buildings; (d) under old Smithford Street, crossing the River Sherbourne, can just be discerned the remnant of arch of the Ram Bridge named after a nearby Pub and originating in the 12th century, when the ford was first bridged.

[40] Saki. (Hilton Munro.) 1870 1917. Political satirist and journalist. Killed in World War 1.

[41] As a personal observation I would conjecture that if Ford had remained the Planning officer Smithford Street would have been built as an eighty feet wide road and would now be a pedestrian mall. Hertford Street would also

have been an eighty feet wide road, open to buses and service traffic, considerably more convenient than the High Street is today. It would have worked and, of contemporary relevance, the modernisation now in progress would present a far less challenging task than that of dealing with the complex configuration that is the present precinct system.

[42] Hasegawa, J., Re-planning the Blitzed City Centre: 1992.

[43] Coventry Planning and Redevelopment Committee: Technical Report on the June/July 1960 'Origin and Destination Traffic Survey': December 1960.

[44] From the perspective of my own involvement, without these urgent considerations, the Ring Road could well have proceeded on the basis of the original roundabouts, with the certainty of daily gridlock to this day.

[45] The Coventry Road System, Part 2: Principles of Design: First Quinquennial Review of the 1957 Development Plan: 1961.

[46] A more detailed technical account of the process of planning, design and construction may be found in the following three references:

1. Senior, G.M., Construction of Stage V. (Ringway Swanswell-Whitefriars). Coventry Inner Ring Road, November 1970.

2. Rayman, Redknap, Aizlewood, Heathcote Coventry Inner Ring Road Proceedings of the Institution of Civil Engineers, July 1970

3. Redknap B.V.: Inner Ring Road Notes on Development, Design and Construction City Engineer July 1974.

[47] Recently refurbished, apparently it was opened in pouring rain!

[48] Swindlehurst J.E.: Report on the Re-Organisation of the Department: 10.8.1892.

[49] Swindlehurst, J.E., Dwellings for the Working Classes: Report, 27.2 1899.

[50] Swindlehurst, J.E., Public Abattoir: Report, Floods in the Sherbourne Valley: Report, February 1901.

[51] Swindlehurst, J.E., The Department and a Refuse Destructor: Report, 1.12.1902.

[52] Swindlehurst, J.E., Report with same title as 51: March 1903.

[53] Swindlehurst J.E.: Disposal of Town Refuse , General Depot, including the Waste Destructor: Report, October 1905.

[54] Swindlehurst, J.E., Steam Raising Plant at the Destructor: Report, February 1908.

[55] Souvenir of the official opening of the Refuse Destructor (Steam to Electricity): 30.6.1910.

[56] Swindlehurst, J.E., - Floods, Sherbourne Valley: Report February 1901,

[57] 'The Old Tech', a former warehouse, was the first establishment of technical education to supply the burgeoning manufacturing industries of Coventry, in 1883.

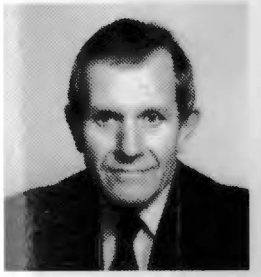
[58] A rather sad footnote is that this enlarged Department left a few surviving members of the wartime Department feeling by-passed and somewhat resentful at being left in the Council House with the City Engineer and his administration.

[59] The full list of Coventry City's City Engineers is as follows:

1. Joseph Eaves Swindlehurst : 1897 1925.
2. Ernest Hone Ford: 1925- 1949. 2.a .Granville Berry 1949- 1969
   Deputy: Gerald Cloherty.
3. Nathaniel Rayman: 1969-1974.
   Deputy: Basil Steele, followed by Geraint Richards.
4. Brian Vincent Redknap: 1974-1989.
   Deputy : Charles Kelly who was Acting Engineer in 1989.
5. Jack H. Simpson: 1989-1992
   Deputy: Chris Beck

The Author

BRIAN VINCENT REDKNAP



B. V. Redknap was born in 1928 and educated at Oxford High School. He was articled as a pupil to the City Engineer of Oxford, 1944 1947. He held various Assistant Engineer posts in Coventry, Leicester and Bristol until returning to Coventry in 1956.

In 1974 he became City Engineer, and served for 15 years in that capacity, though in his last years he also held the post of Acting Chief Executive and Town Clerk. On leaving the Council, he was employed in Management Consultancy for a number of years.

He is a Past Chairman of the Association of Municipal Engineers, Past Vice-President of the Institution of Civil Engineers and Fellow of both the Institution of Civil Engineers and of the Institutions of Highways and Transportation.

He has many and various pasttime interests, including sea-sailing, river-cruising, model boat-building, golf, social bridge and fell-walking

The Coventry Historical Association

Coventry Historical Association is a branch of the national Historical Association and locally promotes its aims. The Historical Association is a voice for History, bringing together people who share an interest in the past, to further the enjoyment and study of History at all levels. Its membership includes both enthusiastic amateurs and professional historians and membership is open to everyone who has a love and concern for History.

The Coventry Branch saw its 70th anniversary in 2000. The national Association celebrates its Centenary in 2006, and membership of the local branch includes both national subscribers and associate local members. Meetings are held monthly from September to May each year and take the form of a lecture followed by discussion and a social coffee. Details of lectures and meeting venues are published in the annual programme, copies of which may be obtained from the Hon. Secretary. Lectures cover a wide spectrum of History: local, national and international topics are covered. A summer programme is also offered, usually of two/three outings in June - July. The Branch is delighted to welcome new members.

Since 1964 the Publications Sub-committee of the Coventry Branch has published pamphlets on aspects of local history, researched in depth by reputable historians. Currently there has been an emphasis on medieval Coventry but it is hoped that future pamphlets in the current series of publications will be based on modern aspects of the city's past.

The Publications Sub-committee invites work from interested researchers and would particularly welcome 19th and 20th century topics and subjects relating to the wider county.

Queries: Publications: Tel. 024 7672 7348
Secretary: Tel. 01788 890 960

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