ART. XVII.—*The canal that never was : The story of the proposed Newcastle/Maryport Canal, 1794-1797.* By. D. J. W. MAWSON.

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WHEN describing the canal mania which seized the country towards the end of the eighteenth century, John Sutcliffe, in his *Treatise on Canals and Reservoirs*, wrote:

"So unbounded have the speculations in canals been that neither hills nor dales, rocks nor mountains could stop their progress, and whether the country afforded water to supply them or mines or minerals to feed them with the tonnage, or whether it was populous or otherwise, all amounted to nothing, for in the end they were all Bridgewater canals. His Grace's canal had operated upon the minds of canal speculators much in the same manner as a large lottery prize does on the minds of the inhabitants of a town."

The Duke of Bridgewater completed his waterway from Worsley into Manchester in 1761. The Bridgewater Canal was followed by the Trent & Mersey, and it was soon found that where canals went, the new factories of the industrial revolution followed. The scepticism which had attended the Duke's proposals gave way to enthusiasm as the financial success of these early ventures became apparent, with the result that more and more canals were promoted.

At first, promoters tended to be drawn from the ranks of local landed proprietors, manufacturers, and mine-owners, but as fortunes were made, the speculators moved in. By the early 1790s, with an optimism which cheerfully discounted all risks, financiers and gamblers alike were willing to chase any venture which might offer a ready profit, and canals, however ill-conceived, were judged to be less

hazardous than the lotteries and tontines which afforded the alternative havens for risk capital.

Although some canal proposals in this decade were rash and ill-considered, this was by no means invariably so, and there were many which proved to be financially sound. Whether or not a canal from the Solway to the Tyne could have ranked as one of these, we shall never know, for, as will be related, John Sutcliffe, more than any other person, ensured that no such waterway would ever be built.

In 1794 Ralph Dodd, who had recently completed a survey for the improvement of the River Wear and Sunderland harbour, was asked to consider the feasibility of linking the North Sea to the Irish Sea by a canal from Newcastle upon Tyne to Carlisle, and thence to the Solway.[1] Although earlier in the century there had been proposals on more than one occasion to extend the navigation of the Tyne to its upper reaches, there had never been any serious suggestion of a scheme quite so ambitious as that now contemplated.*

Canal mania had just attained its peak, and it is against this backcloth that the subsequent events unfold.

By October 1794, Dodd, satisfied that such a canal was practicable, was canvassing support from the industrial and landed interests on both sides of the Pennines.[3] By the end of the month, the *Cumberland Pacquet* reported that Sandsfield, three and a half miles north-west of Carlisle, was likely to be chosen as the western outlet to the sea.[4]

At a meeting in Newcastle some days later, Dodd indicated that the work could be undertaken at reasonable cost, since ample local materials were available and he could foresee no need for expensive

*Earlier in the century there had been a Parliamentary Petition in support of extending the navigation of the Tyne from Newburn up to Hexham, while another Tyne scheme had been proposed in 1778.[2]

aqueducts, tunnels or bridges. He made two important recommendations, however. Where practicable, the navigation should use the bed of the Tyne, for by this means there would be substantial saving in the cost of digging as well as in the purchase of land. Furthermore, the initial undertaking should be limited to cutting a section along the south bank of the river from Newcastle to Hexham.[5]

Shortly afterwards, meetings at Carlisle and Newcastle commissioned him to make a detailed survey,[6] and within two weeks £285. 13s. had been promised towards the cost in Northumberland, and £220 in Cumberland.[7] At the end of December, the subscriptions amounted to £1,035. 7s.[8]

By Christmas 1794, local committees had been formed in both counties, with lawyers as their respective secretaries, Robert Mounsey in Carlisle, and Ralph Heron in Newcastle. But the Newcastle subscribers now seem to have entertained some doubt about Dodd's ability, for they empowered their committee to appoint another engineer if it thought fit.[9]

In Cumberland there was some anxiety at the wisdom of entering the Solway at Sandsfield. Captain Huddart, who as an Elder Brother of Trinity House and harbour surveyor of considerable repute, knew what he was talking about, told Humphrey Senhouse of Netherhall, M.P. for Cumberland and a member of the Carlisle committee, that it was impracticable to bring the canal out so far up the estuary. The strong tides and shifting sands would ensure that only small vessels of shallow draught would be capable of using this anchorage, and even these must await a spring tide. He considered Maryport, where a good harbour already existed, to be far more suitable, any disadvantage imposed by the added distance being outweighed by its superior port facilities and extra trade from the area through which the extended canal would then pass.[10]

Senhouse, who had a vested interest in Maryport, a town founded by his father 45 years earlier to serve the family's industrial interests, naturally welcomed Huddart's report. Others felt that Bowness would be preferable to either place, arguing that the high harbour dues at Maryport, coupled with the burden of canal tolls over the longer distance, would ensure that most of the traffic would keep to the roads.[11] Senhouse's steward, Philip Nelson, who was then supervising improvements to Maryport harbour, disagreed.[12]

On 12 January 1795, select committees from the two counties met for the first time at Hexham. Dodd was criticised for failing to attend, and subsequently pleading that illness had prevented this, was to imply that his letter of apology had been withheld maliciously.[13]

The meeting discussed the respective merits of Sandsfield, Bowness and Maryport. Whereas most of the Cumbrians now favoured Maryport, their Northumbrian colleagues, sceptical no doubt of Senhouse's motives and suspicious of his influence, remained unconvinced.[14] In an endeavour to resolve this impasse, the Cumberland committee's representatives gave an assurance that Senhouse would charge reduced harbour dues to canal users.[15] At this point the Maryport adherents were supported by William Chapman, a Newcastle engineer, who at the behest of the Northumberland committee had just completed a feasibility study of the proposed canal.[16] By the middle of May it had been agreed that the committee's engineer should be asked for his recommendations, and that the final decision be then left to the subscribers.[17] Even so, the Northumbrians still showed little enthusiasm for Maryport, and insisted that West Cumberland interests defray the survey cost of the section west of Carlisle, estimated to be in the region of £250.[18]

The Northumberland committee published Chapman's preliminary report at the end of January, and in the following month appointed him engineer.[19] Carlisle did not ratify this appointment immediately. Indeed, in February Dodd was canvassing their support, contending that although ill-used in Northumberland, he still commanded considerable support there, and believed the greater part of the subscribers would contribute to his survey.[20]

That this bid failed is evident from the fact that by April Chapman was in Cumberland, surveying the difficult descent between Milton and Warwick Hall, and while doing so was corresponding with members of the Cumberland committee.[21]

The canal's new engineer was the son of a Whitby sea captain, who on retirement had established a rope factory at Willington. He first achieved prominence as resident engineer on the County of Kildare Canal, and as a bridge-builder in Ireland, where his work earned him membership of the Royal Irish Academy. Forty-five years old, he was an able but diffident man, who is said to have been more effective on paper than in the cut and thrust of debate.[22]

The two engineers held divergent views as to the most suitable way in which to implement the scheme. Where Dodd favoured a low-level route on the south bank of the Tyne, passing initially no further westward than Hexham,[23] Chapman proposed to take advantage of the high land to the north of the river.* In this he was now supported by both east and west committees, but Dodd's claim to have the backing of some of the Northumberland subscribers was clearly justified, for at the end of July the *Cumberland Pacquet* was concerned that the dispute on the east coast had become so bitter there was some possibility of the whole scheme foundering.[24]

*His proposals are outlined at pp. 307-308.

Photo: Science Museum, London

PLATE I.—WILLIAM CHAPMAN (1750-1832).

facing p. 304.

Meanwhile, in June the Northumberland committee announced that Dodd's survey report then being advertised was published without its authority, since he had been dismissed.[25] At the next general meeting, some of the subscribers attempted to have this report debated, and upon being ruled out of order, they walked out.[26] Chapman and the original county committees, bent on a complete east-west navigation, now found themselves opposed by a breakaway body of dissident subscribers favouring Dodd's more limited objectives.

By the middle of July Chapman had published the first two parts of his survey, covering the entire line from east coast to west, while, as already noted, Dodd had reported on the section between Newcastle and Hexham. Although still presenting his proposals as being part only of the more ambitious objective, he never revealed the same degree of enthusiasm as did Chapman for this visionary cross-country sea link.

The latter dwelt on enticing prospects of branches to north and south into the fertile agricultural area towards Morpeth at the eastern end and on the other side of the Pennines from a point near Brampton southwards to Penrith, and thence to Ullswater (for slates), Appleby and Kendal. Later, Cockermouth and Whitehaven could be brought into the network, while another collateral from Glenwhelt to Knaresdale would capture much of the lead trade, for ore could be carried down to the summit of the main canal either through a rude system of locks, or by an inclined plane similar to that on the Ketley Canal at Coalbrookdale. Indeed, if the terrain proved suitable, possibly a novel system of vertical lifts could be attempted.*

*An inclined plane consisted of a railed track up which barges were hauled either by means of steam, water power or force of gravity. In the latter case two sets of rails were needed, since ascending barges had to be counterbalanced by those descending. The inclined plane on the Ketley Canal, built in 1788, was the first in England and relied on the gravitational principle. Vertical lifts as the name implies hoisted barges straight into the air and were not introduced on the English canals until 1809.

His canal was ultimately to be brought to its summit by a rise of eight locks, a little to the west of Haltwhistle. For eleven miles it then maintained a continuous level, following first the Tippalt and then the high land on the south side of the Irthing. After passing to the north of Denton Church, it crossed the Low Row—Gilsland road and, leaving Beckstonegate and Denton Hall on the north, skirted the rising ground on the north side of the Military Road until half a mile west of the present entrance to Naworth Castle. Here it crossed the turnpike and followed a south-westerly course to a point just westward of Milton, shortly after which the steep descent to Carlisle began. There was a fall of 57 feet in the next three-quarters of a mile. One mile south of Brampton the Penrith—Brampton road was crossed, and a spectacular staircase of locks lost a further 196 feet between here and Low Gelt Bridge. Following first the north, and then the south side of the Warwick Bridge—Brampton road, the line inclined to the west 700 yards east of Corby Hill, and approached the Eden from the north side of Little Corby. A fall of another 121 feet had now brought the canal to the same level as Carlisle. The river was spanned by an aqueduct, and after passing through the north end of Warwick Hall park, the waterway continued to St Nicholas, leaving Aglionby and Harraby to the south, and Botcherby to the north. From St Nicholas, a short collateral ended in a basin at the head of Botchergate, while the main line continued round the south-westward side of the city to another basin in Caldewgate, and thence for a little over 30 miles to Maryport. The fall between Carlisle and Maryport was a mere 48 feet, and except for some deep cutting near Kirkandrews, long continuous levels could accordingly be achieved without undue difficulty.

The prosperity of this canal would depend as well

upon farmers' market boats and regular passenger craft as upon the carriage of minerals from the collaterals and through traffic between the seas. Chapman envisaged that Newcastle traders would be able to export steel, white lead, cast iron goods, coal, earthenware and glass to Cumberland and Ireland, and import from the latter barrelled beef and pork, hides, rape, oats and linen. New manufacturing activities would be encouraged in Hexham and Brampton, where there was unemployment. Local produce, such as potatoes from Brampton, cured herrings from Allonby, and coarse woollens and felt hats from Hexham and Haltwhistle, would all benefit from a wider distribution. Cumberland bacon, hams, butter and cotton goods would be carried eastwards, and the whole area would prosper from the easier carriage of coal and lime. Similar benefits would accrue to the lead country around Knaresdale. The Gelt valley might become one continuous quarry, exporting freestone and flags far and wide, while Gilsland Spa would benefit from increased tourism, and rural West Northumberland from easier access to Newcastle Market.

From the beginning, Dodd's proposals were more cautious. Where Chapman considered the coal trade from the south bank of the Tyne to be of secondary importance, Dodd thought it crucial, and where Chapman thought in terms of the entire undertaking, Dodd, perhaps more realistically, adopted a piecemeal approach.

Chapman believed that height should never be sacrificed unnecessarily, and unless exceptional detours or unacceptably expensive engineering problems prevented it, numerous locks should be avoided by designing the canal to follow the contours. Long uninterrupted levels were not only cheaper to construct and operate, but by ensuring speedy passage, would

attract much local trade which would otherwise keep to the roads. Being aware that at its summit the canal had to rise 440 feet above the level of the river at Newcastle, he preferred to commence his line on the northern side of that city, behind Gallowgate, and thus gain nearly 200 of those feet immediately. Of course, if the waterway had to be connected to the Tyne, this height would ultimately have to be negotiated, but the heavy locking which this would entail could be left to the last, for the carriage of goods by road between canal and river would merely be a temporary inconvenience. His scheme would enable the first section to be led at a continuous level for all of 32 miles to Haydon Bridge, and only here would the first of the series of locks required to raise the waterway to the summit have to be constructed.

In Northumberland the route Chapman chose followed the high land above the north bank of the river as far as Corbridge, thence below Beaufront to Hexham. After skirting St John Lee Church, it curved northwards to approach the North Tyne valley opposite Nether Warden. Here an aqueduct carried it across the valley, then, still following the contours, it passed to the south of Fourstones, and after encountering steep ground which Chapman considered to be more formidable in appearance than in reality, reached level land a little downstream from Haydon Bridge. At this point the ascent began. Seven locks near Haydon Bridge, with others in the vicinity of Bardon Mill, brought the canal to Haltwhistle and the final lift to the summit and the west country which has already been described.

Dodd contemptuously referred to these proposals as "creeping round the sides of the hills" and was quite prepared to sacrifice height. He contended that the rewarding coal traffic which would pass through a line on the south bank would more than cover the

cost of lifting his canal from the river at Stella to Hexham and subsequently, presumably, to the summit at Glenwhelt.

If the two men differed as to the most suitable route, they also failed to agree on the type of canal they wished to build. Where Dodd thought in terms of locks 27 feet wide, capable of accommodating small sea-going vessels of 100 tons burthen, Chapman, always somewhat vague in his specification, initially favoured a width of from 14 to 15 feet, suitable for canal craft constructed to carry half that weight.

Each criticized not only the proposals but the competence of the other. When Dodd suggested that the trade on the eastern section of Chapman's canal "will, like his water, be very scarce", the latter pointed out that by the absence of locks local trade would be attracted, while the ability to take off collaterals at a high level would bring in a great deal of commerce from the country on either side. As for the shortage of water, there were no thirsty locks to consume it, and the small streams, supported by reservoirs to meet occasional droughts, would be adequate to cope with seepage and evaporation. Moreover, when Haydon Bridge was reached, the whole water of the South Tyne would be available.

If Dodd was scornful of Chapman's scheme, the latter was no less critical of his. When Dodd proposed to use the river itself as part of his navigation, his rival pointed not only to the dangers and delays which would result from the floods to which this river was prone,* but to the expensive weirs which would be needed to confine the water in dry season against the shoals of gravel which would otherwise hinder traffic. The necessity of hauling barges against the current would likewise impose a financial burden

*The great flood of 1771 destroyed all the Tyne bridges except that at Corbridge. There were also serious floods in 1763 and 1782.[27]

on canal users. To take the canal into the river at Stella, five miles upstream from Newcastle, as Dodd suggested, was not only an appalling sacrifice of height, but costly in terms of the guard locks and protective weirs to safeguard its entry to the Tyne. Furthermore, the expense of cutting through the steep declivities along the river bank would prove enormous.

The argument became personal. Dodd's allegation that Chapman only owed his appointment to the influence of friends,[28] provoked Chapman to say of him "That any person styling himself a civil engineer should be thus grossly ignorant of his profession, I cannot readily admit, because it would indicate that the party had neither conducted or particularly attended to canals and was insulting the public in pretending to be what he is not."

On 18 April 1795 Dodd forfeited all credibility by foolishly publishing a paper *"A Short Historical Account of the Greater Part of all the Principal Canals in the Known World"*. He culled this from John Phillips' *"General History of Inland Navigation Foreign and Domestic"*, and could blame nobody but himself when the deception was exposed, in an anonymous tract *"The Engineering Plagiarist or Dodd from Phillips Exposed"*,[29] only four days before the publication of his survey report.

Dodd always maintained that the Northumberland committee had dismissed him unfairly from a scheme of his own invention. Although no doubt he deluded himself, one can nevertheless feel a measure of sympathy when, in defence to a charge that he was indulging in the meanest of arguments, personal recrimination, he pointed out that his whole reputation and livelihood were involved in the dispute,[30] for a successful engineer could command a high salary and was able to amass a considerable fortune during his working life.[31]

Early in August, Chapman, having surveyed the south bank of the Tyne, published his third report. He retained his preference for the north line, and the subscribers asked William Jessop, perhaps the most eminent engineer of the day, to give a second opinion. Jessop's short report was favourable.[32] On 2 January 1796, therefore, upon being informed that the cost of the canal (including two short branches, the one from the summit level towards Coal Fell, and the other to Carlisle from St Nicholas) would be £355,067, the subscribers resolved to raise £400,000. Upon half this amount being subscribed, a committee would be appointed to secure the necessary enabling powers from Parliament. Subscription books were opened almost immediately at Newcastle, Hexham, Carlisle and Maryport.[33]

The promoters were destined to disappointment. Although subscribers in Northumberland promised £86,000, little support was forthcoming from Cumberland, where a more cautious attitude now prevailed. In a desperate attempt to attract outside money, subscription books were lodged at Lloyds Coffee House, London, and at Liverpool, Leeds, Hull and Edinburgh.[34] These measures met with scant success, and on 16 April the promoters conceded defeat.

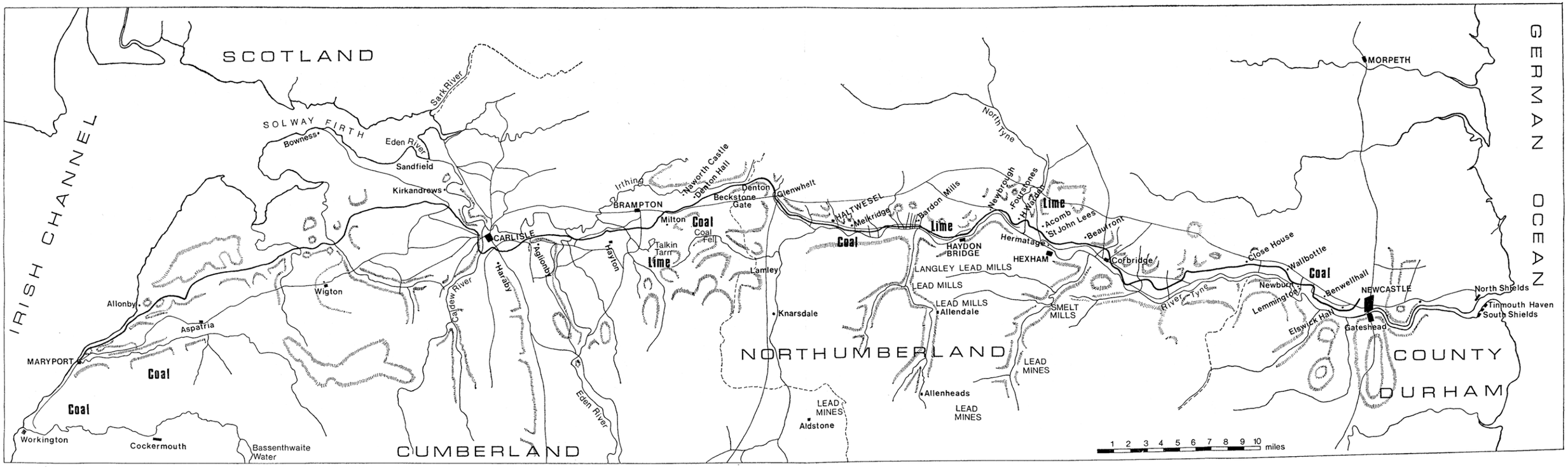
The failure to attract subscriptions in Cumberland doubtless stemmed in some measure from the fact that although the greater part of the proposed canal lay in that county, it held the lesser part of the wealth. Newcastle, with its valuable coal trade, its foundries, potteries, glass-houses and ship-building, had long been an important seaport. In Cumberland, however, the industries most likely to benefit were more recently established, and the backing of enthusiasm with hard cash was consequently more difficult to achieve. The West Cumberland seaports already catered for much of the county's commerce, and doubtless, even in

Carlisle, which had no port of its own, there were those who considered that greater priority should be given to improving coastal communications with Liverpool, Scotland and Ireland than in forging an expensive link with Newcastle across the Pennines. The preoccupation in Cumberland with the proposed canal's western outlet is indicative of this, as is the fact that within twelve years Carlisle industrialists, albeit primarily in order to secure a better coal supply, were contemplating a canal to the Irish Sea.[35] Yet another reason is advanced by a commentator writing forty years after these events, who suggested that the failure to translate popular sentiment into firm support stemmed from the inability of weak leadership to reconcile divergent interests,[36] an indication, perhaps, that the collapse of confidence in Cumberland owed a good deal to the confrontation on Tyneside.

The Northumberland committee now decided to pursue a more limited objective. If £80,000 could be raised, either by continuing the subscriptions already promised, or by attracting new money, an application would be made for an Act authorizing the construction of a canal between Newcastle and Haydon Bridge,[37] which Chapman and Jessop considered could be undertaken at a cost of £108,414.[38] These proposals were advertised, and on this occasion the public responded generously. Within six weeks £110,000 had been promised. The promoters closed the subscription books, and instructed their solicitors to draft a Bill.[39]

No time was lost. On 27 August the intention to apply for leave to bring a Bill was advertised.[40] On 8 November the petition was approved by the subscribers,[41] and in December presented to Parliament. On 7 February 1797, having read the draft Bill to his supporters in Newcastle, the committee's secretary, Ralph Heron, set out for London.[42]

Meanwhile, the dissident subscribers now promoting



The route of the Newcastle/Maryport canal as proposed in 1795 re-drawn from "A Plan of the Proposed Canal between Newcastle and Maryport and of the Adjacent Country by William Chapman, Engineer, M.R.I.A.". The plan is in the Department of Palaeography and Diplomatic, The University, Durham.

facing p. 312.

Dodd's projected south line had been told that £35,708 would be needed to build this canal as far as Hexham, and by June 1796, all but £3,500 having been promised, a committee was elected, with instructions to obtain a second opinion.[43]

The man they approached was John Sutcliffe, an abrasive character, with little experience of canals. He had been brought up in the worsted trade, and at the age of twenty-four had entered a mercantile counting-house as a cash-keeper. During the ten years he was in this employment, he paid another to do his work, and applied himself to designing mills. Although never employed as a principal engineer in any canal scheme, he was later to claim that he had surveyed several in an advisory capacity.

On 5 October he produced his report. In uncomprising language he condemned Dodd's scheme — it was a considerable disgrace — the line proposed was carried through the country in situations fraught with difficulty — it would be folly to adopt it — a good line on the south of the river did exist, however, and he had found it — the previous estimate of nearly £36,000 was sheer nonsense — the subscribers must be prepared to pay nearer £90,000 to take such a canal to Hexham, and a good deal more if it was to extend to Haydon Bridge.[44]

The disillusioned south line promoters faced the same financial dilemma their opponents had encountered earlier in the year, but unlike the latter were unable to truncate their scheme. Boldly they announced their intention to apply for a Bill. Meanwhile, the subscription books would remain open,[45] and every effort would be made to defeat the north line measure. Sutcliffe, gritty, persistent and ruthless, was just the man for this task. Indeed, Chapman made a shrewd assessment of his character when he asserted "His talents have peculiarly fitted him for the line of profession they

seem to have brought him to; that of being the instrument of opposing in place of promoting or conducting works of great public utility."

Sutcliffe's October report was followed by another in January. Barely one-sixth of these verbose documents was devoted to the author's own line, and most of their 120 pages were packed with a confused and rambling assault on the north line and its engineers.

Facts and figures, sometimes of dubious validity, puffed his own proposals or disparaged his opponents'. If any advantage lay in misquoting, he misquoted. If slanderous innuendoes could assist his case, he was equal to the task, directing his sharpest barbs at Jessop, for whom he had a particular contempt. Had this engineer conducted an inspection from a post-chaise, indeed had he bothered to look the line over at all? The man was, in any event, unreliable, for was it not common knowledge that his aqueducts and tunnels were all to often liable to tumble down?*

On somewhat firmer ground, he questioned more obvious shortcomings in Chapman's reports. Why had he not been more explicit in the dimensions of his canal?† Why had his estimates made no allowance for the cost of reservoirs? (which in any event "will be fitter for duckponds than auxiliaries for a canal".) Were the subscribers aware that the whole canal had to be constructed before the water upon which it depended could be brought in from the Tyne at Haydon Bridge? Indeed, four or five years might elapse before

*An unfair accusation. It is true that part of an aqueduct on the Cromford Canal, of which Jessop was chief engineer, had collapsed, as had a tunnel on the Grand Junction, but in both cases the contractors had been to blame.[46]

†In his preliminary report on 5 January 1795, Chapman suggested that his locks might have a width of from 14 to 15 feet to accommodate barges 12 feet wide, 60 to 65 feet long, with a draught of 4 feet. He had still not reached a final conclusion when he published his report of 26 June 1795, and indicated that Messrs Jessop and Whitworth were to be consulted. Jessop later recommended a slightly broader waterway capable of carrying craft 14 feet wide, and the north line estimates were prepared on the assumption that this advice would be accepted.

it produced a scrap of revenue. Scornful of Chapman's estimate, he questioned particularly the cost of passing the difficult ground by St John Lee Church opposite Hexham and carrying an aqueduct across the North Tyne, both of which were engineering problems of some magnitude.

Where the north line had powerful supporters, he sought to detach them — the Duke of Northumberland's collieries would surely be deluged when Chapman's reservoirs leaked — Mr Blackett had been deluded into believing that his coal could be carried more cheaply by canal than on his own railway — the Greenwich Hospital Commissioners' mineral interests would be better served by favouring the south line.

Existing fears were exaggerated, and where none existed he created them. Road diversions and the bridging of the canal would expose the Turnpike Commissioners to inconvenience. If the canal were to burst, mansion houses and estates below its level would be inundated and ruined.

Sutcliffe's own line may have been a good one. Certainly Whitworth, who was shortly to evaluate both schemes, considered it so.[47] For the time being, however, the priorities were clear. If the north line could be defeated, there would be time later to undertake a more detailed survey, and it should not then be too difficult to work within his own generous estimate of £90,000. Meanwhile, this figure was consistent with his allegation that Chapman and Jessop had grossly underestimated the cost of their canal.

As the weeks went by, the parties prepared for the Parliamentary tussle ahead. In December 1796 Sutcliffe enquired of John Bell, his Newcastle surveyor, whether the south line subscriptions were increasing, but was philosophical when told that nothing more had been received, confidently predicting that there

would be a massive withdrawal of north line support when his own estimates were published. By the end of the following month he was less optimistic, critical of the south line secretary, James Ellis, and displeased that the plans of those opposing the north line were not in a more ready state. Only good management and unwearied application, he felt, would overturn the Bill, and while his own abilities were infinitely superior to those of any of the other engineers, his employers had none of the qualities required to create an effective opposition.[48]

Unhappily for Chapman's committee, their intended canal lay through the parks and gardens of four wealthy and influential landowners, John Hodgson of Elswick Hall, Colonel Calverly Bewicke of Close House, Heddon, John Errington of Beaufront, near Hexham, and his near neighbour, John Hunter of Hermitage. By March, Hunter and Hodgson were in London, lobbying Members of Parliament and attempting to detach the north line's most powerful supporter, the Commissioners of Greenwich Hospital.[49] Sutcliffe was also there, conferring with Mr Troward, who had been briefed to oppose the Bill, and while bombarding Bell in Newcastle with last-minute instructions, he exhorted him not to be dejected by the number of petitions in favour of the measure.[50]

Although Sutcliffe optimistically reported "We are going on well. Victory will be ours most certainly",[51] others must have shared Bell's pessimism, for the north line's detractors had mustered little enough sympathy. Indeed, apart from Hodgson, Bewicke, Errington and Hunter, only sixteen landowners and the parishioners of St John Lee presented petitions against the Bill.[52]

The promoters, on the other hand, were supported as well by Greenwich Hospital, which subscribed to Chapman's view that this canal would benefit their estates, as by 265 landowners adjacent to the proposed

canal, 258 inhabitants of Newcastle, 85 from North Shields, and 67 freeholders from Morpeth.[53]

In an endeavour to detract from the promoters' contention that their scheme enjoyed local support, Sutcliffe suggested that barely one-ninth of their finance was derived from genuine local sources. Of the remainder, £23,200 had been put up by the coal trade, with no purpose in mind save to prevent competition from the exploitation of the new coal areas which his own canal would render accessible, and £6,500 had been subscribed by the Chapman family themselves, none of whom would be able to meet their obligations when the time came. Finally, he knew for a fact that several subscribers had now withdrawn, while others were insolvent.[54]

In favour of the Bill it was said that Newcastle was a city of 40,000 inhabitants, which would benefit from the lower price of agricultural produce and building materials. Farmers would gain from easier distribution of lime, while the canal would derive a good deal of trade from Greenwich Hospital's lead mills at Langley and Blagill. In addition, during the preceding year over 80,000 tons of merchandise had been brought by ship to the Tyne, principally for distribution to the west country. A canal on a single level to Haydon Bridge would inevitably capture most of this business.[55]

Robert Whitworth of Burnley, an experienced and able engineer, was now invited to evaluate both schemes. Sutcliffe's surveyor, John Bell, accompanied him on his inspection of the south line, but an injury prevented Chapman from doing the same on the north. Consequently Whitworth's reports reveal an unfortunate tendency to accept as fact assertions which, had he had the opportunity, Chapman could have shown to be hotly contested expressions of opinion.

Whitworth returned to Burnley in order to prepare

his reports, but Bell kept in touch. On 4 February he wrote to say that massive north line withdrawals were anticipated, the general opinion in Newcastle being that Whitworth's comments would be unfavourable to that project. Seemingly sure of his man, he urged Whitworth to indicate which of the two lines he favoured.[56]

Twelve days later, Sutcliffe instructed his surveyor to tell Whitworth that the trustees of both lines desired a comprehensive appraisal of the engineering difficulties which would be encountered on Chapman's canal, especially those at St John Lee, but he was to take care not to mention that this request really came from the south liners, since to do so might cause suspicion![57]

At the end of February, Whitworth submitted his observations, and whether or not he had been misled, as Chapman later asserted, he was certainly kinder to the south line than to the north. The former line "is a rugged one; I never saw a good line like it; yet so far as I can discover I believe it is the best the country affords; it is certainly practicable". He considered Sutcliffe's estimate to be adequate. Chapman, on the other hand, had underestimated the cost of his canal, which in places presented difficult engineering problems. Sutcliffe's stratagem had evidently been successful, for the report dealt with these difficulties at length — 200 yards of tunnelling would be needed at St John Lee, probably 400 yards more at Warden, and yet another tunnel at Capons Clough. An additional £7,000 would be required for these works, while the aqueduct over the North Tyne would cost £6,500 more than Chapman had allowed.* However, he supported with some enthusiasm a recent proposal by

*Chapman and Jessop estimated the cost of this aqueduct at £10,500; Sutcliffe's figure was £23,500 and Whitworth's £17,000. In March 1797 independent estimates were obtained from William Donkin and Robert Thompson, County Bridge Surveyors £9,425, Thomas Thompson, a Newcastle mason £11,325, and William Johnson, County Bridge Surveyor £10,473.[58]

Chapman to link the canal with the river by an inclined plane† a mile upstream from Newcastle and, as if to compensate for his earlier strictures, devoted an unnecessarily large part of his report to describing how this should be built.

Bell and Sutcliffe had expected a great deal more. The former expressed disappointment that the report failed to condemn Chapman's scheme out of hand, while the latter, spitefully referring to Whitworth as "our blundering friend", suggested that little reliance could be placed upon his opinions anyway.[60] They were nevertheless aware of the consultant's own preference, and once more urged him to reveal it. On this occasion their endeavours were rewarded.

"The line upon the south side has certainly very much the advantage, both in point of tonnage and expense, and safety in execution," wrote Whitworth on 16 March.[61] The timing was perfect, for the Bill, having just received its second reading, was about to go into committee.[62]

Sutcliffe had in fact instructed his party to divide the House on the second reading, but was absent in York when the moment arrived. They failed to do so, and angrily he complained to Bell that their mutual employers were blunderers. They were totally inexperienced. He had to carry the whole weight of the business on his own shoulders, for "the troops I command are without discipline".[63] However, his irritation must have given way to jubilation three weeks later,[64] when the composition of the Commons Committee moved Colonel Bewicke to write to his ally, Hunter, "The call of the House is a lucky thing for us."[65] At last good fortune or, more probably, effective lobbying, had given Sutcliffe and his friends the break they had been waiting for.

† Whitworth contemplated a self-acting incline with suitable braking gear and auxilliary cog and pinion mechanism, so that manpower could be appled when needed.[59]

Sutcliffe was the only witness to be examined at length. He took seven days to present his case, and each evening briefed Counsel himself upon the questions he wished to be put on the ensuing day. Skilfully he enumerated his objections — the difficult problems which would be encountered at Warden and St John Lee — the injury which would be suffered by the four gentlemen landowners — the dearth of trade — the superiority of a canal on the south side. But on two points he was reticent — the extent of his own professional experience and the financial backing his scheme enjoyed.[66]

On 12 April 1797 the Committee adjourned. Sutcliffe was convinced his evidence had been so damaging that Heron's party would withdraw their Bill.[67] Up to a point he was right, for within a week they had done so. But although his undoubted skill must have played a part, the serious financial situation then facing the country* was probably a more compelling reason.

Sutcliffe, however, was quick to claim the entire credit. Jubilant but vindictive to the end, he asked Bell to let him know "how your great demagogues digest the bitter pill we gave them in London, for they were quite sure of victory when they entered the field of battle, but we soon convinced them that they knew nothing how, where, or in what manner we should engage them, for your great (but only at Newcastle) Heron looked as simple as he had been blind in both eyes, and Chapman as if he were under his examination before the Commissioners appointed under his Commission of Bankruptcy".[68] But Chapman (if he was aware of the fact) surely had the last laugh, for the victors were reluctant payers, and Sutcliffe spent the next five years attempting to recover his fees![69]

Was a south bank canal from Stella to Hexham advanced with serious intent, or was it but a sham

*The Bank of England suspended cash payments in February 1797.

to give plausibility to objections based on little more than the self interest of four wealthy landowners? There is little doubt that Ralph Dodd's canal was first promoted as a sound alternative to the proposals on the other side of the river, but when Chapman's employers achieved their financial objectives and the south line committee failed to do the same, it would seem that it merely became a convenient hook upon which to hang the case of those objecting to the north line Bill.

In support of this conclusion it can be said that Sutcliffe had little, if any, experience in building canals, but by temperament was a tough and effective professional witness. Chapman suggested more than once that he had been brought in, not to build a canal, but to prevent one from being built, and certainly, if his endeavours killed the north bank canal, they conspicuously failed to revive the fortunes of its competitor.

One might have expected that Sutcliffe's committee would lose no time in vigorously pursuing the advantage the victory afforded them, but this was not the case. Two months elapsed before a subscribers' meeting was called, and even than it merely resolved, somewhat feebly, to keep its subscription book open and call another meeting when the requisite funds were promised.[70] Although in the ensuing months the financial crisis eased, there was no clarion call to support the cause, no appeal to the subscribers of the north line to transfer their allegiance. Indeed, there is no evidence that the original south line subscribers met again. Admittedly in 1802 John Bell suggested that strategic considerations would justify the building of a canal by the military,[71] while in 1810 another scheme was proposed for a canal to Hexham as the first stage of a navigation from Newcastle to the West,[72] but these were merely the death throes of an

imaginative idea, and neither proposal met with enthusiasm.

The expense of opposing the Bill in Parliament, amounting to £1,510. 16s., was not met in full until 1802. Mr Troward's fee was £683. 5s. 7d., and Sutcliffe's £236. 15s. Of those playing lesser roles, Ellis, the south line secretary, was paid £151. 4s. 7d., Whitworth £75. 11s. 6d., and Bell £54. 13s. 1d. The significance, however, lies not in the receiving but in the paying, for it was the four gentlemen landowners, Messrs Hodgson, Errington, Bewicke and Hunter, and not the south line committee who bore the brunt of the cost![73]

Whitworth must be allowed the last word. When writing to Bell on 18 October 1798, he observed that it was a fortunate thing for the smaller subscribers to the north line canal that their application had failed, for otherwise they must surely have been ruined. As for the three leading participants, Sutcliffe was then busy writing a book on canals, Dodd was proposing a ridiculous scheme to dig a tunnel under the Thames, and Chapman was now turned patent ropemaker "for canal business in rather bad".[74]

Whitworth's retrospective assessment of the economic consequences was probably justified, for by then the country was grappling with inflation, but he was being less than fair to Chapman, who was not to be written off so easily. Subsequently enjoying a brilliant career as both inventor and engineer, he assisted Rennie and Huddart in the construction of London Docks, and the former in the execution of the Southern Dock and Basin at Hull. On home ground, he became the consulting engineer of the Carlisle Ship Canal, and in 1824 was asked to advise on the desirability of extending it to Newcastle. Times had changed, and he recommended a railway instead.[75] Indeed, the failure of the various canal schemes left the way open for a

railway, and in 1829 the promoters of the Newcastle to Carlisle railway obtained their Act. Brunel applied for the post of engineer, but was passed over in favour of Francis Giles,[76] who laid part of this, England's first coast-to-coast railway, along the route Chapman had surveyed many years before.

Biographical Notes.

Ralph Dodd (1756-1822) undertook a number of surveys in the north-east at this time. Subsequently he proposed many schemes, few of which were adopted. In 1798 a 900-yard tunnel from Gravesend to Tilbury; in the following year, improvements to the Port of London; while in 1805 London's water supply engaged his attention. Later he experimented with wood preservatives. In 1822 he was injured when a steam vessel exploded. Advised to recuperate in Cheltenham, he was unable to afford the coach fare, so walked. He died there, in poverty, shortly after arrival. *Gentleman's Magazine,* 1822, i, 474.

Capt. Joseph Huddart, F.R.S. (1740-1816) was the son of an Allonby shoemaker who had a stake in the local herring trade. He spent 25 years at sea, progressing from the command of a sloop carrying herrings to Ireland to master of an East Indiaman. During his seafaring days he applied himself to chart making, and published these on his retirement. He became an Elder Brother of Trinity House, Director of the London and East India Docks, and surveyed many harbour improvements. Much of the credit for navigational lighting around the British coast is due to him. S. Smiles, *Lives of the Engineers,* 2, 265.

Humphrey Senhouse (1731-1814), M.P. for Cockermouth in 1786, and for Cumberland in 1790, had a vested interest in Maryport, which his father had founded in 1749. Coal was the staple trade of this town, but the Senhouses had always encouraged other interests to settle there. In 1794 a cotton factory employed more than 400, and two shipyards a further 100. Hutchinson, *History of Cumberland* (1794), ii, 267. Bailey and Culley, *Agricultural Survey of Cumberland,* 1794, 261.

William Jessop (1745-1814) had been a pupil of John Smeaton. He was chief engineer of the Grand Canal from Dublin to the Shannon (on which Chapman worked as a resident engineer) and in the 1790s was engaged on the Grand Junction Canal and

on the Ellesmere Canal. He is considered by Charles Hadfield to have been the greatest of all the eighteenth century canal engineers. He later became chief engineer of the Caledonian Canal, until superseded by Telford. C. Hadfield, *The Canal Age*, 50.

John Sutcliffe admitted in evidence before the Parliamentary Committee that he had "never finished no canal throughout". His previous experience appears to have been primarily in the construction of mills. His only major undertaking prior to these events was the Leeds water supply. In 1796 he was also engaged on behalf of those opposing the extension of the Kennet & Avon Canal, and in 1816 published a treatise on canals and reservoirs. *Chapman's Observations on Sutcliffe's Report*, 1796, and *Evidence of Sutcliffe before the Parliamentary Committee*, Central Library, Newcastle upon Tyne, L.626.1.

Robert Whitworth (1732-1799) received his early experience as an assistant of the Duke of Bridgewater's engineer, James Brindley. He helped to join the Mersey to the Aire over the Pennines, the Thames to the Severn, and from 1786 to 1790 was chief engineer of the Forth & Clyde Canal. C. Hadfield, *op. cit.*, 50. Phillips, *Inland Navigation*, 1805, 544.

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