Early industries in the Merseyside Region

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Introduction

This is a survey of the present state of knowledge of the early industries in the Merseyside region between the dates 1500 and 1750. The research for this paper was confined to published historical accounts and any available published information about archaeological remains. In addition, the author gathered information from archaeologists working in the region. Much of the information was obtained from the Sites and Monuments Records (SMR) of Lancashire, Cheshire and Merseyside. For some industries there is very little information other than a brief mention such as a location in the SMR.

The paper is arranged into three main sections, agriculture and its related industries; extractive industries; and trade. The author has attempted to include all industries, however minor, but this has meant that reference to some is extremely thin. The paper concludes with comments on future research possibilities.

Areas beyond the modern Merseyside county boundary are included since many of the industries in the region are dependent on the Lancashire coalfield and the Cheshire saltfield. The industries of clay pipe-making and glass-making are the subject of separate papers in this publication (fig. 1).

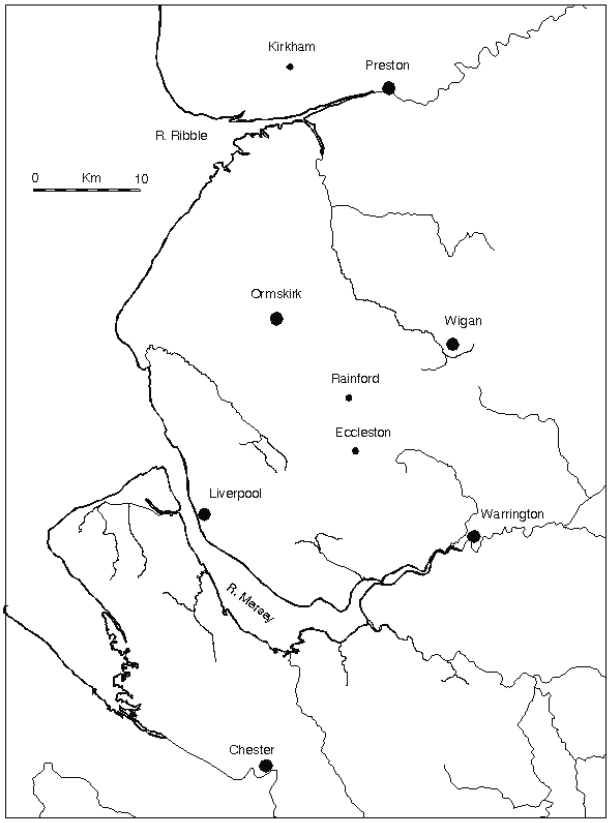

Fig. 1. Agriculture and related industries: sites of main centres discussed in the text

Agriculture and Related Industries

Agriculture

Changes in agricultural practices during this period can be easily identified from documentary sources and the present-day landscape. This was the period of change from the medieval open field system to fields enclosed with hedges. Often farming activity was combined with a variety of small 'industrial' activities as a subsidiary occupation. These other activities were fitted in around the farming year and included brewing, tanning, coal extraction, potting and textiles.

In Lancashire, agriculture was the dominant 'industry' in the early 16th century. The south west lowlands concentrated on a pastoral economy with cattle playing a prominent role, which brought a new prosperity to the area. A high proportion of the area was undrained moss and marshland but in some places there were islands where arable farming was practised (Walton 1987, 9). In some places, especially Rainford and Eccleston (fig. 1), large areas of unimproved wasteland remained to a relatively late date and this bears a direct relationship to the development of the non-agricultural pursuits (Chitty 2002, 192).

Preston, serving a relatively prosperous agricultural region, developed administrative functions. Lancashire took the lead in potato cultivation, which was introduced in the mid 17th century and was well established by 1680 on the south west mosslands. There was a specialised potato market at Wigan (Walton 1987, 75). Potatoes were also grown in north Cheshire from the 18th century (pers. comm. Ian Smith, Environmental Archaeologist, Chester Archaeology).

In Cheshire, there was both arable and dairy farming (Phillips and Smith 1994, 79). Fattening of cattle was mainly undertaken in north Cheshire. Cheese production was particularly pre-eminent in south and west Cheshire (Phillips and Smith, 1994, 28-9). The cheese went overland to London or by sea from Chester and Liverpool to London or Dublin (Phillips and Smith 1994, 80). The mortality patterns seen amongst the cattle recovered from one Chester archaeological site suggest that the rise of the dairy industry is reflected in the diets of the urban wealthy from the late medieval period to the 18th century (Smith forthcoming).

There is evidence of medieval and later arable farming in the number of surviving ridge and furrow and hedge boundaries. Particularly good examples can still be seen in fields around Bunbury and Waverton but there are examples from all over south and west Cheshire and from each side of the mid Cheshire ridge. Clay and marl production were obviously important since there were marl pits in nearly every field in Cheshire. This was needed to improve arable land. Their distribution may be another indication of the extent of the importance of arable crops (pers. comm. Ian Smith). One factor of

particular palaeoenvironmental interest is the degree to which the rather adverse climatic conditions during much of the 16th and early 17th centuries might have favoured grass farming as opposed to cereals (Dodd 1988, 46).

In the wetlands of northern Cheshire and in Delamere Forest peat cutting was important. The term 'moss rooms' appears in the 17th century and mosses were certainly being drained by the 18th century. Pigs were fattened in Cheshire forests such as Delamere from the medieval period but they were also driven to Chester from as far away as Ewloe (Dodd 1988, 46; Thacker 2003, 44).

Milling

Mills were used for grinding grain and seeds such as linseed for human and animal consumption, in the textile industry for fulling cloth, and by other industries for grinding minerals such as flint or pigments.

Windmills were a prominent feature of the landscape in the western plain of Lancashire between the Ribble and the Mersey and in Wirral. Yates' map of Lancashire in 1787 (Harley 1964, 126) shows 79 windmills, 70 of them in the Fylde and west Lancashire plain. Burdett's 1777 map of Cheshire shows 16 in Cheshire and 12 in Wirral (Harley and Laxton 1974, 26).

Water-powered mills were much more numerous. Burdett mapped 140 water mills in Cheshire, the majority of which were used for corn milling. J.H. Norris's survey of water-powered corn mills in Cheshire lists 187 sites with some physical remains (Norris 1968).

In the Merseyside SMR, 49 windmill sites are recorded, some of which are known only from documentary references. These include mills on Brownlow Hill and London Road in Liverpool. There are 10 general mill sites. A horse mill existed in Castle Street, Liverpool in 1667 which was almost entirely engaged in grinding malt (Irvine 1899, 63-67). At Ince Blundell there is no obvious indication on the ground, but features such as ditches, a lake and a trackway suggest that there was more than just the mill house referred to in the record.

The site of Irby Mill in Wirral was excavated by members of the Merseyside Archaeological Society (Chitty 1978). Documentary records show that the first windmill was about 100 yards away from the site of the second, excavated, mill. The earliest mention of a mill is in the 11th century and the records indicate that the mill was built on its new site in the early 18th century. It was demolished in 1898 (fig. 2).

There are 38 watermill sites recorded in the Merseyside SMR, 16 of those being situated in the St. Helens area.

At Garston there was a water mill for corn milling. The millpond and original mill date back to the 13th century. Research by the Garston and District Historical Society shows that the site gradually shrank as the need for land for housing, road building, and the railway sidings increased. The last mill building still survives. The area of the pond had houses built on it. These are soon to be demolished providing an opportunity to excavate the millpond and the vicinity of the mill itself (pers. comm. Roy Forshaw, Garston and District Historical Society).

The SMR for Cheshire has records for 136 watermills, most of which were for corn milling.

In the SMR records for south west Lancashire there are records for three watermills, four windmills, one corn mill and one corn-drying kiln. There are other references to 'mills', most from documentary sources where the remains on the ground have disappeared.

Brewing

The Merseyside SMR lists 12 brewery sites, some of which still exist on the ground. One is at Windle, where the malt house is described as a two-storey building built with stone blocks, L-shaped with two loading bays and a few small windows. Cross's brewery, also in Windle, is described as a range of buildings, part of which is probably 18th century.

Leather

There was a leather industry scattered throughout Lancashire and Cheshire, but it was concentrated especially in towns such as Chester, Clitheroe and Congleton. In Merseyside, the SMR lists five tanneries. Three give a documentary reference only, described as 'tan yard', 'tan yard and pool', 'skinners yard and pool'. There are brick outbuildings associated with a tannery at Billinge and at Litherland there is a portion of an 18th-century building which has wood-lined pits for tanning.

Chester was the most important port in the region during the 16th and early 17th centuries with direct access to the Irish ports. Sheepskin and cattle hides were imported through Chester, and finished articles such as shoes and gloves were exported. In Chester, masters in the leather trade employed up to six people and they became one of the largest groups of freemen in the city. The most wealthy were the glovers (Phillips and Smith 1994, 47). In addition to the imports, hides from the local area and from Wales were also used (pers. comm. Ian Smith).

The following archaeological information has been provided by Julie Edwards, Chester Archaeology. Evidence for tanning from late medieval to late post-medieval date has been found in the eastern suburbs of Chester. The evidence consists of structural remains of large timber-lined and stone-lined pits as well as paleo-environmental remains, dumps of horn-core and also the remains of a hide. Debris from medieval leatherworking such as trimmings and off-cuts from tanned skins were found during excavations through

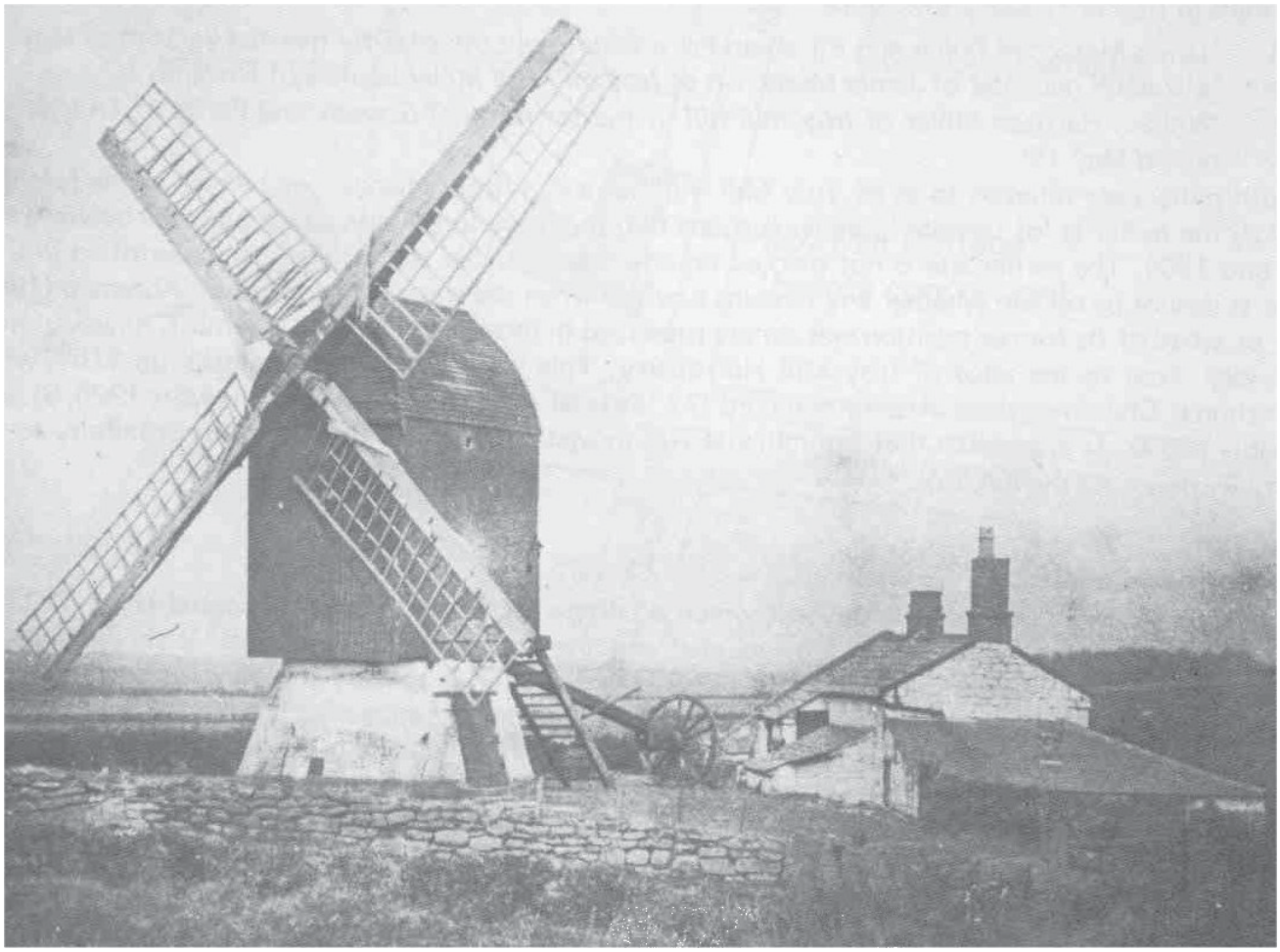

Fig. 2. Irby Mill

a section of the city ditch at 5-7 Foregate Street in 1991. Cobbling debris was also found at the same site. Tools, possibly related to leather-working in the late medieval and post-medieval periods, have been found at 5-7 Foregate Street and also 25 Bridge Street.

Textiles

There were the beginnings of a woollen and linen industry in the early 16th century, based on the domestic production of yarn and cloth and finishing processes of fulling, dyeing, and shearing in the hands of specialised workers (Ashmore 1982, 3). The woollen industry was based mainly in the east of the region and the linen industry in the west. Eccles, Wigan and Ormskirk became established as organising centres for the linen industry, which was locally orientated and marketed (Walton 1987, 11).

By the 17th century there was a clearer distinction between the developing wool industry of south east Lancashire and the domestic production of linen in south west Lancashire which was mainly for home use. By the middle of the century there was focused activity in Preston, Ormskirk and Liverpool (Walton 1987, 23). Flax and hemp were grown commercially in west Lancashire and in the Wigan area and in north east Cheshire. Flax and yarn were also imported from Ireland and the Baltic. Linen was traded in the Midlands and the south independently of the Manchester network (Phillips and Smith 1994, 42-3).

During the 18th century, the linen industry became strong in west Lancashire, especially in the production of heavy sailcloths. Kirkham (Fylde) and Warrington developed a specialisation in sailcloth which enabled the linen industry to survive and prosper, using imported Russian flax (Walton 1987, 61).

One handloom weaving workshop is recorded in Ormskirk (Lancashire SMR). A survey of handloom weavers' cottages in central Lancashire from between about 1770 to 1830 was carried out in the 1970s. This is later than the period under discussion but it provides an indication of the style of building which is likely to have been present earlier. The report concludes that many examples of former handloom weavers' cottages have been radically altered and that their identity depends heavily on documentary evidence. The size and plan-form of the cottages varied markedly. Many of those with small loomshops appear to show no fundamental difference from other contemporary working-class dwellings (Timmins 1979).

Recently a lead cloth seal dated 1711-1720 was found in south west Lancashire (fig. 3). Lead seals were applied to cloth in the 16th to 18th centuries to show the origin, quality and quantity of each piece (Egan

Fig. 3. Lead cloth seal dated 1711-1720 from south west Lancashire

1980, 185). The unusual aspect of this seal is that the initials seem to be abbreviated Spanish to cater for the customers at the other end of the trade route. The use of Spanish would suggest that this seal was lost either being brought home again after its labelling job was done, or more likely, before it made the long journey to its intended destination (G. Egan unpublished note).

The Merseyside SMR has records of a cottage weaver's shop and garden in Rainford. Documentary sources trace this back to 1665 with the name of the owner. There is a documentary reference to a dye house in Gilbert Street, Liverpool. What is listed as a watchmaker's workshop in Eccleston could also be interpreted as a weaving workshop. This is a 2-storey house with side hung elongated casements. The date for this building is just outside the date range being discussed, but, as with the survey of cottages in central Lancashire, it is likely to indicate the style of earlier buildings.

In Chester, few archaeological remains survive of the textile industry. The following information has been provided by Julie Edwards, Chester Archaeology. Spindle whorls of uncertain date have been found on various sites. A wool carder, possibly Tudor, was found during the recent excavations at 25 Bridge Street. Scissors and other tools possibly related to textile activities have also been found at the site. Large numbers of pins are found but as these are multi-purpose objects it is difficult to say without any other evidence if they are related to any textile activity. A small number of cloth seals have been found in Chester dating to the early post-medieval period, but only three have markings that are identifiable.

Felt Hatting

Felt-hat making was introduced into England in the 16th century, concentrated in London. The first record for Chester is dated 1550 and was the only centre in north west England. During the next 100 years 135 admissions of hatmakers are recorded at Chester. The hatters were members of the Skinners and Feltmakers' Company which regulated apprenticeship, employment, wages, prices and marketing. In the early 17th century the trade began to spread. There are records of the industry in Liverpool in the 1620s and 1630s, then references in Cheshire and other parts of Lancashire. By 1660 there is a strong concentration at Chester and wide dispersal across the region (Phillips and Smith 1994, 53).

Felt hats became increasingly popular, replacing knitted caps. The work would be carried on wherever there were people with the skills with access to the raw material, fuel and water. The fur was collected by local farmers, usually rabbit or beaver, and made into felt in small workshops. It was a seasonal trade, often combined with husbandry (Ashmore 1982, 16).

Early hatmakers worked as individuals at home or in small hatshops close by. Few rooms were needed – a loft or garret to store the wool and fur and prepare it for felting, a room with a fire and copper boiler for felting, proofing, dyeing and drying and a shop where the hats were finished, stored and sold. As well as supplying customers in their own shops, they also supplied habberdashers, dealers and drapers in north west England and North Wales. By the end of the 17th century there was an export business through Chester (Phillips and Smith 1994, 53).

The Chester industry declined by 1750 overshadowed by the buoyant growth in Greater Manchester. The hatmaker-retailer gave way to the manufacturer. Workers engaged in ancillary trades include carders, furcutters, woodworkers, smiths in a variety of metals and blockmakers, who made the wooden blocks on which hats were shaped (Phillips and Smith 1994, 99).

Extractive Industries

Coal mining

The Lancashire coalfield covers 500 square miles, stretching from the cotton manufacturing areas of east Lancashire to the manufacturing and industrial areas around Wigan, St. Helens and Prescot. It has influenced the whole industrial expansion of the region (fig. 4, Ashmore 1982, 8).

In Prescot, mining began early when the Earl of Derby leased out coal mines in Whiston in 1521 (fig. 5). By 1564 coal from this area was being exported through Liverpool to Ireland. There was a rapid expansion in the areas around Wigan, St. Helens and Prescot during the mid-late 16th century (Walton 1987, 23). There is a reference to mining taking place in 1540 at Sutton Heath when coal was found by accident during the digging of a clay pit (Barker and Harris 1993, 7). In the will and inventory of Margaret Dycheffeild of Sutton township, dated 1594, are listed all the debts owing to her as coal (Lancashire Record Office 1593/1).

The south west Lancashire field outside Wigan contained half a dozen manors with working collieries, which included Prescot manor (7,000 to 8,000 tonnes from 1594-1596). The local lords of manors – Bolds in Sutton, Ecclestons in Eccleston, Gerrards in

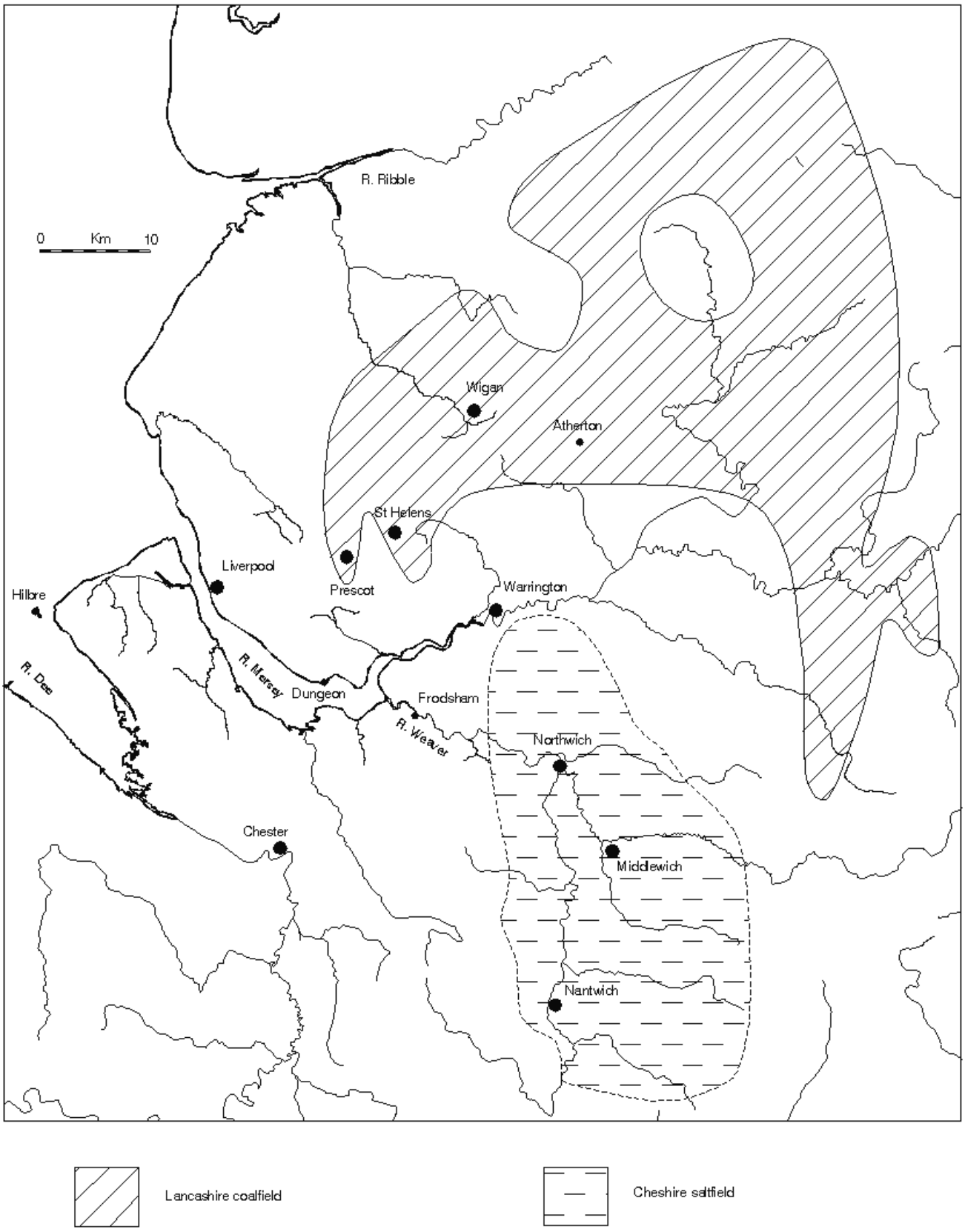

Fig. 4. Extractive industries: location of Lancashire coalfield and Cheshire saltfield, and main sites discussed in the text

Fig. 5. An early coal pit near Prescot

Windle, Byroms in Parr – were all willing to have their coal exploited (Barker and Harris 1993, 8). There were at least 12 collieries within a five-mile radius of Wigan by 1650 (Phillips and Smith 1994, 47).

Most pits remained small, few employing more than 10 or 12 miners (Walton 1987, 73). The work was irregular, mostly in summer and early autumn when customers stocked up for winter. In slack periods they would work on their own small-holding (Phillips and Smith 1994, 49).

The main coal-mining areas in Merseyside were in Whiston, Tarbock and Prescot, and to a lesser extent Huyton, Roby and Knowsley (Cowell 2002, 162).

Larger collieries, especially in the Wigan area, probably stimulated the growth of a variety of metal working trades. These included nail making near Wigan and pewter, copper and church bell manufacture in Wigan itself. All the raw materials, except coal, had to be imported (Walton 1987, 23).

The industrial demand for fuel was even greater than the domestic need. Coal fuel was used for sugar baking from about 1670, a direct result of the new West Indies trade; for salt boiling which started in the mid 1690s; in the pottery industry from the 18th century; for glassmaking, which is traced back to 1724; and for brewing beer. All required large and regular deliveries of coal. Coal was also shipped from Liverpool up and down the coast, to Ireland and abroad. Liverpool was the main destination for coal, both for industry, export and domestic consumption (Barker and Harris 1993, 12).

Salt refining

The location of the Cheshire salt field is shown in fig. 4. In the early part of the post-medieval period brine from the springs was piped to 'wich houses' in Middlewich, Nantwich and Northwich where the brine was boiled in lead pans over wood-fuelled furnaces. There were four or six 'leads' per house. Along the north Lancashire coast, sea salt was made using peat as fuel (Phillips and Smith 1994, 49, 51).

Nantwich was the most important centre up to the 17th century, due to the abundant and cheap supplies of wood nearby. According to Leland there were 300 salt works operating there in the mid-16th century (Ashmore 1982, 10). In the 17th century, Nantwich declined in importance as the centres changed over to the use of coal for fuel. The coal was carried by horse-drawn wagons from the north Staffordshire and north east Cheshire coal pits. Lancashire and Welsh coal were brought by water in vessels called 'flats' to the Cheshire side of the River Mersey at Frodsham, then transported by horse (Chaloner 1961, 66).

Rock salt was discovered at Marbury near Northwich in Cheshire in 1670 while prospecting for new coal sources. Celia Fiennes, writing in 1698, stated 'this rock salt… will make very good brine with fresh water to use quickly, this they carry to the water-side into Wales and by those rivers that are flow'd with the tyde (i.e. to be near to the coal) and soe they boile these pieces of rock in some of the salt water when the tyde's in, which produces as strong and good salt as the others' (Morris 1947, 225).

The two trades of brine and rock salt production continued side by side (Phillips and Smith 1994, 99). As it was cheaper to transport the rock salt to refineries nearer to the coalfields, the rock salt was transported down the river Weaver to refineries at Frodsham, Liverpool (John and Jonathan Blackburne), Dungeon near Hale (Barker and Harris 1993, 5,) and Hilbre. It has been estimated that in 1675 the entire production of the Cheshire salt field produced 27,000 tons per annum with markets inland, and through Liverpool to Ireland, Africa, the Baltic, the Netherlands, West Indies and America (Phillips and Smith 1994, 100).

Exports of salt from Liverpool increased seventyfold between the 1660s and the 1720s. The opening of the Weaver Nagivation in 1732 doubled rock salt cargoes down the Weaver. Exports trebled between 1732-1770 to reach 48,000 tons. In addition to the export market, salt was also used for the local dairying industry, Irish Sea fishing industry and maritime victualling (Phillips and Smith 1994, 51).

Excavations in 2003 in Nantwich revealed the remains of simple timber-framed buildings and property boundaries. Within this, there are details of barrels set in a timber-lined channel packed with clay and probably dating to the early post-medieval period. The barrels would have been cisterns for brine (Leah 2003, 2).

The site at Dungeon is known from documentary evidence from 1692. A salt collector's report of 1733 states that 'Dungeon had 2 panns 12 feet long, 9 feet broad and 1 foot deep which are drawn generally

thirteen times a week' (Forshaw 2003a, 3). Remains on the ground today include a sandstone wharf wall and quayside wall. The refinery itself consists of a brick built chamber divided into two compartments with the top of the arch below river level. Each division of the chamber has a circular opening in the roof, presumably to load in the rock salt. There is a second chamber close by of identical construction but narrower (Forshaw 2003a, 6).

In Liverpool, Thomas Johnson and John Blackburne established a salt refining business at the end of the 17th century (Barker and Harris 1993, 6). Salthouse Dock was built nearby in 1734-53 (Ashmore 1982, 161). This salt works transferred to Garston in 1794 (Forshaw 2003b).

Hilbre was held on lease from the Dean and Chapter of Chester. In December 1694 a new lease was issued for the island for 21 years between the Dean and Chapter and eight businessmen from Liverpool, Manchester and Preston. Eight pans were due to be erected for boiling salt (EEC 9503 Cheshire RO). An Indenture dated November 1700 stated that money had been expended 'erecting and building salt pans, warehouses, water engines and other things relating to salt works and the making of salt' but that three of the businessmen had died and that the salt works 'are very much out of repair' (Plumb Tempest Deeds 920PLU Liverpool RO). This indenture was an agreement to lease Hilbre Island to a London merchant, Thomas Slyford, to take over the salt production. Slyford was required to 'sufficiently repair and maintain and keep the said saltworks and other buildings in good and sufficient repair … for the business of saltmaking or refining of salt' for the remaining years of the 21-year lease.

An excavation on the beach at Hilbre shows the channels cut through the rock platform on the east side of the island. These were to bring the sea water into two large holding tanks cut out of the base of the cliff. On the top of the island above these tanks is a large rectangular depression and numerous other indeterminate features. It is hoped that this area of the island can be investigated more thoroughly (Longworth forthcoming).

No detailed research has been carried out at Frodsham but some minor exploratory work has been done to locate the site of the salt refinery (pers. comm. Roy Forshaw).

Brick Kilns

Lancashire SMR has references to two brick kilns, one of which is a documentary source only. Cheshire SMR lists two brick kilns, one in Hoole Village, near Chester, the other in Vale Royal.

All the brick kilns on the Merseyside SMR are in Sefton. Brick is the most common building material in Sefton district. The buildings range from large houses such as Ince Blundell Hall to estate cottages and small farm buildings. The date of the earliest has not been established but the majority probably date from the 18th century and later (Lewis 2002, 70).

In the St. Helens district, brick buildings are not mentioned in documents before the 17th century, although they are likely to have been made earlier. Field names such as Brick Field, Brick Kiln Field frequently occur in every township on the boulder clay but no sites earlier than the 18th century have been identified by fieldwork (Chitty 2002, 195). 18th century brick built farmhouses and cottages have survived in most townships of the Liverpool districts (Cowell 2002, 97).

Remains of pits which had been dug for clay extraction have been found during excavations in Tarbock. These pits date from the 14th and 15th centuries (Philpott 2000, 79). Evidence from field names such as 'Kiln croft' associated with 18th century farms suggests that many of these farms were also producing either pottery or bricks (Cowell 2002, 163). A malt kiln is listed at Eccleston (Merseyside SMR).

Quarries

The Merseyside SMR lists 14 quarries at sites spread between Wirral, Knowsley, Sefton and Liverpool. In the other SMR records there is a single documentary reference to a quarry in south Lancashire and references to a number of quarries in the Macclesfield area of Cheshire, which produced millstone grit for mill wheels. Shallow oval-shaped pits are probably the remains of early quarrying.

Metal Industry

Iron

In the 16th century there were blast furnaces in Shropshire and Staffordshire, but nothing is known in Merseyside. In Furness, Lancashire, there was iron mining and charcoal ironworks (Walton 1987, 23).

In the late 17th and early 18th centuries a number of new blast furnaces and forges were established in north Lancashire and also around Wigan and in Cheshire (Ashmore 1982, 5). The demand for iron salt pans helped the growth of Cheshire's iron industry during the 1620s. A blast furnace was built at Church Lawton, Cheshire, in 1658 (Phillips and Smith 1994, 100).

The Lancashire SMR lists a 17th-century smithy at Rufford and a blacksmith's workshop at Holt Green before 1770. The SMRs in Merseyside and Lancashire list sites of black smithies, and the SMR in Cheshire lists various iron working sites, including 8 forges.

The following information has been provided by Julie Edwards. In Chester two large dumps of broken cauldron moulds and a possible model for a small bell were found during excavations at Witter Place. Witter Place lies behind properties that would have fronted Foregate Street. A precise date for the dumps is unclear but it appears to be late medieval/early post-medieval on

the basis of a very small amount of pottery and some documentary references to metalworkers in the Foregate Street area. Fragments of crucible have been found on various sites, as well as slag and other industrial debris relating to various types of metalworking and smithing. Iron tools possibly related to metalworking have also been found.

Copper and Brass

In Cheshire, copper was mined at Alderley Edge in the prehistoric period and more recently from the 1690s. Copper was also mined at Bickerton Hill in 1697 (Ashmore 1982, 27-29). There is a reference to this industry in Warrington in 1717 using imported Cornish ore which was brought to the cheap local coal where there was a strong market demand (Phillips and Smith 1994, 101).

The Cheshire SMR has records for the sites of forges, copper working sites and copper mines.

Pewter

Wigan was well-known for pewter-making in the 17th century, supplying tableware and utensils to local markets (Ashmore 1982, 6). Tin was imported from Devon and Cornwall. Wigan pewter declined once earthenware and china made it unfashionable (Phillips and Smith 1994, 102).

Nail Making

This industry was concentrated on the township of Atherton on the south Lancashire coalfield. Most of the iron was imported from Yorkshire. Tough iron for horseshoes was imported from Spain through Liverpool. The smithy was often rented from the lord, with the bellows, anvils and hand tools the nailer's own. In the 16th century the products were sold in markets or from the smithy. By the 17th century, nailers had become more established with shops and stocks in Preston, Manchester, Rochdale and Bury. Some families set up as ironmongers, especially in Warrington, with sales to Knutsford and Northwich. Lancashire nailers sold their products south to Denbighshire in North Wales and north to Kendal (Phillips and Smith 1994, 53).

With the development of the port of Liverpool, nail makers supplied shipbuilders and also merchants for export to Ireland, Virginia and the West Indies (Poole, 1961, 9).

The Cheshire SMR lists a 17th-century slitting mill recorded in Warrington.

Clock and Watch-making

Prescot was famous from the 17th century as a centre for tool and file-making and especially for the manufacture of watch parts and tools. It was based around a domestic system of small workshops and often organised on a putting-out basis, supplying watch parts to London as well as locally (Ashmore 1982, 167).

There were many different specialist makers such as watch movement makers, watch spring makers, clock movement makers and gold hand makers. The workshops were attached to the houses. Some still survive and are recognisable by the large windows on two or three sides (Knowles 1982, 10).

During renovation of a 17th or 18th-century cottage in Little Woolton, substantial evidence of the former watch-making industry carried out there was revealed. The details are recorded in the Merseyside SMR.

Trade

Chester

In the early post-medieval period, Chester was the most important port in the region. It handled trade in a wide range of goods to and from Ireland and Europe. Imports included sheepskins and cattle hides for the leather industry and wool and yarn for the Lancashire textile workers. Other imports included iron, wine, dyestuffs, salt and luxuries such as figs, raisins and peppers from Spain and France. Chester also traded with London both overland and around the coast and also with the Baltic and Scotland (Phillips and Smith 1994, 39-40).

Although Chester remained the largest port in north west England into the 17th century, its relative importance slowly dwindled due to continued silting, the expansion of competitors such as Liverpool and Whitehaven, local inertia, and the growth of other forms of transport. In the 1730s there was an attempt to revitalise the port through the canalisation of the River Dee and the construction of New Crane Wharf to the west of the centre of Chester (Kennett 1982, 11-12).

The silting of the River Dee led to the development of other places along the Dee estuary as ports. A new quay was built at Neston in 1541 and was used for about a century. The 'Port of Chester' extended along the Dee shore of Wirral with landing places at Shotwick and Parkgate from the late 17th century and also at Caldy and Hilbre. Parkgate was a port for travel to Ireland in the early 1700s (Ashmore 1982, 23).

Demand for the storage of wine and beer, salted meat and salt for industrial and domestic uses created an industry for Chester coopers and the Coopers guild was a prominent guild in the city (Phillips and Smith 1994, 51).

Excavations have taken place in the last few years at the site of the post-medieval port of Chester. The excavations have yielded information on the physical appearance of the site but little artefactual evidence has been found. The massive 18th-century sandstone wall of Crane Wharf stands largely intact. The only associated buildings still surviving are the Harbourmaster's house and a warehouse. The area is being redeveloped and

archaeological investigations have provided structural evidence for the quay wall and several wharfside buildings, including a boat-maker's workshop, remains of the cheese warehouse and a 19th-century smithy (Report archive held by Chester City Council Archaeology Service).

Many of the items mentioned in the Port Books (Wilson 1969) are perishable items or materials subject to decay and leave no trace behind them, for example foodstuffs, leather, oils and wines. A variety of 16th and early 17th century imported ceramics have been found from Spain, France and Italy. Some of these may have acted as containers, for example Spanish oil jars. Glass is noted as leaving the port and a wide variety of vessel glass is found in the city, some of it from the Continent (ceramic and glass information supplied by Julie Edwards).

Liverpool

Liverpool was created as a port by King John in 1207 with a royal charter, but it remained comparatively small. It was still referred to as a creek of Chester and paid only £15 in Ship Money under Charles I compared with £100 paid by Chester at the same time (Ashmore 1982, 23).

Until the 17th century, agriculture and its associated activities were the main industries in the vicinity (Philpott 1988, 38). The later 1660s and early 1670s saw significant changes at the port of Liverpool. In addition to the existing coastal and fishing trade there was added a significant overseas connection, trading with Ireland, Northern Europe, Africa, North and South America and the West Indies (Barker and Harris 1993, 11). During the early 1600s tobacco started to be imported from Chesapeake Bay in North America. Over one million pounds a year was being imported by the early 1690s and six million in 1740. Tobacco also came in from Bristol through coastal trade (Walton 1987, 68). During the 1670s much of Liverpool's trade was bringing in cotton and sugar from the the West Indies (Philpott 1988, 38). Liverpool was reckoned to be the third port in England by 1699. Throughout the 17th and 18th centuries, Liverpool was the principal port for trade with Ireland (Philpott 1988, 38).

In a case laid before Parliament in 1699, Irvine quotes the following: 'after the Plague and the great fire of London several ingenious men settled in Liverpool, which originated the trade of the port to the plantations and other places. This so enlarged its commerce that from scarcely paying the salaries of the officers of Customs, Liverpool before the close of the century possessed the third part of the trade of the country, and paid the King upwards of £50,000 a year in customs' (Irvine 1899, xxxii).

In 1700 the first Liverpool slaver, the 'Liverpool Merchant', delivered 220 slaves in Barbados. Mixed cloths in demand in West Africa were used for the purchase of the slaves. By 1752 the Liverpool slaving fleet totalled 88 vessels, which carried over 25,000 slaves (Phillips and Smith 1994, 89).

The first dock which opened in 1715 was the Old Dock at the mouth of the Pool. Extensions and additions soon followed (Ashmore 1982, 161). Excavations in Chavasse Park will provide information on the building and development of the early docks. Salthouse Dock was built in 1734-53, mainly for the growing Cheshire salt trade, with Blackburn's salt works nearby (Ashmore 1982, 161).

Salt distribution became a major factor in the growth of the port, first along the west coast of England and, by the 1740s, also to the east coast. Liverpool was also a distribution centre for the export of earthenware pottery, which was manufactured in south Lancashire and Staffordshire. Imports included luxury foodstuffs and spices, domestic goods from London and tobacco. There was also a redistribution trade from Liverpool in goods such as tobacco, sugar, iron, cotton wool and dyestuffs. The coastal trade of Liverpool doubled between 1689 and 1737 (Phillips and Smith 1994, 111).

The seaborne trade stimulated the shipbuilding industry and ship repair. Roperies feature on maps of Liverpool in Ranelagh Street, St. John's Precinct, St. George's Hall area, Fenwick Street, Bold Street, Park Lane and Blundell Street. The evolution of the docks is also very visible from maps.

With the development of the port and the growth of the town, Liverpool became one of the leading provincial ports and commercial centres, stimulating the extractive and manufacturing industries of its immediate hinterland and spreading its influence further east and south (Walton 1987, 60). Sugar refining developed as a direct result of the new West Indies trade, the first refinery being built in 1670. By the 17th century, Liverpool was producing earthenware pottery vessels, clay tobacco pipes and sugar moulds and in the early 18th century Delftware production began. Salt boiling started in the mid 1690s. Glassmaking can be traced back to 1724 in a reference in the parish register of St. Nicholas' church and a glasshouse is marked on Chadwick's map of Liverpool of 1725 (Barker and Harris 1993, 12). Other industries included a range of metalworking activities such as copper and ironworks and the manufacture of clocks and watches (Walton 1987, 68).

Excavations were carried out at South Castle Street in the 1970s prior to the building of the Queen Elizabeth II Law Courts. Features recovered included part of a 17th-century ditch system which may have been constructed during one of the Civil War sieges and a large number of market features dated mainly to the early 18th century. Finds from the excavation included pottery, clay tobacco pipes, sugar moulds and other artefacts, all predating the building of St. George's Church (Davey and McNeil 1985).

Sugar refining

The first sugar refinery built in Liverpool was a five-storey building erected by Richard Cleveland and Daniel Danvers between 1670 and 1673 (Chandler 1957, 332).

Fig. 6. South Castle Street sugar mould fragments

It was situated close to the corner of Red Cross Street and Derby Square. A second sugar refinery was in operation under the name of Mr. John Hughes. It was situated at the corner of Union Court and North John Street. This appears in the rates of 1705 and 1708. A third refinery was built on the corner of Harrington Street and North John Street and this also appears in the rates for 1705 and 1708 (Nicholson 1981, 28). Other refineries are marked on maps in Victoria Street, Strand Street, Henry Street and at the tunnel entrance.

Sugar imports from the West Indies increased dramatically between 1660 and 1740; 35 tons per annum in the 1660s up to 5000 tons by the 1740s (Walton 1987, 69). This had a direct relationship to the development of the slave trade. Quite often slave ships were purpose built and often returned in ballast, while the trading vessels carried cargo (Walton 1987, 69).

Liverpool was well-known for producing earthenware sugar-moulds for the refining trade. Mr. John Hughes is listed in 1716 as being allowed to dig clay on his land 'for making sugar moulds or potts, and other kinds of muggs' (Picton 1886, 32). Finds of sugar refining pottery were made during the excavations in 1976 and 1977 in South Castle Street (fig. 6). These are dated before 1726 and could have come from nearby (Innes and Philpott 1985, 117). The site of the first sugar refinery in Red Cross Street is immediately alongside one of the areas excavated.

Other sugar-refining pottery was excavated from a kiln site in Prescot. These are vessel types in standard use in the industry in the 17th and 18th centuries and comprise conical sugar-loaf moulds and syrup pots (Brooks 1989, 63).

Conclusions and Future Research Possibilities

There has been no specific research project aimed at identifying archaeologically the rich variety of early industries in the Merseyside region. From an archaeological perspective, early post-medieval development of the two industries of pipe-making and glass-making, which are dealt with in other papers in this journal, leave copious material traces, unlike other industries such as leather and textiles However, many other industries are far better documented than pipes, pots and glass. It is possible to reconstruct old landscapes by studying all available evidence.There are traces of some of the early industries, perhaps as buildings converted to later use or environmental remains buried in the ground. Field names, for instance, can suggest past use and information from inventories provides clues to other activities carried on alongside

farming. Further detailed work on inventories and leases in conjunction with fieldwork is necessary to inform as to whether the lack of evidence so far is real or not.

What is important, then, is to recognise the absolute necessity of a multi-disciplinary approach to this period, its industries, and their interpretation. No one approach, landscape studies, history, archaeology, architectural studies etc. can provide the range of evidence that is necessary for historical period archaeology.

The wider context of trade and its importance regionally, nationally and internationally needs to be stressed in the context of all industrial development. How has the transport infrastructure developed to accommodate the needs of industrial growth? Indeed, what was the transport infrastructure of the region? What of industry and urban growth? The impact of industry upon traditional villages and towns and their economies is worth studying. Perhaps some thought should be given to the role of capitalism and investment in industrial development?

People are another significant topic for study. What evidence is there for workers in industries, their homes, origins, and lifestyles and how were these affected by industry?

Archaeology may be able to shed some light on early coal mining, for instance, work around the shafts themselves may be productive (as it has been elsewhere), and may recover structural evidence or evidence for winding mechanisms, etc., while the identification and excavation of miners' cottages, especially where these are related to squatting in the 16th and 17th centuries could be very productive and important.

It is imperative to pursue a research led agenda through the development control process. Some of the means are already there to be used and applied to the problems and gaps in our knowledge.

Agriculture

The following comments about the Cheshire landscape were received from Ian Smith, the Environmental Archaeologist for Chester Archaeology.

'The distribution of ridge and furrow is one indication that people may have underestimated the extent of arable farming in Cheshire. To individual farmers the relatively small amount of cereal may have been crucial to the economy of their farms. A lot of work could usefully be done in attempting to classify and date any existing areas of ridge and furrow and associated hedges. It would also be useful to gather existing survey work and to make use of the 1947 photographic survey to help to date hedgerows to Parliamentary Enclosure, Medieval or other.

It is suggested that the variety of crops grown in Cheshire has been underestimated by some authors despite documentary evidence that, for instance, by the 14th century there was wheat, barley, oats, rye, beans and peas all grown in the Wrenbury area on the Earl of Chester's land, and that Wirral was heavily committed to the production of corn in the early 17th century (Dodd 1989, 12). However, whilst Cheshire farmers undoubtedly grew cereals, the city of Chester also acted as a consumer and important redistributive centre for cereals from Ireland, Wales and elsewhere from the 13th to 16th centuries (Thacker 2003,45; Laughton 2003,65).

The palynological studies in Cheshire have tended to concentrate on the Late Glacial/Mesolithic and Neolithic. There must be potential for looking at historic pollen sequences and comparing them to documentary evidence. Truncation of peat/bog sequences through peat cutting will be a problem wherever peat cutting took place in Cheshire.

To understand the agriculture of the period, it is necessary to cleanse one's mind of the intensive chemical fed monoculture system of the present and think about arable and animal husbandry systems that are integrated, where there are attempts to spread risk by diversifying and where crops must be rotated'.

Textiles

The later industrial revolution has obliterated most of the evidence of earlier industries, especially in built-up areas but in the countryside, where the small home-based workshops continued over a considerable period of time, there should be surviving evidence. Knowledge of these early industries would greatly enhance our understanding of the rural economy of the region.

Archaeological evidence for the textile industry is always going to be a problem because it was conducted in individual houses. A thorough survey has been done of handloom weavers' cottages between c.1770 and c.1830 in the Central Lancashire area (Timmins 1979). This information could be used as a model for research into other small locally-based industries such as tool-making, pewter-production, watch-making, brewing and felt-hatting. The author is not aware of any detailed research into these at present.

Salt refining

Although exploratory work has been done on the salt-refining sites of Dungeon, Frodsham and Hilbre, no details of the actual processes have so far been determined. There are reports from other areas of this country and abroad and it would be helpful to understand how the local sites fit into the technology used elsewhere. Having looked at reports from coastal sites in Wales and Scotland, it looks as if something different was happening in Lancashire and Cheshire. For this reason, it would be worthwhile making a concerted effort to get these three sites further investigated and published to add to the international corpus of information which is now available.

Coal

Research for this paper did not produce much evidence on the ground for early coal mining. This may be due

partly to a lack of recording, but also to the fact that the early sites have probably been subsumed within later developments on the coalfields. There is a great deal of documentary evidence to assist in locating these early sites but the author is not convinced that archaeological work would enhance our knowledge.

Sugar refining

Finds of unglazed pottery at the South Castle Street excavation in Liverpool suggested that the fill of the Fish Market prior to building the new church had used pottery waste from a nearby production site (Innes and Philpott 1985, 117). At the time of the excavation report, it was not recognised that this was sugar-refining pottery. The site of the first sugar refinery in Liverpool was in Red Cross Street, which is just adjacent to part of this excavation. This evidence suggests that these sherds could have come from the refinery in Red Cross Street. Map evidence identifies where the sugar refining sites were situated. There is no existing archaeology to help our understanding of one of the earliest manufacturing industries in Liverpool. The sugar trade was one of the major contributors to the wealth of the city. It would be very satisfying if the site of one of these refineries could be found.

Final word

On completion of this survey, the conclusion is that much of the early industrial archaeology for our region is missing. This is a sad reflection when one considers how important the whole area became in the succeeding years with the advance of the industrial revolution. It is important to ensure that as much as possible is recorded of the early beginnings of the industrial revolution before it is totally lost in new building developments. Liverpool's status as European Capital of Culture 2008 has provided an unexpected opportunity for archaeological investigations in the city in advance of new developments.

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Abbreviations

JMAS; Journal of the Merseyside Archaeological Society.
THSLC; Transactions of the Historic Society of Lancashire and Cheshire.