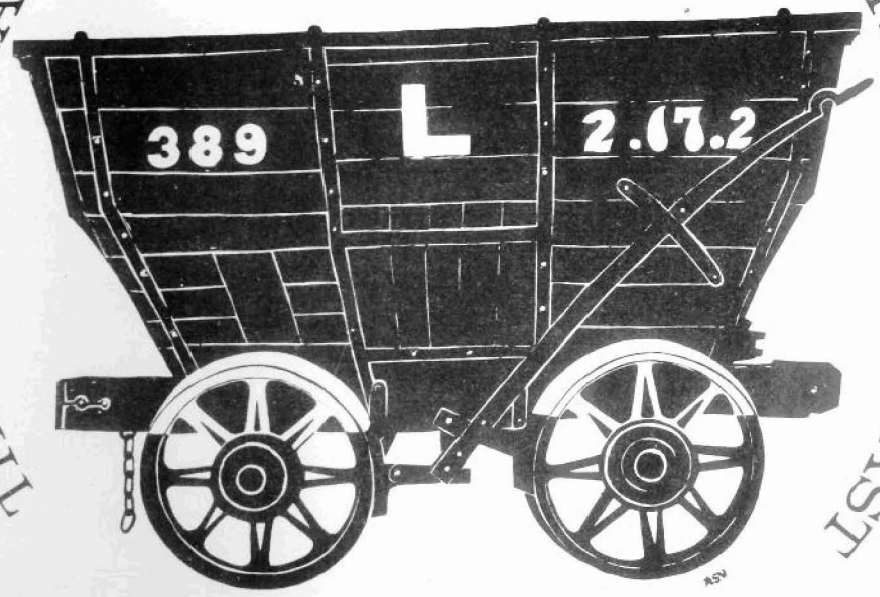
THE INDUSTRIAL ARCHAEOLOGY GROUP FOR THE NORTH EAST



BULLETIN 2

JANUARY 1967

Cover designed by Roy Varndell

Bulletin 2 : January 1967

The Industrial Archaeology Group for the North East

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The Annual subscription is 10/- and everyone interested in this subject is invited to join, even though they may also be members of local Industrial Archaeology Societies. The Group sees its function as one of coordination and hopes it is clear that there is no intention of overlapping with the specific work of such societies.

Correspondence and notes for publication are invited. Bulletin 3 will include a list of sites recorded for the North Riding of Yorkshire.

We regret the delay in publishing this Bulletin, but material is well under way for No. 3 which should come out sooner. Now is the time for members to submit any articles which they would like published. The next issue will have a Yorkshire bias just as the present one is mainly about Northumberland sites.

Our cover illustration

In the haste of producing Bulletin 1 we forgot to mention the subject of our cover. The drawing and design are by Roy Varndell, Designer at the Bowes Museum and its subject, no doubt recognised by many members, is one of the chaldron wagons at Seaham Harbour.

A success story

Bulletin 1 has been successful in a way never envisaged by the Group. It has been taken by the Council for British Archaeology as a model for new Industrial Archaeology Groups and we have had a number of requests from these Groups and Societies asking for copies. We hope to build up an exchange scheme with other similar Societies throughout the country and will try to keep our members informed of anything of special interest going on elsewhere.

Bridges of County Durham

Mr. D. Crockett of Newton Aycliffe has sent us 24 cards of road bridges and 10 of rail bridges over the rivers of County Durham, together with several fine photographs for each. He tells us that he hopes to send an additional similar number when he has time.

Not everyone is agreed on whether road bridges come within the meaning of Industrial Archaeology, but there can be no doubt that these records are worthwhile and certainly the records kept at the Bowes Museum are not restricted to industrial topics. Street scenes, house and shop details, field walls, indeed everything which has been man-made and likely to be man-destroyed is worthy of recording.

Does anyone else have their own particular 'line'? For instance what about old road-direction finger posts, or milestones or Victorian decorative cast-iron or coal-hole covers?

NORTHUMBERLAND

A check list

Here is a brief check list of all the old industrial sites which are recorded at the Bowes Museum for this county. Most of the sites have been seen and recorded by Frank Atkinson, though many watermills and windmills are taken from the initial survey of the Society for the Protection of Ancient Buildings, with additions by Tom Hay and Alan Stoyel.

We are very conscious of the shortcomings of this particular list. Not only does it refer to a very large county with which we are not fully familiar, but the very large urban areas along the Tyne present special problems for the investigator. Here is where the local worker can be of considerable help and we look forward to receiving additions for publication in our next Bulletin.

As with the initial County Durham list published in Bulletin 1, it must be stressed that every site of which the Museum has even the slightest record is noted in this list. An inclusion does not necessarily mean that the site is well recorded. If someone wishes to record a site in depth, or has information available, we will be happy to reply to an enquiry, showing what information we have recorded.

There are only two types of site which are not fully listed here: wheelhouses on farms and watermill sites where nothing remain except a gutted and sometimes modified building. The former are so frequent that the lists would be 'swamped' and the latter are of very specialised interest only, when they are stripped of their mechanical contents. Incidentally a group in Yorkshire is now recording wheelhouses and we hope to publish some of their results later.

Acomb	Coal:mining	colliery & houses	77/NY 926 662
Allendale	Lead: mines	level	77/NY 837 560
	" smelting	smelt mill	77/NY 832 566
" (West)	Lime: kiln	limekiln	84/NY 803 465
Allenheads	Lead: dressing	bowse steads	84/NY 860 455
	" smelting	smelt mill	84/NY 850 464
	Minerals: lime	limekilns	84/NY 845 466
	Power: hydraulic	engine	84/NY 860 455
Allensford	Power: water	corn mill	77/NZ 076 503
Alnmouth	Transport: water	harbour, warehouse	71/NU 248 105
	Transport: water	warehouses (guano.)	71/NU 247 095
Alnwick area	Agriculture: threshing	Chimneys for steam engines	71/NU 251 194
			71/NU 243 143
			71/NU 211 083
			71/NU 186 257
			71/NU 232 147
Alnwick	Manufacturing: furn.	furniture factory	71/NU 186 135
	" leather	tannery	71/NU 184 130
	Transport: rail	metal railway bridge	71/NU 196 126
Amble	Coal: loading	coal shoots	71/NU 267 048
			71/NU 269 049
	Agriculture: threshing	chimneys	71/NU 267 018
			71/NU 244 066
			71/NZ 181 992
Ancroft	Power: water	mill	64/NU 027 443
Ashington	Coal: water	colliery	78/NZ 265 835
Backworth	Coal	winding engine house	78/NZ 303 720
Bamburgh	Power: wind	windmill	71/NU 182 352
Bardon Mill	Manftg: Textiles	fulling mill	77/NY 779 647
	Minerals: clay	brick & tile wks.	77/NY 779 647
	Minerals: lime	limekilns	77/NY 782 670
Beadnell	Minerals: lime	limekilns	71/NU 238 285
Beal	Agriculture housing	houses	/NU 065 427
Belford	Power: wind	windmill	64/NU 147 335
	Manftg: milling	corn mill	64/NU 147 344
	Transport: rail	tank, footbridge, goods shed.	64/NU 126 337

Berwick-on-Tweed	Agriculture: threshing	Chimneys for steam engines.	64/NT 958 466 64/NT 941 465 64/NT 978 562 64/NT 954 509 64/NU 025 447
	Manftg. brewing	malthouse	64/NU 003 527
	Manftg. confectionery	confectionery workshop.	64/NT 998 528
	Manftg. fishing	salmon cobles	R. Tweed
	" "	icehouses	64/NT 997 529
	Manftg. textiles	sacking factory	64/NT 997 531
	Transport: rail	railway bridge 1847.	64/NT 992 532
	Transport: road	old bridge	64/NT 995 527
	Processing: manftg.	granaries	64/NT 996 528 64/NT 998 529 64/NT 999 527
	Transport: sea	store, formerly shipyard.	64/NT 990 525
Blyth	Coal	colliery stables	78/NZ 277 819
	Coal: transport	coal shoots	78/NZ 311 824
	Transport: water-sea	lighthouse	78/NZ 318 814
Capheaton	Power: water	mill wheel	77/NZ 027 814
Chathill	Transport: rail	goods shed	71/NU 186 270
Chollerford	Transport: road	bridge	71/NY 920 705
Chollerton	Agriculture: housing	houses	77/NY 932 720
	" threshing	chimney for steam engine.	77/NY 932 720
	" power	windmill	77/NY 932 720
Corbridge	Minerals: clay	pottery	77/NY 992 652
	Transport: road	bridge	77/NY 989 641
	Agriculture: threshing	chimney	71/NZ 036 669
Cramlington	Power: horse	wheelhouse	78/NZ 239 769
Craster	Manftg: fishing	kippering sheds	71/NU 259 199
	Transport: water	stone loading tower.	71/NU 259 200
Dissington	Power: wind	smock mill	78/NZ 129 695
Dukesfield	Smelt mill (see STEEL)		
Earsdon	Coal: mining	disaster memorial	78/NZ 320 725
East Hartford	Agriculture: housing	single storey cottages.	78/NZ 250 790
	" sheds	cart sheds	78/NZ 250 790
Ellingham	Agriculture: housing	terrace of houses	71/NU 186 257
Fallowfield	Minerals: witherite	lead & witherite mine.	77/NY 940 678
Felton	Power, water	mill & houses	71/NU 183 001
Ford	Coal: mining	mine: chimney	64/NT 966 377
	Iron: working	Smithy	64/NT 949 378
	Minerals: quarrying	quarry with crane	64/NT 965 374
Ford Forge	Iron: working	spade factory	64/NT 933 384
	Manftg: milling	barley mill	71/NT 933 383
Fourstones	Agriculture	wheelhouse and chimney.	77/NY 892 680
	Manftg: paper	paper mill	77/NY 902 666
	Minerals: witherite	witherite mine	77/NY 850 988
Gosforth	Transport: road	med. bridge	78/NZ 254 674
Greenhead	Minerals: lime	kilns	
Great Whittington	Agriculture: threshing	chimney	77/NY 985 737
	" "	thresher	77/NY 985 737
	" "	engine	77/NY 985 737
	Power: wind	windmill	77/NZ 015 705
Guyzance	Power: water	mill	71/NU 207 035
		mill	NU 206 029
Haggerston	Power: wind	mill & dovecote	64/NU 035 436
Hallington	Power: water	corn mill	NY 982 743
Haydon Bridge	Minerals: lime	lime kilns	77/NY 812 682
Healey	Power:water	corn mill	77/NY 995 581
Hexham	Manftg: brewery	brewery	NY 942 649
	Power: water	corn mill	77/NY 955 617
	" "	" "	77/NY 899 655
	Power: wind	" "	77/NY 927 608
Holburn	Power: water	mill	64/NU 039 357

Holmes Linn	Lead mining	lead mine and engine house	77/NY 842523
Humshaugh	Minerals: lime	lime kilns	77/NY 931709
Langley	Lead: smelting	smelt mills and flue and chimney	77/NY 828613 77/NY 840610
Lemington	Manftg: glass	glass cone	
Loan End	Transport: road	Susp. bridge	NT 935510
Lowick	Agriculture	dovecote	NU 071404
	"	18th cent. farm	NU 008386
	"	dovecote	NU 008386
Milbourne	Power: water	mill	78/NZ 114752
Mitford	Power: water	corn mill	78/NZ 183860
	Manftg: textiles	blanket mill	78/NZ 184860
Morpeth area	Agriculture: threshing	chimney	NZ 225780 NZ 239784
Morpeth	Iron founding	foundry	NZ 200861
	Manftg: food	soft drinks factory	NZ 200859
	Manftg: flour	flour mill	NZ 205864
	Transport: road	road bridge	NZ 201859
Newbiggin-by-the-Sea	Agriculture: buildings	complete North'd farm (with chimney)	NZ 297889
	Agriculture: threshing	chimney	NZ 297889
	Power: steam	steam engine	NZ 297889
	Power: wind	tower mill	78/NZ 298893
Newburn	Transport: water	old boats (wherry)	78/NZ 164652
Newcastle	Manftg: engineering	'Turbinia' ship	NZ 247658
	Power: wind	windmill	78/NZ 267658
	Power: water	mill	78/NZ 257672
	Power: wind	smock mill	78/NZ 240656
	Transport: road	swing bridge	NZ 252637
	Transport: rail	viaduct	NZ 296648
	" "	bridges	NZ 251637
	Transport: river	warehouse	
	" "	wharf	
	Lead	shot tower	
New Hartley	Coal mining	colliery	78/NZ 309774
North Shields	Power: wind	windmill	78/NZ 337691
North Shields	Misc.	gent's. convenience	NZ 335661
Otterburn	Manftg: textile	tweed mill	77/NY 888928
	Power: water		
Plessey	Power: wind	windmill	78/NZ 238789
Ponteland	Iron: working	Smithy	NZ 166729
	Minerals: bricks	brickworks	78/NZ 149733
	Transport: road	Toll house	NZ 166728
Rennington	Minerals: lime	lime kiln	71/NU 217158
	" "	" "	71/NU 228174
Riding Mill	Iron: working	shaper nr. Smithy	NZ 015617
	Power: water	Corn mill	77/NZ 018614
Ridley Hall	Transport	Bridge	NY 796647
Rothbury	Power: water	Corn mill	71/NU 073008
	" "	" "	71/NU 068016
Scotswood Bridge	Transport: road	susp. bridge	78/NZ 200635
Scremerston	Iron: working	Smithy with tyre shaper.	NU 008491
Seahouses	Minerals: lime	lime kilns	
Shilbottle	Iron: working	Smithy with tyre shaper.	NU 193085
	Agriculture:building	Cart shed, chimney.	NU 211083
Shoresdean	Coal: mining	Colliery with smithy engine house.	NT 957 46
Shotleyfield	Power: water	Corn mill	77/NZ 061531
Simonburn	Power: water	Mill	77/NY 890740
Stannington (or Plessey Mill)	Power: wind	Windmill	78/NZ 239789
Steel	Lead smelting	Smelting mill	77/NY 941580
Stella	Power: electricity	Steam turbine	
Stublick	Coal mining	Colliery	77/NY 832603
Throckley	Coal: transport	"dandy cart"(site)	78/NZ 155675
	Minerals: brick	brickworks	78/NZ 155675
	Power: wind	windmill	NZ 146697

Tweedmouth	Manftg: brewing Iron working Manftg: flour	Brewery engineering shop flour mill	NT 994522 NT 994527 NT 995522
Twizell Bridge	Transport: road	med. bridge	NT 885433
Warkworth	Power: water	mill	71/NU 230046
Weldon Bridge	Power: water	mill	71/NU 137984
Whitfield	Power: water	turbine	77/NY 781573
Willington Quay	Lead: working and products.	Lead works	NZ 339 664

A Waddle Wheel

It sounds like something Paul Jennings thought up and one is tempted to say it looks like something designed by Heath Robinson, but that would be unfair and carrying the simile too far.

The discovery began in a Coal Board office, at a general discussion on old mining equipment, when an Area Engineer who had just taken in a new district suddenly remembered seeing an old Waddle wheel at some colliery. The rest of the afternoon was spoilt for him as he worried about where he had seen it. He remembered. He telephoned, and there it was: just out of service two weeks ago and due to be scrapped.

Reference to mining text books of about 1900 cleared up our problem of what it was and how it worked. In the 1880's this large fan (our example is about 30 ft. in diameter) was designed to ventilate collieries. Air was sucked in at the centre and thrown free centrifugally at the circumference. Our example is at Ryhope Colliery, Co. Durham. It was probably erected about 1900 and originally powered by a double horizontal steam engine, but latterly by electric motor. Its preservation is now being worked out with the very kind cooperation of tolerant Coal Board officials.

Are there any other Waddle fans in existence elsewhere in the country? This is the sort of query that no-one seems able to answer. Can any of our readers?

FA

COUNTY DURHAM

Additions to check list in Bulletin 1.

Below are given additions which have been made to the County Durham check list, at the Bowes Museum, since it was published in our Bulletin 1.

Some have been recorded by Frank Atkinson, the water mills and colliery engines by Alan Stoyel and other items have been reported by H. L. Beadle, S. D. Bell, Sid Chaplin, J. A. Dent and Peter Semmens. We are grateful to everyone who has helped and look forward to hearing of other sites which we have missed.

Bearpark	Coal: coke	ovens	85/NZ 243434
Birtley	Minerals: clay	brick-making	78/NZ 265556
Bishop Auckland	Power: water	pumping	85/NZ 202299
Bowburn	Coal: winding	horiz. eng. (2)	85/NZ 304379
Castleside	Lead: smelting	flue	84/NZ 078484
Chopwell	Coal: mining	Colly. buildings	78/NZ 114586
East Herrington	Power: water supply	pumping	78/NZ 361529
Ferryhill	Coal: winding	horiz. eng.	85/NZ 282331
Gateshead	Coal: pumping Minerals: lime Transport: rail	eng. hse. kilns warehouses	78/NZ 274632 78/NZ 265639 78/NZ 250632
Great Burdon	Power: water	mill	85/NZ 318167
Healeyfield	SEE Castleside		
Jarrow	Power: electricity	wood cooling tower	78/NZ 323656
Killerby	Power: water	mill	85/NZ 190197
Port Clarence	Iron: working " "	foundry ironworks	85/NZ 500215 85/NZ 507215
Roker	Transport: rail	3 steam cranes	78/NZ 409584

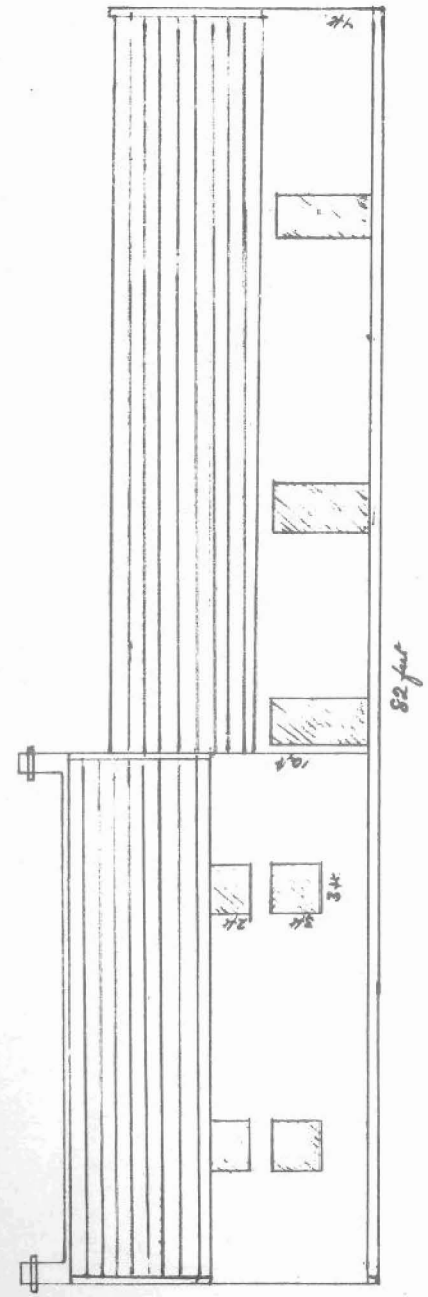
Ryhope	Coal: ventilation	Waddle fan	78/NZ 399534
Shotton Colliery	Coal: winding	horiz. eng.	85/NZ 398412
South Hylton	Iron: working	forge	78/NZ 350568
South Shields	Coal: transport	staithes	78/NZ 355649
Stanhope	Minerals: quarrying	millstones	84/NZ 003420
	Power: water	mill	84/NY 994391
Stockton-on-Tees	Food manufacturing	brewery	85/NZ 447186
	Minerals: clay	brickworks	85/NZ 455201
	Transport: water	quays	85/NZ 448186
			450192
Sunderland	Minerals: lime	kiln	78/NZ 390577
	" "	Fulwell kilns	78/NZ 385601
	Transport: water	warehouse	78/NZ 413570
			410575
Tanfield	Transport: rail	bridge	78/NZ 195551
Thornley	Coal: winding	horiz. eng. (2)	85/NZ 366395
Waskerley	Transport: rail	station etc.	84/NZ 052453
West Boldon	Power: wind	stone tower	78/NZ 354612
Whitburn	Power: wind	stone tower	78/NZ 406625
Whitburn Colliery	Coal: winding	horiz. eng.	78/NZ 407636

South Hetton
wheels and chimmneys

Following up the article on the Horse Gin at East Herrington another horse wheel has been located, this time underground. Pursuing rumours the writer found than an underground horse wheel still exists at South Hetton Colliery and it is hoped that a party will visit it shortly and measure it up.

At South Hetton Colliery a furnace chimney for underground ventilation still stands, while the writer gathers there are two still existing at Silksworth Colliery. Moreover in the demolition of the above ground structures at the Old Herrington Colliery remains of two more were noted hidden behind modern brickwork. If you know of others, please inform us.

MW



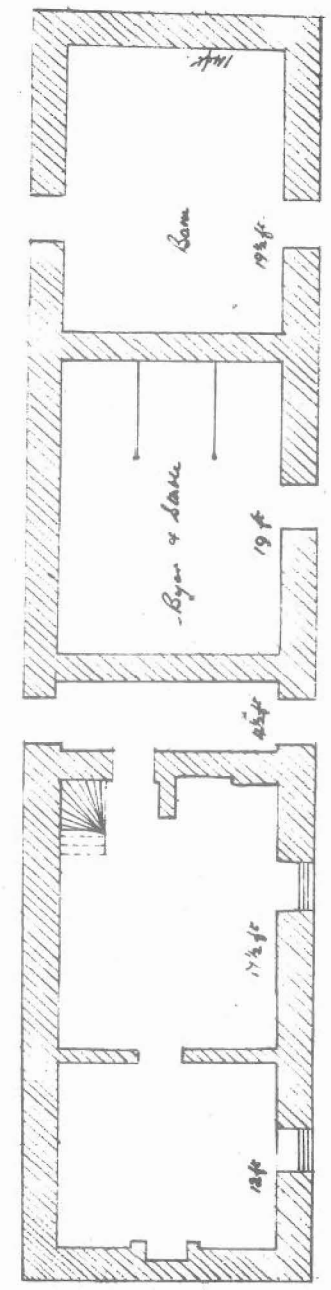


Figure 1 (see "Northumberland farmsteads")

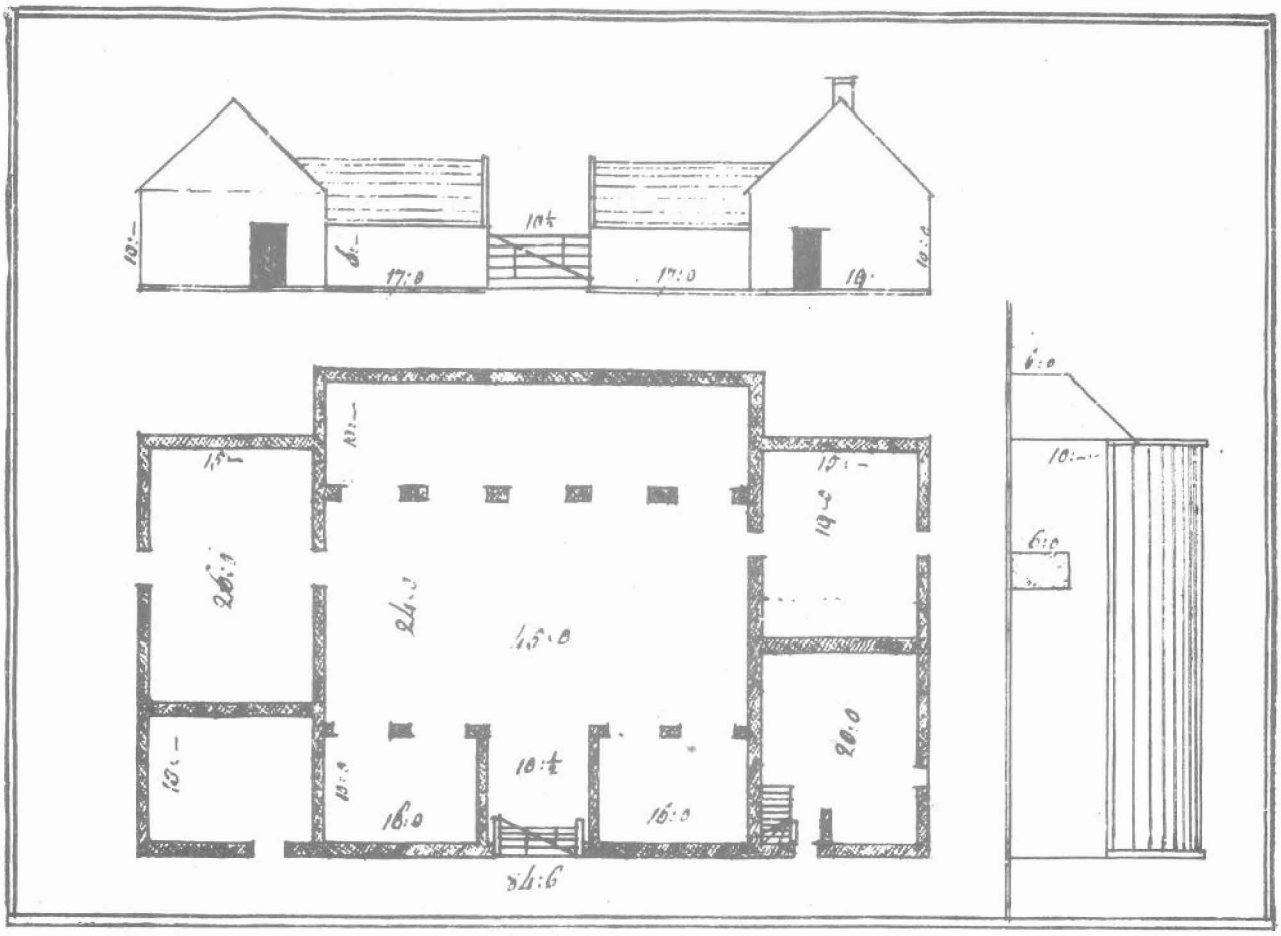


Figure 2 A (see "Northumberland farmsteads")

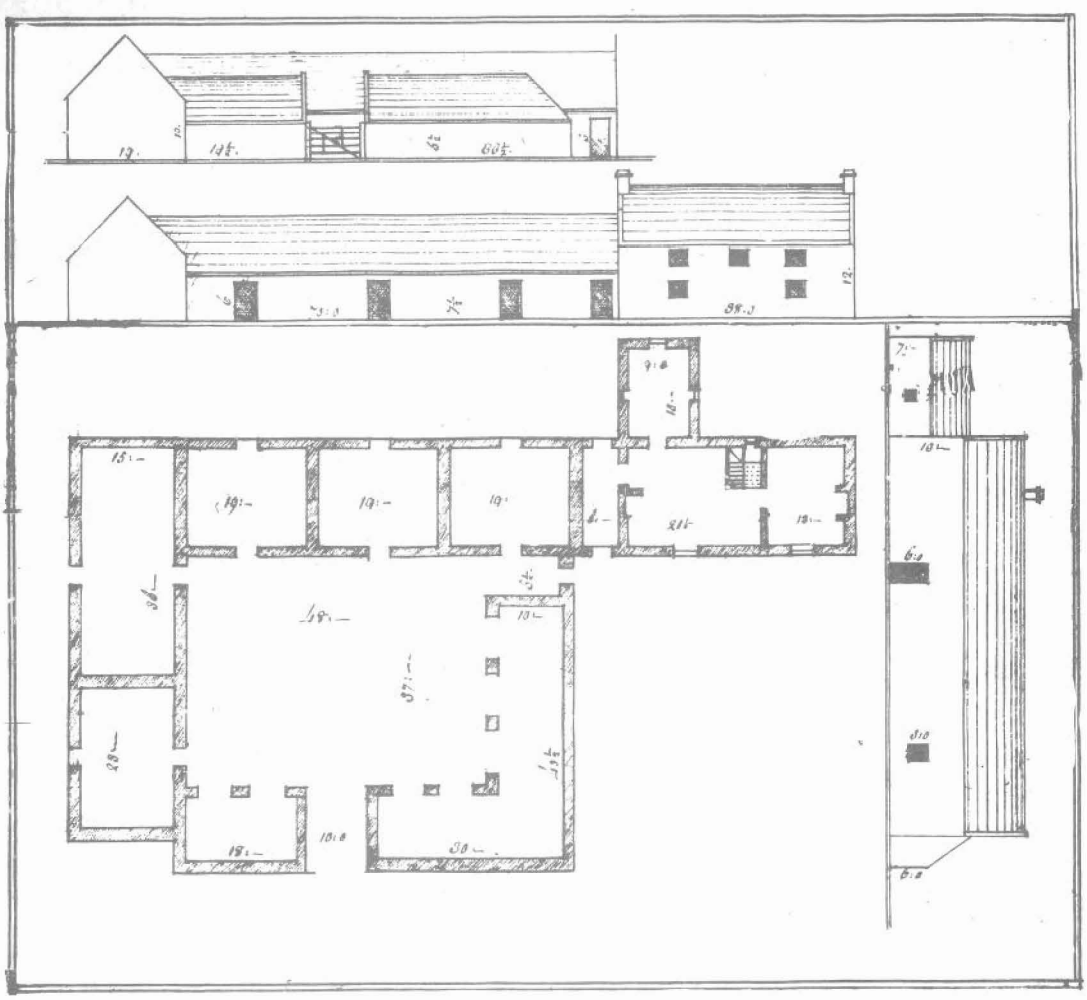


Figure 2 B (see "Northumberland farmsteads")

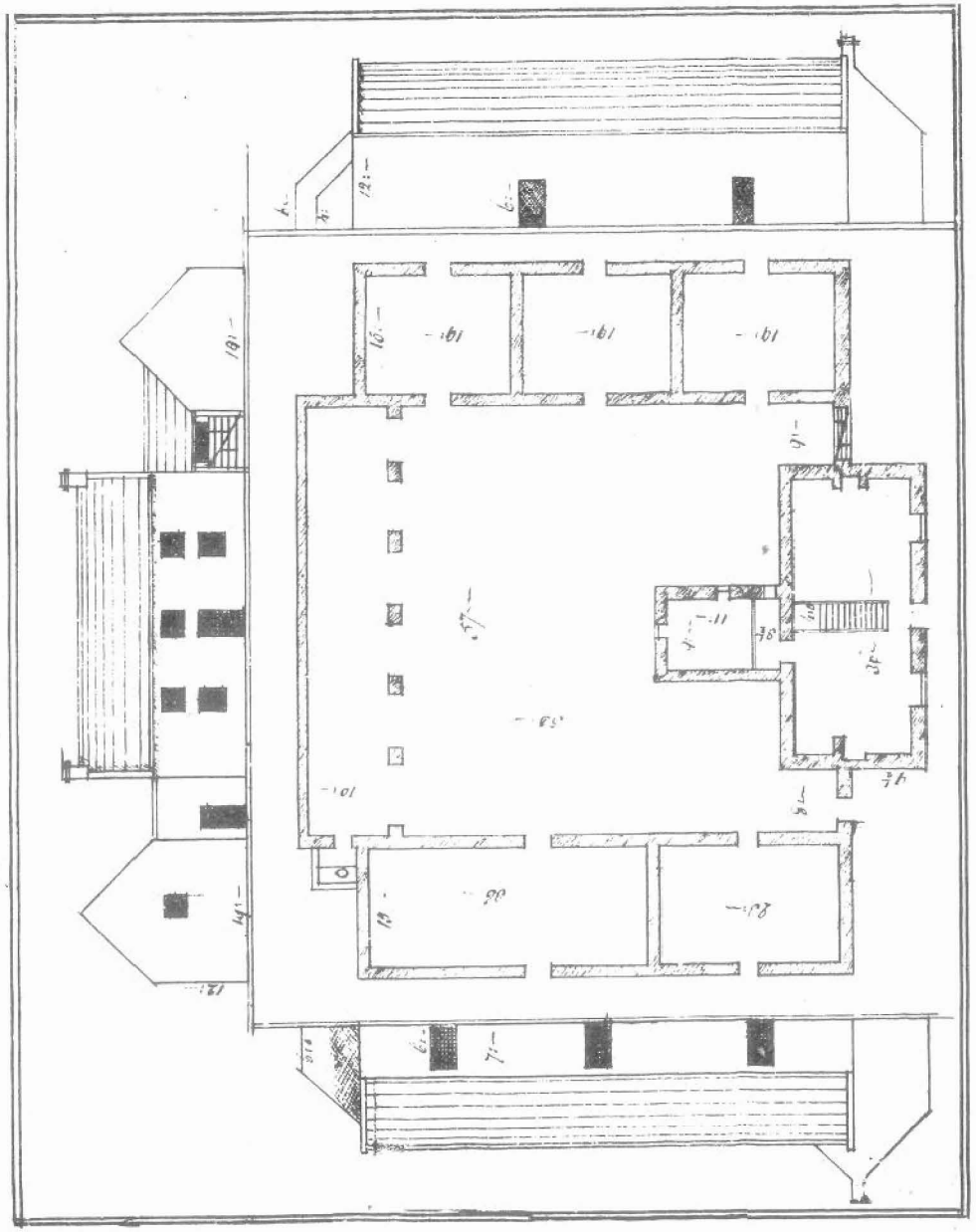


Figure 2 C (see "Northumberland farmsteads")

Old coal workings at Hett

Alan Stoyel

It was learnt recently that some old coal workings had been broken into during open-cast mining on a hillside about a quarter of a mile N.E. of Hett, a small village approximately 4 miles S. of Durham (Grid. Ref. NZ/285 370).

In December the site was visited by Michael Wheeler and the writer, who were able to enter the workings.

The coal is the Five Quarter seam, this being the one above the Main. (Unfortunately the coal seam nomenclature is complex and great care must be taken when discussing particular seams in the North-East. As an example of the apparent confusion there are two other Five Quarter seams in Co. Durham, bot of them higher up in the succession than the one in question, which is itself equivalent to the Stone Coal of Northumberland. There is a Five Quarter seam in Northumberland, too, but it is much lower down!) It is approximately 3 feet thick, and the primitive room and pillar workings were completely within the coal with about 5-6 inches remaining above the backs. The overburden consisted of about 15 feet of friable shale and this has collapsed into many of the passages.

The site foreman said that no old workings were intersected nearer the outcrop of the seam but the sites of two filled-in shafts were pointed out in the opposite direction. The galleries appeared to be heading directly for one of these shafts which would have been about 20 feet deep. Unfortunately the passages were floored with at least 6 inches of thick mud so that any tools would have been covered. Marks on the walls showed that a pick with a sharp point had been used to excavate the coal. The open-cast operations have yielded the remnants of two sledges and some pieces of timber of triangular cross section, however. The width of each gallery was about 5-6 feet and the extracted coal was estimated at about 40-45%, although this latter figure is very approximate due to the collapses which have occurred.

A tentative 18th century date would be placed on these interesting workings; but it must be stressed that they are now very dangerous and should not be entered on any account.

SOME NORTHUMBERLAND FARMSTEADS

Mark Hughes

Even the most casual observer could scarcely avoid noticing that the landscape of the valleys of the Tyne and its tributaries west of say Prudhoe present features unlike those of much of the rest of Northumberland or County Durham. In this landscape perhaps the most distinctive and attractive element is the large number of superbly proportioned late eighteenth and early nineteenth century farmsteads. In most cases the house and farm buildings were conceived as a single entity and built as a unity, and although perhaps no longer ideally planned for farming in an age of milking parlours and grain dryers they remain an impressive memorial to a crucial period in agricultural development.

Though of course there were a number of Yeomen farmers who built their own farmhouses in this area there can be no doubt that the vast majority of farms were tenant occupied and the houses etc. built by one or other of the various landowners of the district. In the 18th and 19th centuries the principal landowners were the Dukes of Northumberland with farms scattered widely throughout South West Northumberland, the Blacketts of Matfen with estates both near Matfen itself and in the Haltwhistle/Bardon Mill area, and the Blackett-Beaumont family who at various periods between 1700 and 1850 owned Wallington, large parts of Hexham and Hexhamshire as well as the Bywell estates which were bought in 1818 from the Fenwick family. In the North Tyne valley the Allgoods of Nunwick with a large estate centred on Simonburn and their neighbour the Charltons of Hesleyside readily come to mind. In terms of size however no estate in South West Northumberland approached that of Greenwich Hospital who after 1735 became possessors of the lands of the ill-fated Earls of Derwentwater. In addition to outlying lands such as Newlands and Whittonstall and Hartburn they were mainly concentrated along the Tyne valley where from Dilston near Corbridge to beyond Haydon Bridge they are so densely located that one can see at least one of their farmsteads from almost any spot along the main road between Corbridge and Bardon Mill. It is the Greenwich Hospital farms par excellence that set the tone of farm buildings in this area and is upon the records of that estate now in the Public Record Office in London and those of the Blacketts, Blackett-Beaumonts and Allgoods that this article is based. I intend to focus attention on only two themes, the first examining the factors which influenced the landowners in deciding when to build and the second describing briefly the types of housing that were built at various dates.

Even among yeoman farmers the generalization that periods of building coincided with prosperity needs treating with great reservation but for the landlords of the Tyne valleys the factors involved cannot be reduced to such a simple hypothesis. Among such a diverse group of landowners it is only to be expected that the patterns of Estate management in general and building policy in particular should differ markedly. The decision to build or not was one which could frequently be deferred almost indefinitely and some agents and owners were more inclined than others to undertake a building programme. Nicholas Walton Receiver for Greenwich Hospital between 1759 and 1810 was an avid builder as was his more famous successor John Grey of Dilston after 1833. The Sir Edward Blackett of Matfen who controlled estate policy from about 1830 till his death in 1885 was more inclined than either his father or Grandfather had been to build and similarly on the Blackett and Beaumont Hexham estates new building was uncommon between 1750 and 1820 but when Thomas Wentworth Beaumont gained control after 1820 he delighted in undertaking a massive building programme.

Two points need to be stressed concerning these examples which could readily be supported from the evidence for other estates. The first is that in neither of the last two cases can it be argued that the individuals in question enjoyed greater wealth than their predecessors. It was not the accretion of new gross income which induced them, any more than Walton or Grey, to do what their forebears or even contemporaries on other estates were not willing to do.

In the second place the period from 1820 to 1850 can only be described as one of considerable difficulty for farming during which rents tended to fall and which included three major agricultural depressions when abatements (temporary rent reductions) of up to 15% had to be made. In this period therefore the apparent paradox is reached where at precisely that time when gross rental revenue was declining, and therefore prima facie the landlord would be least willing to incur additional expenditure, they can be seen to be doing just that. As I will show later this accords with other economic factors but it also illustrates that the timing of new building on any estate is in the last resort dependant on the conscious decision of the owner. If his net income provided a sufficient surplus beyond the requirements for his enjoyment of a subjectively pre-determined standard of living then how he would devote his surplus cash was a matter in which whim and fancy could take a major part.

The ways in which his whims were excercised and his fancies took him were however in their turn influenced by economic factors to which we now turn. The economic relationship between landlord and tenant, of which the rent was the most obvious feature, was in reality a most complex affair into

which the provision of farm buildings fitted as the major item where landlord capital investment could be expected to yield a direct or indirect return. Of course the price changes in agricultural products between 1750 and 1850 grossly affected the level of rents but for much of the period another, and at times equally important factor, was the calibre and availability of would-be tenants.

The whole evolution of Northumbrian Agriculture is related to the creation especially in the 18th century of large tenant farms at the insistence of landlords who saw obvious advantages in an estate composed of a relatively small number of large farms tenanted by persons of capital as opposed to a large number of smaller holdings. This very process created a situation where there could occur a shortage of such persons willing and capable of taking on the large farms. Estate farm building is directly related to the supply of such tenants as well as the creation of the larger farms themselves. At those times when such potential tenants were in short supply the landlord had to attract them by whatever means were at his disposal and new buildings were an attraction to landlord and prospective tenant alike, since for the landlord the outlay could be more than covered by the increased rent.

In other cases the technical proficiency of one potential tenant may have so far exceeded that of his competitors that again the landlord was induced to almost bribe him by the offer of improved new buildings even when he offered no higher rent that his competitor. The agreements for farms on these estates contain many examples where the incoming tenant has exploited his scarcity value in order to get a new set of buildings out of his future landlord. At the other extreme in times of depression the sitting tenant was often able, by threat of giving notice to quit, to force the landlord not necessarily into a direct reduction of rent but an indirect one by improving the amenities of the farm by providing a new house or steading.

In terms of dating phases of differing intensity of farm building in the light of these economic factors there would appear to be four major periods between 1700 and circa 1850. Up till c. 1750 there is evidence to suggest that new building was rarely more than reluctantly undertaken as direct replacement of ruinous previous structures. The following thirty five years or so till the mid 1780's saw a considerable burst of activity associated with the existence of a wide technical gulf between progressive minded would-be tenants possessed of sufficient capital but comparatively scarce and also possessed of social pretensions, and the more common less progressive ones devoid of both capital and social yearnings. From the mid 1780's through till the end of the Napoleonic Wars in 1815 changes in land use consequent upon the massive inflation of agricultural prices drew from the landlords a certain amount of building but very often it took the form of modifications to an existing range of buildings while the technical gulf became less apparent and there was no shortage of capable tenants.

Finally from the end of the wars till at least 1850, except where the decline in a landlord's income reached the point where he would or could not undertake massive estate expenditure, it would seem that building was undertaken either reluctantly as an alternative to a more painfull fall in rental income, or willingly in order to attract and help the relatively scarce good tenants.

Within these long waves of activity three further factors need mentioning. In the first place the social demands of the larger tenant farmers rose continuously and were reflected in the larger more elegant houses they looked for. Secondly at any time the collapse of an existing building could necessitate new building even when general estate policy was against such a step. Thirdly, as indicated above, there must always be borne in mind the overriding fact that any landlord's decision might contain an element of non-economic consideration such as social or political prestige.

What then were the sort of farm steadings built under these influences. It is quite clear that in the earlier part of the 18th century the basic arrangement of such steads as were built were linear with the House, byre and barn lying in one line. A contemporary plan of such a house to be built on the Matfen Estate in the early 1750's is the basis for the first plan (fig. 1). The obvious features of this building are the thickness of the walls: at least 2'6", the fact that the staircase is not in the centre of the house but in a corner of the main living room, that the only door into the house is approached by a passage between the house and the byre/stable, and that the roof is either low pitched and stone-slated or thatched. Many of these ranges have since been extensively modified, either as a consequence of the holding to which they were attached having amalgamated to form part of a larger holding, or following a later building of a new set of buildings.

The two modifications most common have been the conversion of the whole into either labourers' cottages with a second storey being added to the single storey, byre and barns and a toofal added at the back to provide additional kitchen space, or with manual structural change they became nothing more than barn and byres. Even when modified these early types would seem to be capable of being recognised by certain features - the size and roughness of the stonework, especially at the non dwelling house end, the off centre original siting of the kitchen chimney, the fact that where a side wall as opposed to gable end front door has been inserted the insertion is clearly noticeable, the small square windows. As far as I can judge, a detailed survey of the Tyne valley area should produce ample examples of this sort of farmstead and though one would not for a moment suggest that they were not built after the mid eighteenth century, they do represent the more primitive layout which the waves of building during the period from 1750 onwards were to abandon in favour of more elaborate forms. In their main outlines the principal features of these later forms

were all presented in the set of three steadings offered to Wm. Bates in 1764 when he was about to become a tenant of Sir Edward Blackett of Matfen, which form the basis of Fig. 2. (a photo copy of the original mss). In the first stage "A" the linear farmhouse is retained as one side of a square/farmyard, a barn/stable forms the side opposite while the other two sides are made up of hemmelling; one range pierced by a gateway.

In the next stage "B" the linear housing forms an offsett element in a square with a further barn and byre set at right angles on the end furthest from the house, the other two sides of the square once more made up of hemmelling, one range of which was pierced by a gateway.

In the final form, the house forms one side of the square but now for the first time the entrance is no longer in a gable end but the conventional "double front" is now apparent, with the back of the house facing into the "yard". Opposite the house was a range of hemmelling and the two other sides were composed of barns, byres and stables.

Other features such as the change in location of the stairs, the greater height to the eaves, and the erection of a dairy are apparent from the plans, but in simple terms most later 18th and early 19th century new-built farmsteads conform with only minor modifications to one or other of these schemes.

By the mid 19th century the tendency for the farm house to become detached from the other buildings becomes more pronounced until the simple square of stage B is retained with the house being located at will at some distance from it.

Perhaps the best quality of masonry and elegance of (18th century) design occurs on the Greenwich Hospital farms for which, although I have not as yet found any plans extant, a number of estimates have survived in the Public Record Office in London. Three examples will suffice.

1. Wark Manor farm. Map Reference 830 788. Hexham map. New Built 1769

House	22 x 15 x 14	£51
Dairy	15 x 7 x 6	£9
Stable	13 x 15 x 9	£14
Byre	21 x 15 x 9	£19
Barn	24 x 15 x 13	£24
Fold wall & oven		£7
		£124

2. Whitechapel farm. Map Reference 802 649. Built 1767.

House	40 x 19 x 14	£91
Milk house	15 x 7 x 7	£10
Stable	24 x 15 x 9	£30
2 Byres	21 x 15 x 9	£49 for the two
		£180

3. Elington East farm. Map Reference 870 635. Estimate 1792.

House	36 x 15 x 17	
Toofall for dairy & back kitchen	36 x 9 x 9	£120
Stable	24 x 15 x 13	£34
Byre	21 x 15 x 9	£22
Barn	30 x 15 x 13	£37
Cottage	18 x 15 x 9	£25
		£238

Obviously in a paper of this kind one must be limited in scope and omit satisfactory examination of a number of important and interesting features but I hope that I have indicated some of the sort of evidence and information armed with which, the industrial archaeologist could embark upon the necessarily more detailed survey of the farms. If any individual or group were interested in undertaking such a survey I would be more than willing to provide whatever document-based evidence as to dating/costs etc., was available, to the best of my knowledge. The fuller appreciation of the history of our region depends upon mutually advantageous cooperation between the persons who rely predominantly on documents and those whose interests and aptitudes lie more in the examination of archaeological evidence.

Note on dialectal words

Two words are used in the above paper which may not be immediately understood by all readers, though they occur frequently in 18th and 19th century documents and are still in general use in agricultural circles in Northumberland.

Hemmel: a shed or covering for cattle. This word is recorded in The English Dialect Dictionary (Joseph Wright, 1902) as being used in Scotland, Northumberland, Durham, Cumberland and parts of Yorkshire.

Toofal or tofall: a small building annexed to a larger, against which its roof rests; a 'lean-to'. Wright records this from the same areas as for Hemmel, and additionally from Westmorland.

MILLSTONES IN THE NORTH EAST

Alan Stoyel

Millstones have been used for grinding corn and other materials for many hundreds of years, and these few paragraphs have been written in the hope that an interest in the different types still to be seen in the North East will be stimulated, and any unusual features reported. The examples which have been quoted are at water-mills, but those used in other mills, whether powered by wind or steam, were essentially the same.

At one time the supply of millstones was obtained locally, an example being at Shotley Bridge, where massive sandstone was found outcropping along the River Derwent, and similarly near Barnard Castle. Certain areas outside the North East gradually became suppliers of special types of millstone for grinding particular sorts of grain, although local stone was still quarried for corn grinding well into the nineteenth century about two miles north of Stanhope, Co. Durham, the locality being still marked as "Millstone Rigg" on the modern Ordinance Survey maps. Another quarry which contains some blocks of stone in the shape of rough millstones has been reported by Mr. H. L. Beadle to the east of Flushiemere, near Middleton-in-Teesdale, Co. Durham.

For a very long period the best stones for flour production were imported from the Paris basin: these were known as French or burr (buhr) stones, and were made of fitted blocks cemented together with plaster of Paris, stout iron hoops being shrunk on to hold the blocks in place. The stone is a hard, structureless chalcedony with a characteristic speckling due to irregular cavities, and of a cream or pale brownish colour. Burr stones were generally built up in this country and sometimes an iron plate may be found on the back which records the maker. A local name which is quite frequently seen is W. Mountain and Sons of Newcastle, as on one of the stones at Tocketts Mill, near Guisborough, Yorkshire (N. R.). Occasionally the inscription on a millstone includes the date of manufacture, and what is probably the earliest dated one to survive in the North East is to be seen at Satley Mill, near Lanchester, Co. Durham, made by George Maris of Hull in 1846.

Burr stones range in diameter from 4 feet 8 inches at Hamsterley Mill near Rowlands Gill, Co. Durham, to 4 feet, as at Aycliffe Mill, near Darlington, although smaller stones were almost certainly used in windmills. Very small burr stones may be found, each one generally made from a single block. These are in the 1 foot 6 inches - 2 feet 6 inches diameter range, and an example may be seen in Newminster Abbey Mill, Mitford, near Morpeth. The gear from Newbiggin Mill, Blanchland, Northumberland, which is in store for the Open Air Museum, includes a pair of these.

Peak stones are probably the commonest type to be seen in the North East and are of Millstone grit, a coarse, tough, medium grey sandstone which was quarried as a single piece. The best quality stone came from the Peak District of Derbyshire. They were mainly used for grinding barley and oats, and were often larger than burr stones, varying in diameter from 4 feet at Alwent Mill, Gainford, Co. Durham, to 5 feet 1 inch at Brignall Mill, Yorkshire (N. R.).

Other imported millstones which may be found are of dark vesicular lava, quarried whole in Germany, known as blue or cullen (derived from Cologne) stones. This was the last part of the country to use this type - principally for grinding barley. Their diameter varies from 3 feet 10 inches at Healey Mill, near Hexham, Northumberland, to 4 feet 6 inches at Croxdale Mill, near Durham, although another example is seen in the pair of stones, 2 feet 4 inches in diameter, which was used to grind the local shale to make slate pencils at Cronkley Pencil Mill, Yorkshire (N. R.). near Langdon Beck, in upper Teesdale.

Latterly an artificial millstone of emery and cement, known as the composition stone, was much favoured. Composition stones are said to grind faster, especially when the furrows on the dressed surface are sickle-shaped instead of straight; they also have a very real advantage in that they do not need to be dressed so frequently due to their abrasive texture. They may be seen, in use, at Crathorne Mill, near Yarm, Yorkshire (N. R.).

It is not always necessary to go inside the mills to see examples of these different millstones. Often a spare stone was left leaning against an exterior wall, as at Croft Mill, Yorkshire (N. R.). near Darlington. At Gaunless Mills, Bishop Auckland, a fine collection of stones stands along the side of the mill yard. Often millstones are sunk in the yard, as at Leap Mill, Burnopfield, near Stanley, Co. Durham, or are used as steps as at Coatham Mundeville Mill, near Darlington. At Alwent Mill, Gainford, they have been used to floor the interior of the mill; or they may form an attractive feature in gardens, as at Croxdale Mill, near Durham. Many of the village names on the grass verges of roads in Yorkshire offer a splendid opportunity to see different types of stone, most of which have not been moved very far from their working places in all probability. It is regrettable, however, that mills such as Kepwick Mill, near Northallerton, Yorkshire (N. R.). should have been gutted of their stones merely for this purpose, when the remainder of the gear is intact.

At Norton Mill, near Billingham, Co. Durham, a large peak stone lies on a grassy bank where the mill used to stand. Pieces of millstone may be recognised easily by their dressed surface with the tell-tale furrows,

and examples may be seen in dry-stone walling near Beckside Mill, Hamsterley, near Witton-le-Wear, Co. Durham, or in the debris of a demolished building at Hawthorn Mill, near Easington, Co. Durham.

The location of any millstones is well worth recording, since they might be the means of discovering an unknown mill site. Local inquiries will produce interesting information even if the stones have been moved.

In the North East there is still a great deal to be found out about the local sources of millstones and also, of course, about the mills where they were used. News of any discoveries will always be most welcome.

Three books

of interest to the industrial archaeologist

The Bowes Railway by C. E. Mountford published by the Birmingham Locomotive Club, Industrial Locomotive Information Section and obtainable from 44 Hicks Avenue, Greenford, Middlesex, price 12/6 141 pages, 80 illustrations, 8 maps.

This is a very detailed and interesting survey of the NCB line from Burnopfield Colliery to Jarrow Staithes. This railway is especially interesting as being the last major example of inclined plane working in the North East, once so common. 6 inclined planes are still in use and their method of operation is described in detail.

The Railways of Weardale by T. E. Rounthwaite published by the Railway Correspondence and Travel Society, price about 9/- obtainable from J. R. Gregory, 10 Windy Arbour, Kenilworth, Warwickshire. 37 pages of text, 48 photographs, 4 maps.

Very useful booklet on not only the main railway line up to Wearhead but the Stanhope and Tyne from Consett and the private Weardale Iron Company lines, standard and narrow gauge.

History Field Studies in the Durham Area published by the University of Durham, Institute of Education, price 7/6. 167 pages, 9 maps. Pages 125 to 160 are especially useful, giving short summaries of several industries and topics, such as lead, coal, ironstone mining, and the Stockton and Darlington Railway. Various sites are listed and a bibliography is given at the end of each chapter.