



Journal

of the

Railway and Canal Historical Society

VOLUME XXIII

No. 2

JULY 1977

THE RAILWAY & CANAL HISTORICAL SOCIETY

Founded 1954 Incorporated 1967

PRESIDENT: Dr. M. J. T. Lewis

VICE PRESIDENTS: M. D. Greville and Charles Hadfield

CHAIRMAN (Managing Committee): Grahame Boyes

HON. SECRETARY

Martin Prew
435 Upper Richmond Road,
Putney,
London
SW15 5QY

HON. TREASURER

John Broadhurst
112 Broughton Avenue,
Aylesbury,
Bucks
HP20 1QB

HON. EDITOR

Jeoffrey Spence
Tuborg Halt,
34 Manor Avenue,
Caterham, Surrey
CR3 6AN

MEMBERSHIP SECRETARY: R. J. Taylor, 64 Grove Avenue, Hanwell, London W7 3ES

LOCAL GROUP SECRETARIES

London R. H. G. Thomas, 233 Rosendale Road, West Dulwich SE21 8LR

North Western — P. H. Edwards, Foxhome, Start Lane, Whaley Bridge, Stockport

North Eastern — S. Tyson, Westwood, 27 Carr Lane, Acomb, York YO2 5HT

West Midlands — N. T. Pitts, 4 Siskin Road, Pedmore, Stourbridge, Worcs.

East Midlands — J. W. D. Miller, 11 Burleigh Rd., West Bridgford, Nottingham NG2 6FP

AREA CORRESPONDENTS

South Western — D. E. Bick, Pound House, Market Square, Newent, Glos. GL18 1PS

Devon & Cornwall — A. P. Miller, 56 Revell Park Road, Plymouth PL7 4EL

JOURNAL OF THE RAILWAY & CANAL HISTORICAL SOCIETY

VOLUME XXIII

No.2

JULY 1977

CONTENTS

OBITUARY: HERBERT GEORGE KENDALL	42
THE GLASTONBURY NAVIGATION AND CANAL <i>Dr. A. M. Boyd</i> ..	42
THE RIVER TERN NAVIGATION <i>J. H. Denton and M. J. T. Lewis</i> ..	56
CANALS AND HORSE-DRAWN RAILWAYS <i>G. Y. Hemingway</i> ..	64
AN UNREMUNERATIVE BRANCH LINE IN 1876 <i>G. Martin Smith</i> ..	65
RECENT LITERATURE <i>William J. Skillern</i>	67
CORRESPONDENCE	69

Herbert George Kendall 1919-1977

AN APPRECIATION

George Kendall, the name by which he was generally known to a wide circle of friends, died suddenly on 6 March after a heart attack. He entered the GWR service at Ivybridge in 1935. His keenness to qualify for promotion led to excellent results in the Company's staff educational classes. After two years in the District Traffic Manager's Office, Plymouth, he joined the Royal Air Force (Movement Control) where he served until 1946, when he resumed his railway career. He retired from British Railways Board Headquarters in 1975 with the fixed intention of devoting himself almost full-time to his railway history research and writing.

His interest in this started on his home ground with an exhaustive enquiry into the early Plymouth & Dartmoor Railway, the results being published as a book in 1969. By then he had started collecting material for what was to be his *magnum opus*, a very detailed study of the South Devon Railway. This was virgin ground and he researched every known source with the thoroughness and meticulous care which were the hallmarks of all his work and thinking. He was convinced that not every aspect of the SDR 'Atmospheric Caper' had been fully investigated and diligently tracked down some hitherto untapped evidence amongst Brunel papers, the work on which he was engaged at the time of his death.

If few members came into personal contact with him, some will have benefited from his ever-ready help. He contributed two West Country items to the *Journal*: 'Animal, Vegetable — or Minerals' (January 1958, page 6) and 'What Happened was This . . .' (September 1960, page 81). The former dealt with an important legal battle about mineral rights under railway lines, which resulted in a decision that china clay was a mineral. The latter was a very careful analysis of the evidence (including some hitherto unpublished) for and against the probability of a speed over 100 m.p.h. having been reached on Wellington Bank in 1904.

George Kendall will be sadly missed by his many friends, not least by those of us who had known him for forty years as a staunch companion on fieldwork visits and fellow historian of great promise. The Society was represented at his funeral at Holcombe Church, Dawlish, on 10 March, where the large congregation showed the respect in which he and his family were held, both locally and at a distance. Our sympathy goes out to his widow, son and daughter in their tragic loss so early in life.

C. R. Clinker

The Glastonbury Navigation and Canal

BY Dr. A. M. BOYD

This short history is based on a talk given by the late Dr. Boyd to fellow members of the Glastonbury Antiquarian Society in 1963. Since that date further research into the history of the canal has been made by Robin Atthill, Charles Hadfield and myself. The results of our research have been incorporated into this history, and I thank Messrs Atthill and Hadfield for generously making their files of information available to me.

Despite the additions, the history is, in the main, Dr. Boyd's own work. It is a great pity that he is not alive to see it in print, for he once wrote "I have never really considered publishing anything – I'm quite content with finding local history an enjoyable hobby". May this history be a fitting tribute to a much loved family doctor and local historian. Kenneth R. Clew

In the early nineteenth century Glastonbury seems to have been a pleasant little town, but not so small as towns went in those days. The woollen trade had gone and there was nothing much beyond some fellmongering and tanning. However, it was in the centre of a district which must have done well out of the agricultural boom of the Napoleonic Wars. There was certainly money and confidence about, for the town was a Royal Borough, with a mayor and corporation who conducted themselves with considerable pomp and ceremony.¹

The town was clean and well-kept. The inhabitants had forgotten their former Jacobite sympathies and frequent banquets were held where innumerable loyal toasts were drunk accompanied by tremendous cheering. Even so, there had been a terrific row in the corporation about the chastity or otherwise of Queen Caroline. The lower classes obstinately retained belief in the power of the evil eye, and seemed to have a mania for letting off squibs and fireworks in appropriate places.

Turnpike road building was in full swing and Glastonbury was served by both the London-Taunton and the London-Bridgwater coaches. When they were in good form, or perhaps a little drunk, the coachmen used to drive down the High Street at full gallop, with the guard blowing his horn, scattering pedestrians and upsetting carts and stalls.²

In the early 1820s certain gentlemen of Glastonbury began to consider promoting and building a canal themselves which, besides making the fortunes of the promoters, would revive the dying trade of the town. Indeed, it would make it a centre of commerce for the whole district and, perhaps, even a town second only to Taunton.

Earlier, in medieval times, the Pilrow Cut had connected the River Brue with the River Axe, a route used when transporting church seats from Bristol to St. John's Church, Glastonbury in 1500. After the Dissolution of Glastonbury Abbey in 1539, the Pilrow Cut was no longer maintained and soon went into disuse.³

Who were the original instigators of the canal scheme is not known for certain, though there is little doubt that they were John Beauchamp jnr. of West Pennard and Richard Perriam Prat of Glastonbury. John Beauchamp was a surveyor and little more is known about him. Of Richard Perriam Prat, much more has been revealed. He looms very large indeed in the annals of Glastonbury at this time, for he and his younger brother, Samuel, were partners in a firm of solicitors in the town.

Richard Perriam Prat lived in Blenheim House and in 1813, at the age of 23, he was appointed Town Clerk of the Borough. He was also a churchwarden and a sewer commissioner, and had his finger in every pie. As a town clerk, he seems to have been the complete ruler of the corporation. Between them, the two brothers owned a lot of property. There is no doubt that they were a couple of very bright boys.

The nearest point to the sea was Highbridge and it was from there that the canal would have to come. Under the Brue Drainage Act of 1801⁴ a new cut had been constructed at Highbridge, to the south of the River Brue. It left the river just above the town, and joined it again below the town. The old loop of



Glastonbury Canal — the opening day

the Brue was filled in and the old High Bridge and its gates done away with. Two new tide sluices (one an emergency one) were erected on the new cut, under the control of the Commissioners of Sewers. This meant that Highbridge had lost its harbour. Extensive work was also done on the Brue levels, with several large new drainage channels, the most important being the North and South Drains.

Two routes from Highbridge were considered. First, making the Brue navigable up to Glastonbury and, second, across the moors making use of the South Drain. In 1826 Richard Hammett, a local surveyor, was commissioned to make a survey on both routes and report. It seemed to be a cardinal principle from the beginning that everything should be done as cheaply as possible; the big canal engineers were expensive. Luckily for the drainage of the area, Hammett turned down the Brue scheme as impracticable. The Brue would need deepening three feet all along, a seven foot lock would be necessary at Meare and great difficulty would be experienced between Meare Church and Turnbridge, where the Brue is cut through solid rock. Besides these obstacles there were numerous "steainings" where cattle and carts were driven across the river, which would entail numerous and costly bridges.

Consequently, he chose the southern route which he surveyed and estimated in detail. At Highbridge the old bed of the river should be dug out, re-opening the harbour. A floating basin for vessels up to 250 tons would be constructed, together with tide locks and a new bridge. From this point the Brue would be used as far as Cripps House, which is just above Bason Bridge, as it would already take 20 ton barges. From Cripp's House it would follow a drain called

the Cut to Gold Corner, where it would join the South Drain. It was to follow the South Drain to Meases' Wall, between Catcott and Westhay. Here the level of the Moor rises slightly and a lock with a three foot rise would be necessary. Another lock, with a four foot rise, would be built at Ashcott Corner where the South Drain turns off southwards. From this point the canal would follow the Cuckoo Ditch, to cross the Brue at a place called Back River. It was apparently meant to flow through the river without any gates or locks. From there it was to run across New Close and join the Mill Stream, turning south to a basin near Bennings Bridge at Glastonbury. Barges were also supposed to turn up the River Brue from Back River to a wharf to be built near Pomparles Bridge.

The canal was to be constructed by deepening and widening these drains and ditches to a breadth of twenty feet. Hammett reckoned it would be of immense benefit to drainage, as the water level would be lower than the existing South Drain. He stressed that most of the land traversed was valueless and that, in many places, the sale of the peat thrown out would defray the cost of digging. Finally, he was quite certain that there would be no difficulty in constructing a canal through peat soil.

He concluded his report by saying:

With every circumstance so much in favour of the execution of the measure, it may reasonably be expected that the expenditure will be moderate; and after very careful inquiry and calculation, I am satisfied it will not exceed £9,000.⁵

This estimate was wildly optimistic.

The next step was to issue a prospectus, form a company, and get the necessary Act of Parliament. This is where the Revd. Richard Warner, an indefatigable traveller and writer comes into the story. He was just writing his *The History of Glastonbury*, in which he was helped by Richard Perriam Prat who provided most of the local history. Another helper was John Beauchamp jnr., whose assistance Warner acknowledged with a rather neat compliment to the surveyor "John Beauchamp, whose modest merit must eventually find its deserved level". If it is a compliment, it can be taken two ways!

Warner became infected with canal mania and gave the scheme a good write-up in his book, even reprinting the promoters' prospectus

GLASTONBURY and HIGHBRIDGE CANAL and NAVIGATION, from the latter place to a point in the river Brue, near Cripps's House, and thence by adopting, deepening, and widening the South Brue Drain to Ashcott Corner, and through a certain other drain called Cuckoo-Ditch, and lands called Lower and Higher Newclose, to the town of Glastonbury, and by a branch of the river Brue to Pomparl's Bridge, near the village of Street, with a FLOATING BASIN at Highbridge, for Vessels of 250 tons burthen.

In laying the particulars of this undertaking before the public, the promoters deem it almost unnecessary to dwell upon the advantages of a water communication with one of the wealthiest and most populous divisions of the county of Somerset.

At the same time, it may be proper to state a few of the more prominent and beneficial results likely to arise from the adoption of this measure, and which a slight acquaintance with the locality of the town of Glastonbury and the neighbouring towns and villages will fully confirm.

In the first place, the supplies of almost all the necessities, as well as luxuries, of life are provided by means of land carriage, from the ports of *Bristol*, *Bridgwater*, *Weymouth*, and *Bridport*, to the city of *Wells*, and the towns of

Glastonbury, Shepton-Mallet, Castle-Cary, Bruton, Wincanton, Sherborne, Yeovil, and Milborne-Port; containing with their neighbouring villages, at the very lowest calculation, upwards of 50,000 persons.

The more immediate supplies required, and which will of necessity pass through the intended Navigation, consist of the following articles, viz. deal, iron, slate, brick and tile, salt and salt rock, groceries, pottery, hides, bark, Birmingham and Sheffield articles, staves, and wheat; and coals, hoops and hurdles, from the principality of Wales.

In exchange for these commodities the unrivalled paving-stone of this neighbourhood is almost alone an adequate return. But it is not to be forgotten that this portion of the county of Somerset abounds in the most valuable elm and other timber, of constant demand in the Welsh market; and supplies of many of the neighbouring counties with cheese and cider. It is again to be observed that these are the more *prominent* only of the articles of supply and return, those of minor importance are purposely omitted.

It may further be urged, in favour of the proposed measure, that the line, although nearly adjoining some of the most favoured and fertile spots of this great country, passes through a tract of country particularly barren and unproductive, and especially, and, indeed, only, requiring the aid of drainage to bring it into cultivation. This will be most amply effected by the intended undertaking, without the constant and heavy charge occasioned by the present system.

The estimated expenses of this comparatively trifling, but most desirable, work, amount, at a liberal computation, to £10,000 only. The lowest calculation of CLEAR income amounts to at least £10 per cent.⁶

However, Hammett's plans and estimates did not satisfy John Beauchamp jnr or, more likely, they ran into strong criticism in the negotiations preceding the Act of Parliament. In consequence, Beauchamp surveyed the line himself. The proposed locks on the South Drain would be a nuisance, besides gravely obstructing the drainage, and he considered it would be quite feasible to run the canal at one level from the Highbridge tide lock right up to Glastonbury. He proposed building a lock on the canal just before it crossed the Brue, and another just before it joined the Mill Stream, to prevent these channels from diverting their course and pouring their waters down the canal. It would, of course, stop the canal from doing the same thing down the river. He estimated the total cost at the more realistic figure of £15,234.⁷

The plan chosen by the promoters was on the lines of that first suggested by Hammett. The navigation was to run from the mouth of the Brue up to a wharf adjoining Highbridge lower floodgates, from which point a navigable cut was to be made to join the Brue again near the upper floodgates. This meant re-opening the old course of the river which had been filled in in 1801.

The navigation would then follow the course of the river to Cripp's House, where a new canal would be built to Shapwick. A lock at Shapwick would provide the link with the South Brue Drain, which it would follow to Ashcott Corner. The route then followed the Cuckoo Ditch, crossing the Brue by means of two locks, one down and one up again, to terminate at a basin near St. Benedict's Bridge, Glastonbury.⁸

A meeting was held in Glastonbury Town Hall in late February 1827, when Samuel Prat said that £14,000 had already been subscribed towards the navigation, though Beauchamp's estimate of its cost was now £18,000. An engineer,

Mr. E. T. Percy, spoke in favour of the scheme and it was decided to seek Parliamentary powers for the work to be carried out.⁹

Royal Assent was received on 28 May 1827 for

An Act for improving and supporting the Navigation of the River Brue from the mouth thereof, at its junction with the River Parrett, to Cripp's House, and for making and constructing a Canal from thence to the town of Glastonbury, in the county of Somerset.¹⁰

It is a lengthy document, running to eighty-seven pages of foolscap, and covering every possible contingency.

The company formed was to be called "The Glastonbury Navigation and Canal Company". It was empowered to raise the sum of £18,000 by 360 shares of £50 each. Subscribers did not pay up all the money at once, but gave a promissory note for the full amount, paying such monies as were called upon from time to time, the "calls" depending on the progress of construction. Many of the shareholders seem to have been confident that they would never be called upon to pay the full amount of their shares. The company was empowered to raise a further £5,000 by mortgaging the canal.

Because the drainage of the River Brue was under the management of the Commissioners of Sewers, the company were required to invest £1,000. This was to be at the disposal of the commissioners for repairing and altering drainage works, as was made necessary through the building of the canal. The act laid special emphasis on land drainage; that the company must in no way obstruct or hinder it, and that the rights of the Commissioners of Sewers must not be prejudiced. The company were expressly forbidden to interfere or meddle with the commissioners' tide sluice on the Highbridge New Cut, an interesting point in the light of what afterwards transpired in the 1850s.

The names of the principal shareholders were given, thirty-six in all. The deposited plans¹¹ show that £15,250 had already been subscribed before the Act was obtained. Of this sum, all but £900 came from the County of Somerset, most of it from local men. Richard Perriam and his brother Samuel Prat are not in the list of shareholders, or "proprietors" as they were termed by the Act. It is known that they had "several thousands" invested in the canal. Perhaps they subscribed the one-fifth of the capital sum still outstanding, though the deposited plans do show that £2,000 of shares were in the name of Miss Ann Prat. The Prat brothers were the solicitors for the canal company. The agent was originally M. Browne of 21 Parliament Street, London, but after a couple of years he was replaced by Samuel Prat.

The company seal appropriately displayed the arms of the town of Glastonbury, above which was depicted a Severn trow, the type of vessel that could navigate the canal.

If the canal was not completed within five years, the powers given by the Act became null and void. After construction work began it became apparent that the plans were quite impracticable. This caused alarm and despondency and it was decided to seek the advice of Sir John Rennie, the famous engineer. He reported in July 1828.

Rennie gave estimates for three different sizes of waterway; a 10ft deep one which would take large sloops and small brigs of 120 to 140 tons and cost £38,250; an 8ft deep one capable of navigation by the 40 to 60 ton coasters used in the Bristol Channel trade, which would cost £28,720; and a 5ft deep barge canal which would cost £22,850.

He recommended an 8ft deep canal, 20ft wide at the bottom and 44ft wide at the top. Several awkward corners should be eased and the two locks at the River Brue crossing be eliminated and replaced by a three-arched aqueduct, with a syphon for the river. A similar, single arch aqueduct was proposed to cross the South Drain. Only two locks would then be needed, the sea lock near Highbridge, and another on Shapwick Moor with a 3ft 2in rise. Both locks would be 64ft long and 18ft 6in wide.¹² The high level pound would be supplied with water from the Mill Stream at Glastonbury, by means of a sluice.

It was a heavy blow to the company, who had no option but to adopt Rennie's recommendations. They were now bound to exceed their estimates and it put an end to any hopes of making the canal on the cheap. In March 1829 Rennie recommended that the high level pound be deepened from 8ft to 10ft, so that the surface water would be below the land level.¹³ Probably because the coasting trade objected to paying lockage charges to get to Highbridge, the sea lock was built above Highbridge Wharf, which therefore remained tidal. Plans to ease an awkward turn in the canal near Glastonbury basin were not carried out, no doubt because the land could not be bought.

With Rennie's recommendations accepted, the company saved as much as they could by skimping on the puddling and bottoming of the canal. On one stretch near Edington Burtle no bottoming was done at all. This was said to be due to "an unfortunate event which occurred during the performance of the work".

In 1831 it was reported that:

The foundations of the abutments of an iron aqueduct for conducting the canal across the river Brue, about a mile below the town of Glastonbury, have been laid, and the work is proceeding.¹⁴

The aqueduct was an expensive one, according to John Wright, blacksmith of Glastonbury, who wrote in 1844:

The canal crosses the river Brue by a Cast Iron aqueduct that cost near £3,000 and close to this aqueduct is a wrought iron swing bridge that I made.¹⁵

The company were further embarrassed in 1831 by the Commissioners of Sewers, who issued a writ for the £1,000 due to them under the Act, a fact which the company had conveniently forgotten about.

The canal was not completed in the five year time span stipulated, but by 1832 was too far advanced to give rise to any trouble. This was a terrible year, with the whole country on the brink of revolution. Luckily, things were quiet around Glastonbury, although Bristol was in the hands of a mob for several days, and troops had to be called in from Frome and Sherborne to quell riots in neighbouring towns. At Glastonbury the passing of the Reform Bill was celebrated by the continuous ringing of the bells of both churches, the firing of cannon at intervals throughout the day, and a grand firework display at night.

At last, in the summer of 1833, the canal was ready for navigation. It was 14 miles 1 furlong long, with several winding holes and passing places. From Cripp's House to Glastonbury there were some eleven bridges, all of them swing bridges. Thus the canal was ideally suited to take the flat-bottomed Severn Trow, which could load at Gloucester or Cardiff and unload at Glastonbury wharf, lowering their masts to pass Highbridge and Bason Bridge.

The official opening ceremony took place on 15 August, a contemporary newspaper reporting

Early in the morning, the road leading from the town to the basin, was thronged with spectators, and the whole population appeared to be on the *qui vive*. About seven o'clock, the Company's barge, the *Goodland*, and the beautiful yacht, the *Water Witch*, filled with the most respectable persons of the neighbourhood, set sail for Highbridge, accompanied by a band of music, the bells ringing a merry peal; the party returned about six in the evening.¹⁶

A print of the opening (which erroneously gives the date as 1832) shows the return of the expedition. The *Water Witch* and the *Goodland* have only their crew aboard, while the respectable gentlemen and the band are in barges towed by sailors. To add to the effect, one member of the band is discharging a musket.

On 26 August there were further high jinks. This was a sailing match between the *Goodland* and a new yacht, *St. Vincent*, the property of Mr. J. Vincent. On board both vessels were about 150 persons, members of the respectable trading class, with their wives and daughters, accompanied by the inevitable band. On leaving Glastonbury, from the start the *Goodland* took the lead and arrived at Highbridge more than an hour before the yacht. On the way back the *St. Vincent* sprang a leak and began to sink. However, the *Goodland* turned back and rendered assistance to patch her up. Both vessels returned in triumph to Glastonbury, with crowds of spectators, ringing of bells and, this time, the firing of cannon. Later on, the "gentlemen of Glastonbury" gave a public dinner in a "commodious booth" erected near the aqueduct. One can be sure that there were innumerable toasts, accompanied by tremendous cheering.

The canal had cost about £30,000, though the Act had only authorized the raising of £23,000 in capital. The shareholders had had to honour the whole amount of their promissory notes, to their disappointment. Of the remaining money, probably some was never raised and so left debts unpaid. Rennie, who had sent an account for his survey in July 1828, was still waiting for £367 to be paid some nine years later. Frequent applications for payment had only met with promises from Samuel Prat and, in June 1837, Rennie threatened legal action.¹⁷

The shareholders were looking for some return on their money and at first their hopes ran high. There is no doubt that, for the first few years, the canal was a great success. In November 1834 a newspaper reported

... several new and handsome houses have been erected. Strong inducements are held out for building; timber, slate, coal, salt, iron and all articles of general consumption are imported in abundance, and at very reduced prices, through the canal, which bids fair not only to be of great utility to the centre of the County, but to afford a very handsome return to the subscribers.¹⁸

Many houses in Glastonbury today are a result of the building boom. All pre-railway slate roofs must have come down the canal.

Phelps, the contemporary Somerset historian wrote in a similar fashion ... an increasing trade in coal, iron, timber, slates, and general merchandise is carried ... Another important advantage to the marsh country is that the flood waters now pass off rapidly through the lock-gates of the canal, which are opened when the water is high, and a double outlet is made in addition to the original sluices; thereby relieving the marsh of its waters, in about as many days as it required weeks heretofore.¹⁹

This reference to the drainage is interesting, as it shows that the confident hopes of the promoters that the canal would benefit the drainage of the Brue levels were fully justified, at least in the early years. Indeed, the canal was so successful that there was talk of constructing a railroad from Glastonbury wharf to Yeovil, Sherborne and Dorset, making Glastonbury a great inland port.

This sudden prosperity seems to have brought in a short-lived golden age in Glastonbury. A Mr. Hawkins started a Classical school for young gentlemen, the Glastonbury Cricket Club was founded and defeated all comers, and a flourishing Horticultural Society was established. The inhabitants sent two petitions to Parliament: the first that the penal code be reformed and the death penalty abolished, the second (which was signed by the members of the established church) that the remaining restrictions on the dissenters be removed.

It is sad to relate that this happy state of affairs did not last for long. A considerable portion of the canal was cut through peat. Sodden peat swells, eventually finding its own level. Consequently, in a few years the bed of the canal began to rise, especially where the clay bottoming was defective or absent. This started to obstruct the navigation, and the company had considerable difficulty in keeping the canal open. They were forced to keep the level of water in the canal as high as possible by keeping the sluices firmly shut. As well as this, instead of opening the sea lock gates to let out the flood water, the company cut small sluices or "slacker holes" in the gates, so that the gates could be kept shut whilst water trickled away through these holes. As these measures were insufficient, the company also cut slacker holes in the Commissioners of Sewers tide sluice. They had no right to do this, as they were expressly forbidden under their Act to interfere with the commissioners' sluice.²⁰

One wonders why the commissioners did not complain about this. Perhaps it was because Richard Perriam Prat was a commissioner or, more likely, because at that time the commissioners were not noted for their zeal and efficiency. Anyway, it suited the sluice keeper who, instead of having to wind up the heavy sluice, had the easy job of opening the slacker holes.

The result of all this upon the drainage of the lower levels of the Brue was disastrous, as now the flood waters no longer drained into the canal and the peat moors absorbed more and more water to become completely waterlogged. The high level pound for the canal from Shapwick lock to Glastonbury began to leak like a sieve, and all the surrounding fields became sodden. In dry weather, to keep the high level filled, all the water of the Brue had to be diverted down the canal. The result was that the river was bone dry from Clyse Hole to Cross Rivers at Westhay, which hardly pleased the farmers who used it for watering their cattle. Because of the lack of scouring, silt began to build up at Highbridge sea lock, and the gates became sealed with mud on either side and were in "a very bad and dangerous state".²¹

The shareholders now found themselves in an unpleasant position, trade had collapsed, all capital was spent and there was now no return for their money. Nobody would now consider buying their shares. Many of them had invested heavily in the canal, and they were very hard hit. Amongst those who lost heaviest were the brothers Prat, though outwardly they were still a firm of prosperous and eminent solicitors.

One morning, in early January 1840, the Prats fled whilst the going was still good. Great was the consternation in the town when this was discovered. Messrs Reeves & Company, solicitors and bankers of Glastonbury and Taunton, tried to sort out the Prats' affairs, and soon everyone's worst fears were realized. A Taunton newspaper noted

... failure of a professional partnership in Glastonbury led to the flight of the principals ... failure alluded to is to the amount of £40,000 to £50,000 and has occasioned a very extended degree of distress to numerous individuals and families in Glastonbury, Lyng, Othery, and other parts; the defaulters being considered eminent in their profession and implicitly trusted with sums

of money to be laid out at their discretion. The principal cause of their failure is attributed to the unprosperous state of the Glastonbury Canal, in which they had embarked several thousand pounds. Some frightful expedients in their exigency have been attributed to the absconding party.²²

This was followed soon afterwards by a spectacular suicide. A fellow churchwarden of Richard Perriam Prat was John Bulleid. He was also a shareholder in the canal and, with one or two others, had gone co-security with Prat for bonds amounting to £2,000. He was now being pressed for payment and as he had lost all his money on the canal he was unable to meet the demands. A writ was issued against him, and he solved his difficulties by jumping from the top of St. John's tower.

There is a strong tradition that there was a suicide pact, with both Bulleid and another creditor ascending the tower, though only Bulleid who was aged 45 jumped as the other changed his mind and descended in a more normal fashion. The *Taunton Courier* made no mention of this in its report on the inquest. The jury returned a verdict of insanity, so Bulleid was able to have a Christian burial in St. John's churchyard on 1 February 1840.

As for the Prats, they were declared bankrupt and their property and effects sold up at the *George Inn* on 15 and 16 July 1840. The annals of Glastonbury are silent about them from then on, though Samuel Prat did return home at last. He died in 1845, aged 52, and lies with his three children beneath the chancel of St. John's Church.

So collapsed Glastonbury's dream of being great. The depressive effects of this were to be felt for some years to come. It was recorded that, in 1848

... most of the large houses in the town were to be let, and a very large part of the smaller ones. I remember I counted some 112 or 113 houses that were empty in the town, and many of the larger houses were offered to me at a ridiculously low rent, the owners only wanting a tenant to occupy and prevent them falling into ruin.²³

However, the canal company managed to survive and struggle on. Indeed, there seems to have been a slight revival, for John Wright, blacksmith of Glastonbury, wrote in 1844 "of late there is a considerable traffic on the canal". Perhaps he was exaggerating, as he seems to have had a strong local pride in what was essentially Glastonbury's own project. More likely it was due to the appearance of railways on the scene. The Bristol & Exeter Railway had reached Bridgwater in 1841, crossing the Brue at Highbridge, and making a station there, which probably accounts for the increased traffic to Glastonbury.

In 1842 the railway line was extended to Taunton and in 1846 was completed to Exeter. Although the canal was not threatened, as yet, its neighbour, the Bridgwater & Taunton suffered disastrously and in 1845 had a receiver appointed.

On 30 October 1846 the B&ER board met, one result of the meeting being that The Secretary was instructed to go to Glastonbury for the purpose of treating for the purchase of the Canal if it can be obtained at a price specified to him.²⁴

The canal company were indeed willing to sell, and it must have been greeted with relief by the shareholders. On 19 June 1847 the B&ER decided to buy the canal. The railway company shareholders were not so happy, as they expressed at a meeting in May 1848. Some thought the purchase was unjustified. One asked "Had anyone ever seen any boats or traffic on this canal? He had been there time after time and had never seen a boat in his life". Another shareholder said that some time ago there was a mortgage of £7,000 or £8,000 on the canal,

which was sold for £3,000 to £4,000. Therefore, it was monstrous to give the sum proposed.²⁵

Despite the objections, the Act authorizing the sale of the canal was passed on 30 June 1848.²⁶ This was not the end of the canal, but it was the end of the Glastonbury Navigation and Canal Company. The gentlemen of Glastonbury had gambled and lost. But they should be remembered for their strong local patriotism, courage and initiative.

Under the Act authorizing the sale, the B&ER had

... to keep open and maintain the said navigation and canal and every part thereof, and to keep all the wharfs and works thereof in good order and condition.

There were already troubles. In August 1850 it was reported that the canal was choked up with weeds and mud.

The proposal for a railway from Highbridge to Glastonbury and beyond was first made in 1850. It offered a heaven-sent opportunity for the B&ER to relieve themselves of a troublesome burden. The B&ER had originally purchased the canal to stifle competition from a proposed narrow gauge (4ft 8½in) railway. Now, the proposed Somersetshire Central Railway offered the prospect of extending the broad gauge (7ft) another twelve miles eastwards.

At the half-yearly shareholders' meeting on 28 August 1851 it was reported that the B&ER were to sell the canal to the SCR for £8,000. The B&ER had co-operated in the formation of the SCR from the beginning, agreeing to subscribe £10,000, of which £8,000 was to be considered the purchase price of the 400 shares in the canal. In fact, the B&ER made a profit on the canal sale, as the total purchase price from the Glastonbury Navigation and Canal Company amounted to £7,372.²⁷

In the meantime, the B&ER were having trouble with the Commissioners of Sewers. For some years past the sea lock gates and sluices at Highbridge had been kept closed, and fresh water kept back to raise the depth of water in the canal. In 1850 the lower levels in the vale had become flooded and the dyke reeves at Chilton Polden complained. As they had stated the canal was full of mud, the commissioners ordered the gates at Highbridge to be opened.²⁸

The B&ER called for tenders to remove the weeds in the canal and protested about the commissioners' action, claiming it would take away the whole value of the property they had just purchased. The commissioners decided to make arrangements with the B&ER for the removal of the "obstructions at Highbridge and expend such sum as they consider reasonable for that purpose not exceeding £30".²⁹

Presumably navigation continued, as the B&ER made repairs to a slip on the banks of the canal in September 1851 and, the following month, resolved to "repair Cripps Bridge at moderate expense".³⁰

The Somerset Central Railway Act received the Royal Assent on 17 June 1852, this being "an Act for making a railway from Highbridge to Glastonbury".³¹ The transfer of the canal from the B&ER to the SCR took place on 16 September 1852, though the canal was to remain open for a little longer. In 1853 both the lock at Shapwick and the bridge over the canal at that place were repaired. Perhaps the canal was needed to transport some of the materials needed for the railway, as the first sod of this was cut at Highbridge on 18 April 1853.

The end was in sight. On 4 May 1854 the secretary of the SCR was instructed to issue notice of the closure of the canal for traffic between Glastonbury and

Shapwick Bridge as from 14 June. Strangely, in its final year, the canal had carried more traffic than ever before. Gross receipts for the year ending 30 September 1853 were £312, maintenance costing £182.

Robert Neville Grenville, born 1846, recalled one of the last pleasure trips on the canal

I remember my father taking a party down in a barge from Glastonbury to Highbridge. We ate our luncheon under the GWR bridge and got safely back to Glastonbury in the evening with our colours flying and the band playing.³²

Could this have been the ceremonial final trip before the canal closed? Robert's father was a director of the Somerset Central Railway.

The canal closed throughout on 1 July 1854, the railway opening shortly afterwards, on 17 August 1854. The canal basin was filled in, the high level pound drained and its banks broken down, the aqueducts and lock being dismantled. The lower part of the canal again became the South Drain, which it originally was, the Commissioners of Sewers resumed complete control of their tide sluice and land drainage was immensely benefited.

The railway was laid alongside the River Brue from Highbridge to Cripp's House. From there it cut across country to Edington Burtle, and ran along the north side of the canal as far as Shapwick lock. There it crossed the South Drain and was laid on the piece of ground which formed the barrier between the South Drain and the high level pound of the canal. It crossed the canal again at Ashcott Corner and the Brue a few yards to the south of the aqueduct. All the swing bridges over the canal were made fixed, and were numbered as railway bridges.

One portion of the canal remained untouched, and reverted to the ownership of the Commissioners of Sewers. This was the part which lay west of the turnpike bridge at Highbridge. Of the remainder, even though the canal had been abandoned, land drainage had to be maintained.

The Glastonbury Canal had a brief life of just over twenty years. The railway, whose history has been covered in detail by Robin Atthill³³ lasted 111 years. It fell a victim to the "Beeching axe" on 7 March 1966, since when the track has been lifted. The remaining portion of the canal at Highbridge which had become silted up was abandoned thirty years earlier, in 1936.

Those worthy citizens of Glastonbury, who marched in procession through the grounds of Glastonbury Abbey to celebrate the formal opening of the railway are immortalized for all time by a line drawing in *The Illustrated London News* of 26 August 1854. It shows that many carried banners, including one with the quaint wording "Where ther's a will ther's a way". The "will" may survive, but the "way" has gone forever, both by rail and canal to Glastonbury.

Intensive peat cutting has altered the levels beyond recognition in recent years. Few remains of the canal survive. The tide or sea lock at Highbridge is now a car park. The cast iron hollows quoins and other remains of Shapwick lock are visible at ST413417, as is the canal bed as far as ST452396, apart from one or two places where peat cutting has altered the contours. Nearer Glastonbury, the abutments of the aqueduct which carried the canal across the river Brue at ST480392 are to be seen, though the canal basin at Glastonbury has vanished without trace. It lies beneath a big timber works, and there is only the 1844 Tithe Map to recall its position.

References

1. Population figures in 1801 were: Bridgwater 3,634, Glastonbury 2,680, Taunton 5,794 and Yeovil 2,774.
 2. There is a Rowlandson print depicting this happening.
 3. For more information about the Pilrow Cut see Michael Williams, *The Draining of the Somerset Levels*, 1970.
 4. 41 Geo. III, c. 72.
 5. *Glastonbury Canal Report, Particulars and Estimates*, 1826 (Somersetshire Archaeological & Natural History Society Library, Taunton).
 6. Rev. Richard Warner, *The History of Glastonbury*, 1827.
 7. Joseph Priestley, *Historical Account of the Navigable Rivers, Canals, and Railways of Great Britain*, 1831 (Reprinted by David & Charles, 1969).
 8. Rennie's MS. Reports, 27 July 1828 (Institution of Civil Engineers).
 9. *Taunton Courier*, 28 February 1827.
 10. 7 and 8 Geo. IV, C. 41.
 11. House of Lords Record Office.
 12. Rennie's MS. Reports, 27 July 1828, op cit.
 13. Rennie's MS. Reports, 31 March 1829, op cit.
 14. *British Almanac Supplement*, 1831, p 231.
 15. G. W. Wright, *The History of Glastonbury during the last forty years*, 1890.
 16. *The Alfred*, 2 September 1833.
 17. Rennie's MS. Reports, 12 June 1837, op cit.
 18. *Sherborne Journal*, November 1834.
 19. Rev. W. Phelps, *The History and Antiquities of Somerset*, 1836.
 20. Michael Williams, *The Draining of the Somerset Levels*, 1970, p 233.
 21. Somerset River Board, Proceedings of the Commissioners of Sewers, 2 October 1866.
 22. *Taunton Courier*, 5 February 1840.
 23. G. W. Wright, *The History of Glastonbury*, op cit.
 24. B&ER Minute Book, 30 October 1846.
 25. *Western Times*, 6 May 1848.
 26. 11 and 12 Vic., c. 28.
 27. B&ER half-yearly Report for 2nd half of 1852.
 28. *Bridgwater Times*, 21 November 1850.
 29. *Ibid.*, 5 December 1850.
 30. B&ER Minute Book, 24 September and 29 October 1851.
 31. 15 Vic., c. 58.
 32. Robert Neville Grenville's Presidential Address "Somerset Drainage" in *Proceedings of the Somersetshire Archaeological & Natural History Society*, 1926.
 33. Robin Atthill, *The Somerset & Dorset Railway*, 1967.
- See also Charles Hadfield, *The Canals of South West England*, 1967 for the general history of Somerset canals and waterways.

EASTERN COUNTIES.—The directors have determined on adopting the system of warming carriages with the waste steam from the engines. The plan has for some time been adopted on the French lines, and on the London & North Western. (*Railway Times* 11 January 1862)

SOUTH-WESTERN.—The double line of rails between Crewkerne and Chard road is now completed, and was used for the first time on Saturday week. (*Railway Times* 15 February 1862)

The River Tern Navigation

BY J. H. DENTON AND M. J. T. LEWIS

Between its source north-east of Market Drayton and its confluence with the Severn five miles east of Shrewsbury, the Tern and its tributaries the Meese and the Roden once powered numerous corn, oil and paper mills and no less than ten ironworks. Of these, the two lowest, Tern and Upton Forges, were in their day of very considerable importance; but until recently the exact site of Tern Forge, and the former navigation of the river, were completely forgotten.¹

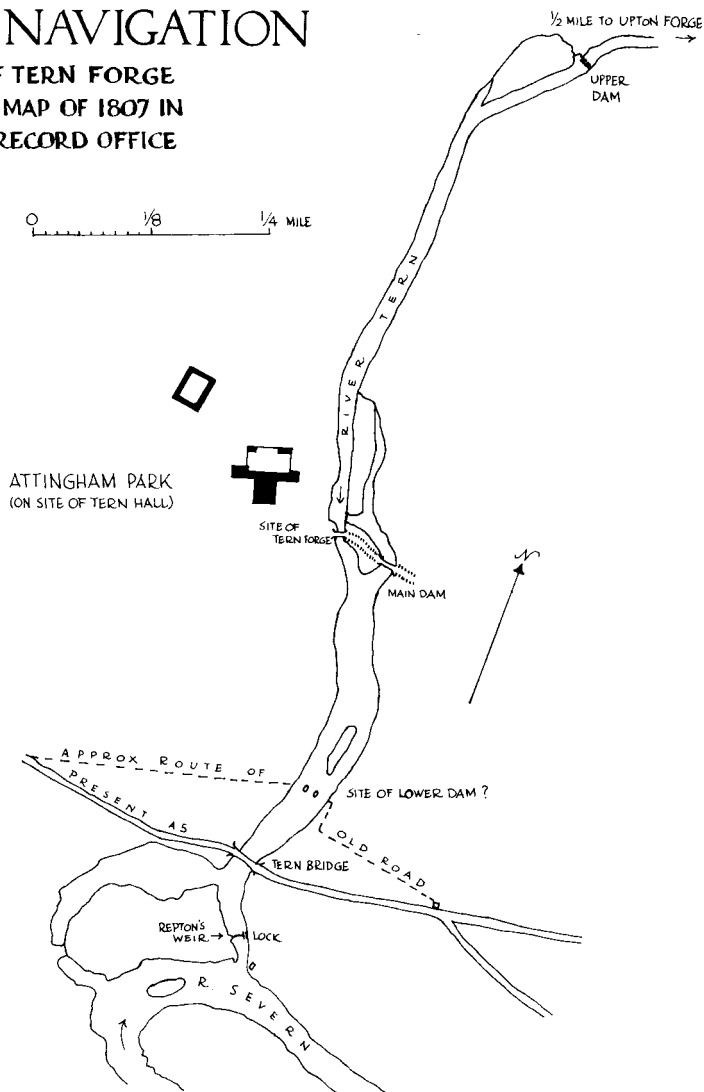
A hundred yards east of Attingham Hall and half a mile above the mouth of the Tern, a causeway some 150 yds long crosses the river at a point where a weir banks the water up (SJ 552099). This is the remains of a mill dam, the site probably of the Atcham mill of Domesday and certainly of a corn mill built before 1700. Around this corn mill Tern Forge grew up, using the same head of water for power. Half a mile upstream a second dam still exists, long since breached, which impounded a stretch of water, Tern Mere, almost as far as Upton Forge; and there may have been a third dam below the main site, just above the old road bridge. These dam pools quite possibly powered subsidiary forge plant. The forge began in 1710, built under a 50-year lease² granted by Thomas Harwood of Tern Hall (the predecessor of Attingham Hall) to a partnership whose principal members were Thomas Harvey of Stourbridge (brother-in-law of the wife of Abraham Darby I of Coalbrookdale) and two others who were sleeping partners in the Coalbrookdale works. This interest on the part of the Dale is explained by the original intention to smelt iron at the Dale and convert the resulting pig into bar iron at Tern Forge. Although this would have been feasible with charcoal-smelted iron, it transpired that Darby's new coke-smelting process produced iron unsuitable for forging, and Tern had to look for its supply of pig largely to other sources.

Nor was bar iron Tern's only product. In a letter of 1713, Harvey told Richard Hill (the Harwoods had assumed that surname): "We have erected a Mill for Rowling of Brass plates, and Iron hoops, and Slitting of Bar Iron into Rods for making of nails which cost us £1500. Since we have erected a Wire Mill, a forge and a furnace for Converting of Iron into Steel, and Shops for about 40 men". All this had cost another £2500, and had made Tern Forge "the first Joint Work of this kind In England, and for its goodness of Building Europe Can't produce the Like".³ Indeed, the Fuller list of 1717⁴ gives Tern's output as 300 tons a year, a very large figure indeed for that time: it mentions only one single forge in England that produced more. By 1737 the investment in plant and buildings amounted to £10,000, and at least 80 men were employed and accommodated in cottages on the spot.⁵ Tern was clearly an establishment of high importance, with four times the nominal capital of Coalbrookdale and employing twice as large a labour force.

By 1725 the works were sublet to the Wolverhampton ironmaster brothers William and Richard Wood, the latter a partner with Charles Lloyd III in Bersham Furnace near Wrexham. But in 1727 Richard absconded,⁶ in 1730 William died, and in 1733 the widow of Thomas Harvey assigned the lease to Joshua Gee, whose daughter married her son.⁷ The next two decades saw some decline in the forge's fortunes, for the output is given as 150 tons in both 1736 and 1750.⁸ Moreover, the Hill family in signing the lease of the forge site had clearly been naively ignorant of the consequences. The din and nuisance of a large-scale works within a stone's throw of their windows, the presence of a community of rude workmen, and endless arguments over rights of way, had

TERN NAVIGATION

AND SITE OF TERN FORGE
BASED ON A MAP OF 1807 IN
THE SALOP RECORD OFFICE



banished the peace of Tern Hall, and in 1757 Thomas Hill thankfully seized the expiry of the lease as an excuse to evict his tenants and remove the blot on his landscape. The works were immediately demolished, but the old corn mill, a more congenial companion, was rebuilt and extended.⁹ A grand scheme to embellish the estate in the closing years of the century included the diversion of the old road to the line of the present A5, with a new and splendid bridge built by William Hayward, in 1777–81; in 1783–5 the present Attingham Hall replaced the old Tern Hall on the same site; in 1787–9 the corn mill was removed; and in 1797–8 the grounds were landscaped by John Nash along lines suggested by Humphry Repton.¹⁰ The surviving remains of the industrial complex were almost entirely tidied away, leaving the grandeur of Attingham Park as we see it today.

Rather over a mile above Tern Forge stood Upton Forge (SJ 560112), which began life at least as early as the 1670s. It seems always to have been worked in conjunction with Duncot mill, three-quarters of a mile higher again. Both belonged to the Corbett family, and were worked by a bewildering succession of lessees. In the 1730s and 1740s Joshua Gee of Tern Forge had them, followed in 1750 by Francis Dorsett, later in the century by the Hallen family of iron-masters, and around 1800 by William Hazledine who operated a paper mill here and wrought the links for the Menai Bridge at the forge.¹¹ Upton was another extensive and important site, with an output of 200 tons a year in the first half of the eighteenth century, although by the 1790s it was at a low ebb. Little visible trace now remains.

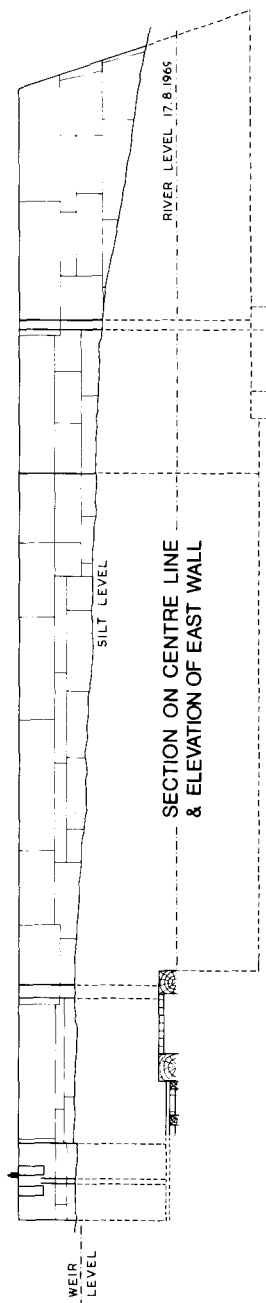
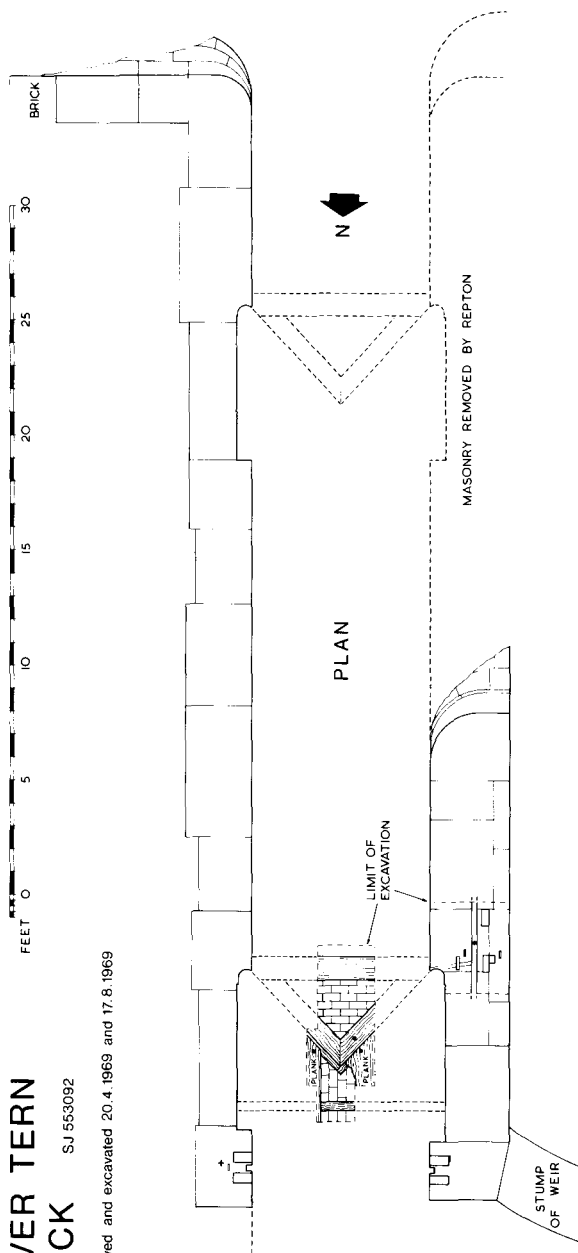
Higher up the Tern and its tributaries were eight more forges, with sizeable transport needs. We know that the Tern was navigable, and navigated, from the Severn as far as Upton: did boats go further up? There is no evidence to suggest it, and the smallness of the streams and the numerous mill weirs would have made it a tedious task. More likely the iron and fuel travelled by land. Certainly Sir Richard Whitworth had his eye on these forges as customers when in 1766 he proposed a canal to join the Severn to the Trent. His route was to follow the valleys of the Tern and Strine to Newport, and thence northwards; but he did not intend to use the Tern itself, for he decried rivers and advocated canals. His ideas, too, were big: a waterway large enough for boats 50 ft by 11 ft, carrying 30 tons on a 3 ft 6 in. draught, “made after the manner and form of those made at Bridgnorth on the Severn”.¹² But it proved to be only a dream.

Dreams apart, the fact is that some (or maybe all: our evidence is highly fragmentary) of the pig iron for Tern Forge came to its doorstep by water. As was commonly the case with Shropshire ironworks, the sources of supply varied over the years, and the Severn provided the main artery of transport. During Wood’s tenure, some pig came from Bersham Furnace¹³ by packhorse to Clawdd Coch on the Vyrnwy above Llanymynech or to Llandrinio on the Severn, and thence down river. Secondly, between 1736 and 1738 the Coalbrookdale Cash Book records a number of deliveries of pig to Tern;¹⁴ a typical entry (11 January 1737/8 reads: “By owner Pool, fret. of 3t. 10c. 3q. to Tearn @ 4/-. 14/2”). Owner Pool seems to have had the monopoly of these particular cargoes: can it be because his boat was one of the few suitable for the River Tern? In Gee’s time, a letter of 1737 tells us, “A trow cast away betwixt Bristol and Gloucester — Mr. Gee had about £400 of pigs which are all lost it is said”.¹⁵ Since Gee did not produce these pigs — he is not known to have owned any furnace — it was probably Forest of Dean iron being brought up river to supply his forges; £400-worth represents 40 or 50 tons. Finally there is a reference in 1743 to 30 tons of pig being delivered from Charlcombe Furnace (under Brown Clee Hill) to Tern Forge;¹⁶ the easiest route would be overland to Bridgnorth and thence up the

RIVER TERN LOCK

SJ 553092

Surveyed and excavated 20.4.1969 and 17.8.1969



Severn. We have no evidence about Tern's sources of coal and charcoal — similarly scattered origins are likely — nor about the transport of its finished products. The chances are that the bar iron, nails, wire, steel and brass also went out by the River Tern and (mainly) down the Severn for sale. Quite possibly, at a later date, the building stone for Attingham Hall was likewise brought to the site by water.

These references only imply navigation on the Tern. Categorical written evidence is sparse but clear-cut. At one end of the forge's history, the original lease makes specific mention of "wharfs" on the site, and at the other end the Tern Corn Mills are advertised in 1757 for letting: "situate on River Tern which is navigable from there to the Severn, in distance not quite half a mile".¹⁷

Navigation to Upton is equally certain. In 1757, just after Tern Forge had been closed, Richard Hill's agent told him of a dispute over fishing rights in the river between himself and Andrew Dodson, who was an employee of Lord Bath, the landowner on the east side of the river opposite the upper dam. Andrew was trying things on: to fish satisfactorily he needed the water level in Tern Mere lowered. "The same day Andrew came to me in Shrewsbury and asked me to draw the water for him to get up an old boat that was Mr. Gee's that has been sunk in the pound for some time. I told him I would do it . . . and went home on Friday morning. He came soon after and told Fanny what I had promised him and said he had a barge coming up with half a dozen lusty fellows that would soon pull up the boat provided he had the water drawn, upon which old Rowley went (tho very unwillingly) and drew up the gates". But Andrew, with the water down, started fishing. "He neither tried to get up the boat nor had he any barge come up that day . . . The boat that he pretended to want up was formerly made use of for the carriage of pigs and iron to and from Upton forge but an old ware out thing and past repairing. He says he bought it off Mr. Gee, but be that as it will, it shall never be taken from the place where it is by Andrew or anyone for him, without your orders".¹⁸

The river had therefore been navigable to Upton; did it remain so after Tern Forge closed? It is not clear whether Andrew's fictional barge was to be hauled by its lusty fellows up the Severn or up the Tern; probably the latter, for an Upton lease of 1782 still mentions "landing places, wharves" there.¹⁹ True, in 1761 pig iron was being carried from Horsehay Furnace to Upton by waggon,²⁰ but Horsehay is inland and the short journey direct by road may have been cheaper than the long journey by railway and water which involved transhipment.

During the period of Hazledine's tenure the works complex at Upton was considerable, its buildings perhaps stretching intermittently all the way from SJ 560112 to 573114 (Duncot), so that at this time Upton Forge may have been the biggest industrial site of any period on the Tern. In 1820 Telford specified that the ironwork for his Menai suspension bridge should be made of best Shropshire iron "drawn"²¹ at Upton forge and finished and proved at his [Hazledine's] establishment near Shrewsbury". This was a very substantial order, and one might expect the navigation to have been needed to Upton during this time if conditions lower down had permitted. But circumstances had by now much altered. The Shrewsbury Canal had opened in 1796 and passed the forge about a third of a mile to the north-west, and although its Shrewsbury terminus was less conveniently situated than the Severn for Hazledine's establishments there, it is reasonable to assume that the bridge links left Upton by canal. Part of the canal opposite the forge has been obliterated, and there are no signs of a wharf on the surviving section; but as the canal gave direct access both to Shrewsbury and to the iron and coal producing area of East Shropshire it was more convenient for transport than the river, even without the considerations of

later obstruction at Attingham. It is also significant that Hazledine ordered a substantial number of tub boats for use on the Shrewsbury Canal.

Of the ironworks there is nothing left to see except a large house at Upton, and at Tern the two dams, some slag in the banks, and a ruin known as the Boathouse which may or may not be as old as the forge. How boats passed through the Tern dams we cannot tell. Poundlocks seem more likely than flashlocks, which would waste the carefully hoarded water; but none of the few maps, nor the dams themselves, offer any clue.

There remains the mouth of the Tern to consider. The natural course of the river swung westwards in a large bend before meeting the Severn. For the purposes of navigation a cut with a lock on it (SJ 553092) was dug across the base of the peninsula thus formed, and a dam was installed on the natural stream. By the time Repton appeared on the scene the whole river was overgrown and reedy, and the lock cut seems to have vanished in this greenery, for it is marked neither on a map of 1795 nor on Repton's plans of 1797.²² But as part of his landscaping he had the lock cut widened to accommodate the full flow of the whole river, whose original loop is now silted up and half dry; and he dammed up the water again in the new channel by throwing a curved stone weir across it, using the head of the old lock for the sluice gates. The weir fell in a flood of the early 1830s, and since then, apart from massive accretion of silt, the scene has remained unchanged.

How old is this lock? It is certainly pre-Repton, since he adapted it to his new purposes and his weir butts up against it. It is unlikely to be earlier than 1710 and the creation of Tern Forge, when its only users would have been the still small Upton Forge and Tern corn mill. Nor is it likely to date from after 1757, when much the same considerations apply. It probably belongs, therefore, to the lifespan of Tern Forge, and it may be tentatively attributed to Thomas Harvey and the works' heyday in the 1710s. For the reasons given above, it can hardly have continued in use after the 1780s, and may have been abandoned earlier still. It served as the lowest in the series of three or four steps (depending on the number of Tern dams) between Upton and the Severn, although when the rivers were in flood it no doubt became temporarily redundant.

The lock is a most interesting one. Not only does it tell us something above the navigation, but it is an example of that distinct rarity, the early eighteenth century poundlock still (more or less) in its original condition: Repton's alterations in no way disguise its essentials. Strangely enough, though within sight of the A5, it seems to have been unremarked by anyone who understood its significance until in 1969 we were told about it by Geoffrey Toms of Attingham. On 20 April of that year we measured its visible parts and on 17 August we excavated²³ enough to allow confident restoration of its plan and section.

The walls consist of ashlar blocks, some of them lightly rusticated, laid in courses that range in height from 5 in. to almost 2 ft. The stones are up to 6 ft long, and on the top course at least are joined by iron cramps set in lead. The east wall varies in width (3 ft maximum), has a battered return wall at the tail and, apart from some stones missing at the head and displacement by tree roots above the rail gate recess, is complete. The west wall, against which Repton's curved weir abuts, is now 3 ft 6 in. wide. Its back was once probably similar to the east wall's — irregular with soil infill behind — but it had a dressed facing added when Repton exposed it by widening the lock cut to accommodate the river. The downstream half of this wall is absent, no doubt removed by Repton, although its stump is rounded off with curved masonry perhaps recovered from the original wall end. Thus three hollow quoins survive, carved in the stonework.

We exposed a length of the wall top behind the surviving western quoin, revealing a wrought iron strap running longitudinally between three rectangular slots, and a shallow groove running almost at right angles to the lock. These slots and groove may well have held the anchor for the pivot strap round the heel post of the gate, but their position is unusual. The lock's length between quoins is 29 ft, and its width varies from 7 ft 8 in. to 7 ft 10 in.

Our excavation, through 4 ft of accumulated silt, revealed the floor of the lock head, in construction typical of the eighteenth century with transverse timbers and brick paving. The mitre cill consists of two timbers 9½–10½ in. wide, meeting at an angle of 86° – sharper even than the usual angle of mitres on early river locks, which in turn tend to be sharper than those on canals. The main cill beam is 12 in. wide and its upper surface, like that of the mitre, lies 6 ft 1 in. below the lock top. Over the red brick floor, and spiked to the cross timber and to narrow stringers which follow the angle of the mitre cill, are longitudinal 2 in. planks (one complete, one very worn, one missing). Their surface is 6 ft 5 in. below the lock top. The triangle inside the mitre may also have been planked over since a spike survives in the surface of the cill.

Water prevented excavation below the cill, but probing showed that the lower floor of the chamber was 4 ft 5 in. deeper, or 10 ft 6 in. below the lock top. On 17 August 1969, the day we did our levelling, the river level was 6 ft 10½ in. below the lock top. This, we were told, was higher than the lowest summer level, but lower than the average between the ordinary low summer and high winter levels. On 20 April 1969, indeed, it was a good foot lower than in August. In other words, on 17 August the depth of water on the bottom cill (assuming it to be similar in design to the top cill) could have been 3 ft 3½ in., not unreasonable by the shallow standards of the Severn in summer; on 20 April it would have been little over 2 ft. Above the lock, if the level of water in navigation days was the same as that retained by Repton's weir, the depth on the top cill would have been 3 ft 4 in.

Above the top gates are vertical grooves in each wall, flanked at the top by deep holes blocked on the east side by bricks. Behind each groove stands a wrought iron stanchion with an eye in it. During the excavation we found the remains of a sluice door: a heavy pawl, and a rotted wooden paddle rod fitted on one side with an iron ratchet bar and on the other with a bar with staggered holes, evidently for levering it up by a handspike. These could be interpreted as stop-plank slots and as a gate paddle for the lock, but in view of the chronology of the site and the absence of any trace of the lock gates it seems well-nigh certain that they all belong to a control sluice contemporary with Repton's weir.

The distance between the point of the lower mitre (as projected) and the top cill is exactly 24 ft: apart perhaps from those on the Pitchcroft Branch of the Donnington Wood Canal (for tub boats), the shortest known lock in Britain. Allowing for the thickness of the lower gates, the absolute maximum size of boat that could pass the lock is 23 ft by 7 ft 8 in. What kind of boat, then, was it that navigated the Tern? The Severn trow and its smaller version, the barge found on the upper river, were very variable in size, but none is known anything like as small as this. One thinks more in terms of the 4-ton punts, drawing 16 in. of water, which went up the Wye to Hereford in the seventeenth century.²⁴ But there were small vessels on the Severn too, known as wherries or lighters: examples listed at Shrewsbury in 1837 varied between 5 and 12 tons burden.²⁵ It was perhaps this kind of craft which carried the cargoes to and from Tern and Upton Forges; but we will probably never know for sure.

The Tern navigation was a small private one of a type which has parallels in other Severn tributaries. The Dick Brook, whose history is even more obscure,²⁶ invites comparison, with a forge at the head of navigation, the date 1715 inscribed on one of the halflocks, and a width limit of 10 ft 9 in. imposed by the locks and by the sinuosity of the stream. Again, at least at Eardington on the Severn south of Bridgnorth was made navigable in the 1770s for tub boats carrying iron from one forge to another.²⁷ Andrew Yarranton attempted in the 1660s and 1670s, with short-lived success, to make the Worcestershire Stour navigable from the Severn to Stourbridge. This was a grander scheme, with parliamentary authority and many locks; but its purpose was comparable — to serve the multifarious iron-works along the river — and its barges, designed to carry 16 tons, were restricted in the 1660s by the shallows to 7 tons.²⁸ And it is not impossible that other minor river navigations like the Tern, feeding and tapping the great highway of the Severn, may yet be resurrected from oblivion.

References

1. Their rediscovery was largely due to Robin Chaplin; see his "Location and Scale of Tern Works" (duplicated sheets); "A Forgotten Industrial Valley", in *Shropshire News Letter*, 36 (1969), 1–3; and "Discovering Lost Iron-works", in *The Local Historian*, 9.2 (1970), 82–4. We are grateful to Mr. Chaplin for further unpublished information.
2. In Salop Record Office (SRO), Attingham Collection (unlisted). Quotations from this source are by courtesy of the County Archivist.
3. SRO, Attingham Coll., Thomas Harvey to Richard Hill, 16 Apl 1713. His claim for Tern's priority and excellence is surely denied by the date and scale of Ambrose Crowley's works on Tyneside.
4. E. Wyndham Hulme, "Statistical History of the Iron Trade of England and Wales 1717–1750", in *Trans. Newcomen Soc.*, ix (1928–29), 21–3.
5. SRO, Attingham Coll., Joshua Gee to Thomas Hill, 12 Nov 1737.
6. References from John Kelsall's diary, *Montgomeryshire Collections*, xlvii (1940), 55–60.
7. Information from T. C. Hancox. A. Raistrick, *Quakers in Science and Industry* (1968), 114.
8. *Trans. Newcomen Soc.*, ix (1928–29), 25, 27.
9. Information from Robin Chaplin.
10. *Location and Scale of Tern Works*, and information from Robin Chaplin. Although one school of thought attributes the landscaping work to Nash alone, he did act as Repton's partner; and since the designs were in the latter's name we have hereafter referred to the work as Repton's.
11. *Shropshire News Letter*, 36 (1969), 3–4.
12. Richard Whitworth, *The Advantages of Inland Navigation* (1766), 9, 36.
13. Information from Robin Chaplin.
14. Shrewsbury Borough Library, MS 331, ff. 53, 61, 67, 73, 74, 80. We are grateful to Barrie Trinder for these references.
15. SRO, Attingham Coll., from Thomas Bell, 19 Feb 1737.
16. *Trans. Shropshire Arch. Soc.*, 65 (1958), 84.
17. *Worcester Journal* 8 December 1757. We are indebted to John Norris for this reference.
18. SRO, Attingham Coll., Thomas Bell to Richard Hill, 25 Apl 1757.
19. SRO, 1396/2.
20. Barrie Trinder, *The Industrial Revolution in Shropshire* (1973), 148.

21. Telford in his autobiography defines "drawn" as rolled, whereas William G. Norris, manager at Coalbrookdale from 1866 to 1897, corrected this in his own copy by a marginal note that it meant hammered. There is thus some doubt whether Upton, which would certainly possess forge hammers, also boasted rolls.
22. Humphry Repton's Red Book, in the custody of the National Trust.
23. By kind permission of C. R. St Q. Wall, Regional Representative of the National Trust (the owners), and of D. Cottrell (the tenant). We are also grateful to Alan Denton for his help in the work.
24. BM Add MS 11052 f. 95.
25. Barrie Trinder, *op.cit.*, 106.
26. T. C. Cantrill and M. Wight, "Yarranton's Works at Astley", in *Trans. Worcs. Arch. Soc.*, n.s. vi (1929), 92-115; J. M. Palmer and M. I. Berrill, "Andrew Yarranton and the Navigation Works at Astley", in *Jnl. of Rly & Canal Hist. Soc.*, 4.3 (1958), 41-6; M. J. T. Lewis, W. N. Slatcher and P. N. Jarvis, "Flashlocks on English Waterways", in *Industrial Archaeology*, 6.3 (1969), 222-4, 233.
27. N. Mutton, "The Forges at Eardington and Hampton Loade" in *Trans. Shropshire Arch. Soc.*, 58 (1967), 235-43.
28. Staffordshire Record Office, D 1788/59/3 and 61/7.

Note on the drawings: the Tern Navigation map is based on one of 1807 in the Salop Record Office — the only known map to mark the lock, though it does not name it. The lock drawings are compiled from our own survey. Solid lines denote observed features, dotted lines our reconstruction. The size of individual stones is derived from photographs, not measurement, but their width in plan is based on probing.

A comparison between canals and horse-drawn railways

(From *Sheffield Mercury* 26 March 1825)

Contributed by G. Y. HEMINGWAY

The estimated average cost of 75 canals was £7,946 per mile, but as most of them exceeded the estimate the actual cost was about £9,000 per mile.

The average cost of about 500 miles of tramways and railroads was about £5,000 per mile, "and the length of a canal is generally about one third longer".

The estimate for the Liverpool & Manchester Railway is £12,000 per mile, but "that road is meant to be executed on a magnificent scale, 60 ft wide," and the cost stated is to include land, engines, wagons and warehouses. But the Union Canal cost as much as this, and the Forth & Clyde twice as much.

The proposed Peak Forest Railway, patronized by the Duke of Devonshire, is estimated by Mr. (Josias) Jessop to cost £149,206, while "a canal for the same connexion as is proposed by the railway was estimated, in October 1810, by the late Mr. Rennie, at £650,000."

"Rail-roads may be made to branch out in every direction, to accommodate the traffic of the country, while . . . the possibility of carrying branches from a canal . . . must depend entirely on the surface, and a supply of water." And, with a railway, a stationary engine can haul wagons up any hill along the route.

"It has been stated that a horse on a rail-road, with a descent of 60 ft in a mile, will draw 20 tons at 3 m.p.h., and that a horse will draw the same load at the same speed on a canal. Mr. Telford has said that a horse will draw 12 to 15 tons on a railway with a slope of 55 ft to a mile and return with 4 tons. On Sir Hope's railway, about 2 miles long, with a descent of 1 in 80 for about 500 yds, and an ascent of 1 in 400 for 500 yds, the rest level, a horse will drag 12 tons from end to end at 2½ m.p.h. "Mr. Cummings says that on some of the tram-roads in South Wales, where the inclined plane is about ½ in. to 1 yd, one horse usually takes down 30 to 40 tons above the weight of the waggons. Mr. Wilkes of Measham has stated that one horse, value £20, on a railway declining 1 in 115 drew 35 tons, which on a level railway would be reduced to 6¼ tons. But the most extraordinary feat is that stated by Mr. Banks, and to which many persons were witnesses, of a horse which drew 16 waggons, weighing 55 tons, for more than six miles on the Surrey Rail Way. On the whole, it appears that on a well-constructed level rail road an ordinary horse will draw, with considerable ease, a load of 7 to 8 tons at a rate of 2½ m.p.h., or 10 to 12 tons at 2 m.p.h. The same horse will draw, on a canal, about three times the weight, but this advantage is counterbalanced by the greater original cost of the canal and its greater length."

It would require six horses to draw along a canal at 4 m.p.h. the same load that one horse will draw at 2 m.p.h. The railway has the advantage unless the speed is not more than 2.82 m.p.h.

An unremunerative branch line in 1876

BY G. MARTIN SMITH

Among the closures proposed in Dr. Beeching's celebrated report¹ was that of the former Great Western branch from Ruabon to Barmouth Junction (latterly renamed Morfa Mawddach). The reason given was of course the sparse traffic carried, less than 10,000 passengers and 5,000 tons of goods a week. After the statutory procedure had been gone through, closure was approved by the Minister of Transport and took place on 11 December 1964, some weeks earlier than had been announced, because of flooding which breached the line in several places.

This branch was built during the 1860s in five sections owned by five distinct companies: the Vale of Llangollen, Llangollen & Corwen, Corwen & Bala, Bala & Dolgelly, and Aberystwith & Welsh Coast. The first four came within the Great Western's sphere of influence at an early date and were worked by that company from the outset; the Bala & Dolgelly was completely taken over on 1 August 1877, the others on 1 July 1896. The Aberystwith & Welsh Coast, on the other hand, was amalgamated with the Cambrian on 5 August 1865, and so was independent of the Great Western until the Grouping. It must have been disappointing to the promoters, and may be equally surprising to us today, to find that the branch, in particular the Bala & Dolgelly section, was hardly profitable from the start. This emerges clearly from a report on the Bala & Dolgelly made in 1876 to Richard Moon, chairman of the London & North Western, by his district superintendent at Chester, Edward Miller Gard Eddy. Moon's interest is unexpected; possibly he had an ambition to extend the London & North Western's services to Dolgellau and Barmouth, since the Denbigh, Ruthin, & Corwen, which it worked, had running powers over the Bala & Dolgelly. Be this as it may, the report² is worth quoting in full for the details it gives of the traffic and working of an unremunerative branch in those days.

Private.

London and North Western Railway
District Superintendent's Office
Chester 7th October 1876

Report to R. Moon Esqre.

Bala & Dolgelley Railway

Below I append the result of my enquiries regarding the above.

The line is a single one throughout, there are three intermediate Stations viz Bont Newydd, Drws-y-Nant, & Llanuwchllyn the latter is used as a crossing Station. Goods Sidings are provided at each place. The traffic is worked on the train staff system with the block telegraph as an auxiliary.

The gradients on the line are bad. Starting from the Dolgelley end the line rises for about 10½ Miles (in some places the ascent is 1/51, 1/59 & 1/61) it then falls for the remaining 6¼ Miles to Bala, gradients slightly easier. Such a heavy road makes it expensive to work the traffic.

Passenger traffic.

During the Summer Months 5 Passenger trains are run daily (Sundays excepted when only 1 is run) in each direction & I understand they load fairly with through traffic to Dolgelley Barmouth &c. & during the past Summer the G. W. Coy's Carriages have gone through from Dolgelley to Barmouth the Cambrian Coy providing the power.

During the Winter Months commencing 2nd October only 3 Passenger trains are run from Bala to Dolgelley & 4 in the opposite direction. The Passenger traffic during the Winter is very light. During the two days I was on the line the maximum number of Passengers in any one train was 40 but the average would not exceed 30.

The traffic to & from the intermediate Stations is very small. Bont Newydd serves a few outlying houses. Drws-y-Nant I should think scarcely pays its expenses. Llanuwchllyn Station serves a small country village of that name & is the chief of the intermediate Stations.

Sir Watkin Wynn has a Shooting Box near the North West [*sic*; actually south-west] end of Bala Lake & there is a private Station on the line opposite the House which is used by Sir Watkin & his friends. The Station is only manned when Sir Watkin is there.

Goods traffic.

The Goods traffic is also light a regular goods train is timed over the line in each direction, the Mail from Ruabon in the morning also takes Goods & there is a conditional train run when required. On one of the days I was on the line the conditional train was not run & the regular Goods consisted of 23 & 24 Wagons (mixed) in each direction.

On the 2nd day the regular train from Bala only brought 11 Wagons & 17 Wagons were worked from Dolgelley towards Bala but in consequence of the principal number of the Wagons being loaded with timber & slates these 17 Wagons had to be worked in 2 trains.

Dolgelley.

The traffic at this place appears to consist chiefly of timber, coal & lime, some slates are also handed over by the Cam. Coy.

Bont Newydd.

There is a fair timber traffic from this place averaging about 100 tons per month. Small traffic in Coal & lime for surrounding country. A few slates are also carted from a quarry about a Mile & a half away & loaded from this Station.

Drws-y-Nant.

Traffic practically Nil.

Llanuwchllyn.

Small Coal & lime traffic.

There is also a small Cattle traffic on the line.

The bulk of the Coal used on the line comes from the Ruabon district, some however comes from Wigan.

I understand the Goods traffic is now a little lighter than usual.

E. M. G. Eddy.

References

1. HMSO, *The Reshaping of British Railways* (1963).
2. London & North Western Railway Company, reports read to board (Public Record Office LNW 1/63).

The spellings Dolgelly and Dolgelley are anglicized versions of Dolgellau, which is now accepted as the correct form.

Recent Literature

BY WILLIAM J. SKILLERN

- BICK, David E. *The Old metal mines of mid-Wales. Part 2, Cardiganshire, north of Goginan.* 1976. (The Pound House, Market Square, Newent, Gloucestershire, GL18 1PS, £1)
- BODY, Geoffrey. *Railways for pleasure.* 1976. (David & Charles, £1.95)
- BOWERS, Michael. *Railway styles in building; with photographs by Patrick Watters.* 1975. (Almark Publishing, £3.95)
- BURTON, Anthony. *Canal; photography by Derek Pratt.* 1976. (David & Charles, £4.50)
- CHAPMAN, S. Keith. *Gazetteer of Cleveland ironstone mines.* 2nd ed. 1976. (Langbaugh Museum Service, 10/12 Fountain Square, Guisborough, Cleveland, 45p)
- CLARK, Paul. *The Railways of Devil's Dyke.* 1976. (Turntable Publications, Sheffield, £1.25)
- COMPTON, Hugh J. *The Oxford Canal.* 1976. (David & Charles, £3.95)
- COURSE, Edwin. *The Railways of Southern England. Vol. 3, Independent and light railways.* 1976. (Batsford, £5.60)
- DARWIN, Andrew. *Canals and rivers of Britain.* 1976. (Dent, £6.95)

- ESSERY, R. J. and MORGAN, K. R. The L.M.S. wagon. 1977. (David & Charles, £4.95)
- FORBES, N. N. and Others. The Electric lines of the Lancashire & Yorkshire Railway. 1976. (Electric Railway Society, c/o 17 Catherine Drive, Sutton Coldfield, B73 6AX, £2.50)
- GAGG, John. John Gagg's book of narrow canals. 1975.
- GAGG, John. 250 Waterway landmarks. 1976. (John Gagg, Shootacre House, Princes Risborough, Bucks., 50p each)
- GREAT WESTERN RAILWAY Timetables, October 6th 1947: [facsimile reprint, 1976]. (Oxford Publishing Co., £1.80)
- GUDGIN, D. S. E. (Compiler). Vulcan Foundry locomotives, 1832-1956. 1976. (D. B. Barton, £3.50)
- HALL, V. F. Industrial steam locomotives. 1975. (Moorland, £3.25)
- HODGE, Peter. The Hertford Loop. 1977. (Southgate Civic Trust, 70 Vicars Moor Lane, London, N21. 60p; by post, 70p)
- L.M.S. Centenary of opening of first main-line railway. Supplement to the Railway Gazette, September 16, 1938. [Facsimile reprint, 1975]. (Oxford Publishing Co., £2.40)
- LARKIN, David. Private owner freight wagons on British railways: a pictorial survey. 1976. (D. B. Barton, £1.75)
- MacDOUGALL, Lesley. The Crinan Canal: an illustrated history and guide. /1976?/. (Famedram Publishers Ltd., Gartocharn, Alexandria, G83 8RT, Scotland, 40p)
- MARTIN, Don. The Monkland & Kirkintilloch Railway. 1976. (Strathkelvin District Libraries & Museums, 170 Kirkintilloch Road, Bishopbriggs, Glasgow G 64, 50p)
- PATRICK, A. Canals in Nottinghamshire: a survey in industrial archaeology. 1976. (Nottinghamshire County Council, Dept. of Planning & Transportation, Trent Bridge House, Fox Road, West Bridgford, Notts. NG2 6BJ, £1)
- ROGERS, John D. Rheilfordd y Cambrian, the Cambrian Line: an illustrated history and guide; [English and Welsh text]. 1974. (Famedram Publishers Ltd., 40p)
- STABLES, David G. (Compiler). The Chester Canal packet: an archive teaching unit. 1975. (Cheshire Education Committee, County Hall, Chester, £1)
- STEAM-UP in Lancashire: Railwayana from "Lancashire Life". 1976. (Whitehorn Press, Thomson House, Withy Grove, Manchester, £1)
- THORNE, H. D. Rails to Portpatrick. 1976. (T. Stephenson & Sons, Prescott, Merseyside, £5.95)
- WADE, E. A. The Plynlimon & Hafan Tramway. 1976. (Gemini Publishing Co, 23 Palace Gardens Terrace, London, W.8, £2)
- WEIR, Tom. The Highland line (Perth/Thurso): a pictorial guide. 1974. (Famedram Publishers Ltd., 75p)
- WILSON, E. A. The Ellesmere and Llangollen Canal: an historical background. 1975. (Phillimore, £3.50)

WREN, Wilfrid J. Ports of the Eastern Counties: the development of harbours from Boston in Lincolnshire to Rochford in Essex. 1976. (Terence Dalton Ltd., Lavenham, Suffolk, £5.40)

Articles

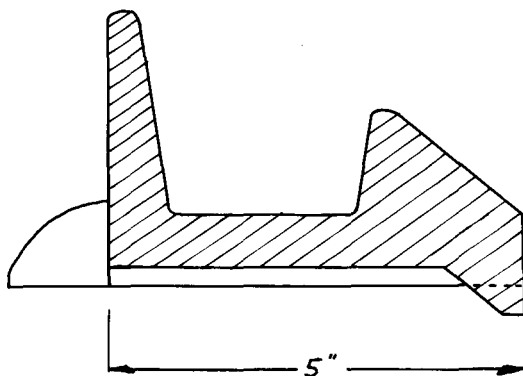
"Journal of the Walford and District Industrial History Society", No. 6, 1976, includes articles on the Grand Junction Canal by Michael Hemming, pp. 35-45, and the Brill Branch Railway, pp. 48-50. (Available from C. A. Jacques, 9 Parsonage Road, Rickmansworth, Hertfordshire, 40p)

Correspondence

Cast Iron Trampplates

Sir,— Horse tramroads have long been an interest of mine, and I was recently much indebted to Mr R. F. Carew of Cheltenham for the presentation of a cast iron trampplate rescued from the nearby quarries of Leckhampton Hill where plateways worked for 130 years. Although of the usual 3 ft. length, the plate is of very peculiar appearance with no obvious application and certainly none in turnouts or cross-overs where box and wing plates were used. The appended sectional drawing shows the channel-like shape, the width of which decreases from 3 ins. at the ends to 2¼ ins. in the centre, so that in plan the inner face presents the form of an arc of large radius. The plate has certain minor features in common with others from the area and I should be grateful for any clues as to its purpose. This example led to a discussion with Harry Paar, and in view of the large numbers of trampplates dispersed in private and public collections throughout the country it was felt that a register of "vital statistics", identifying marks, place of origin etc., could prove of inestimable value to the study of this neglected subject and tramroads in general.

In a small way I attempted a start some ten years ago by contributing an article to *Industrial Archaeology* (August 1966) in which over two dozen plates involving a profusion of patterns were described and divided into eight basic types. The project is clearly of considerable magnitude and perhaps the R&CHS would like to consider if it is worthy of official inception and support. DAVID E. BICK



Great Northern Railway: London to Peterborough

Sir,— Now that the entire resignalling of the Great Northern Railway Main Line, London to Peterborough, is virtually complete it may be appropriate to give a summary of the signalling arrangements recently displaced.

At the time of the accident at Abbots Ripton referred to in the Journals for July and November 1976 the Great Northern had signal cabins at all stations and, in addition, there were many intermediate cabins. As is generally known after this disaster the signalling system was subject to full inquiry, the somersault signal was adopted and the green light in place of the "white" light as the clear signal. Hours of signalmen's turns of duty were reduced.

By 1877 there were 38 signal boxes between Kings Cross and Hitchin, inclusive, and a further 24 on to Peterborough, not counting boxes serving goods lines only. Between Kings Cross and Finsbury Park the down line boxes were separate from the up. There were four boxes at Finsbury Park, two at Holloway, Wood Green, Hatfield, Biggleswade, Sandy and Huntingdon, known as South and North respectively. Hitchin had three boxes. With the widening of the line at various places additional signal boxes became necessary and these were provided between 1888 and 1891 at Wood Green, New Southgate, New Barnet and Hatfield, each now having four boxes, except New Barnet which had three. The down lines had separate boxes from the up lines as far as New Barnet, the North or No 3 box at the place being the first to signal both down and up trains. Two of the New Southgate boxes were unusual as they were built into the arch of Friern Barnet Road bridge and the chimneys extended above the parapet of the bridge; access was by steps from rail level.

The signal box at the site of the former Welwyn Junction was by mile post 20 and was named Twentieth Mile. An additional box was provided at Digswell in 1882, at Stevenage in 1887, at Harringay in 1885 and Hadley Wood in 1884; the former Hadley Wood box was renamed Greenwood. These, with some others, gave a total Kings Cross to Hitchin (inclusive) of 57 signal boxes and a further 29 on to Peterborough in 1897, not counting boxes serving only goods lines and yards.

In 1898 to ease congestion at Potters Bar an additional box, named Mimms, was brought into use. This was situated a little way south of the station and the signalman was specially authorized to accept a second down train as soon as the previous one had passed the home signal.

No substantial alterations were made until 1920 when, with improved apparatus and track circuiting, it was decided to close some signal boxes. Ten boxes between Kings Cross and Hitchin were closed between 1920 and 1923 by combining down and up boxes or installing track circuiting and automatic signals. Intermediate block signals were placed at Hawkshead in 1922 and at Wymondley in 1928. Twentieth Mile down and up boxes were replaced by Welwyn Garden City in 1926. An unusual feature of these was that they formed a block section on the two branches, but had no control over the train staff and ticket arrangements. Digswell points and signals were worked from Welwyn North in 1931 and the completion of track circuiting and automatic signalling Greenwood to Potters Bar enabled Ganwick to be closed from 24 January 1932.

Virtually all main line signal boxes were opened continuously Monday morning to Sunday morning, three men working shifts of eight hours. On Sundays most station boxes were open and intermediate boxes closed.

Two other points of interest: a signal box was installed at Letchworth in 1875, about thirty years before there was a station; and after the Canonbury tunnel

accident in 1881 the GNR erected and operated from 1884 two additional signal boxes: Drayton Park at the north end of the tunnel and Highbury Crescent at the other end, worked in conjunction with Canonbury Junction box NLR. Highbury Crescent box was closed and removed in 1912 and Drayton Park in 1921.

H. V. BORLEY

Boat and Barge Horses

Sir,— D. J. Smith comments (*Journal*, November 1976, p.88) that towpath deterioration is “tending to limit the present revival of horse boating for pleasure”. Whilst this does have an effect, and the British Waterways Board maintains it has no legal obligation under the Transport Act 1968 to keep tow-paths of cruising waterways in repair (a highly contestable legal point, incidentally), a more direct reason is the refusal of BWB to license any new horse-drawn boats. In January 1974 BWB wrote to the Inland Waterways Amenity Advisory Council “Horse-towing on the canals cannot now be prohibited since many of the towing paths were constructed for this purpose”. Indeed, section 43(3) of the Transport Act 1962 provided that the Board could charge fees and make the use of canals “subject to such terms and conditions, as they think fit”; but, of course, in the context of the existing public right of navigation. Parliament cannot, as a matter of interpretation, be assumed to be cutting down an existing right unless the words are clearly intended to do so — and they are not in the 1962 Act. Further, Parliament is assumed to legislate in the full knowledge of the working of all existing legislation, and is not to be assumed to amend it by implication unless there is a clear intention. Under section 16(2)(a) of the British Transport Commission Act 1954 there had been given power to make byelaws “for determining . . . the means by which . . . vessels may be navigated and used.” There was therefore no need for the 1962 Act to give such a power, and there is nothing in that Act to suggest that it intended to widen, almost accidentally, the powers of the 1954 Act. I would therefore conclude that BWB was given no power in 1962 to refuse horse-boats licenses simply because they were horse drawn.

The Transport Act 1968 did not, whatever is alleged about it, withdraw the right of navigation; it simply qualified it by making it enforceable only through the courts (which was the reality of the situation before) and giving the court some discretion whether or not to order reopening of obstructed waterways (a decision to be based on “reasonableness”, not simply on convenience). Again there is no direct amendment of existing rights (such as the right to have a license for a horse-drawn boat, subject to other, more normal, conditions), and nothing to imply that any such effect was intended. The pre-1968 position was therefore maintained. BWB was therefore correct in its assertion to IWAAC in 1974, and is wrong to have changed its policy on this matter. Any dissatisfied boat-owner refused a license on these grounds could compel the Board to issue a licence, if necessary by taking legal action.

DAVID R. PEDLEY

Legal Adviser, London Branch, Inland Waterways Association

All material published in this *Journal* is copyright and must not be reproduced without the permission of the Editor.

Leeds Central Station

Sir,— I regret that I have not been able to reply earlier to R. A. Cook's article "The Mystery of Leeds Central Station" (March 1976 *Journal*).

Mr. Cook surmises that the original temporary terminus of the Leeds, Dewsbury & Manchester Railway at Leeds was on the low level and that this was closed in late 1850 to allow the construction of the new high level Central station, but this is not substantiated by the minutes, etc., of the various committees of the Leeds Central Station Board. These make it quite clear that the London & North Western Railway (which absorbed the LD&M by Act of 9 July 1847) constructed an approach viaduct to a high level temporary terminus for the opening of its Dewsbury—Leeds line to public traffic on 18 September 1848. An 1849 plan shows this as a two-road terminus.

On 16 March 1849 the Board resolved that these works be adopted as part of the Central station and approved plans for enlarging the temporary terminus so as to accommodate additional traffic which would stem from the opening of the southern end of the Leeds & Thirsk Railway and the completion of the LNWR trans-Pennine route through Standedge — events which respectively took place on 10 July and 1 August 1849. The extra works were largely although not entirely complete by this time, and in September it was reported that LNWR expenditure on the station amounted to £26,000, a figure that would appear to include the original works for the temporary terminus and the approach viaduct. As the total cost of the station was estimated in 1851 to amount to £49,000, it is evident that the enlargement of the temporary terminus was relatively modest.

It is also interesting that the LNWR paid the greater share of the cost of a station which it never regularly used after 1850. In that year disagreement over apportionment of costs and land caused the Central station partners — apart from the Lancashire & Yorkshire Railway — to move their traffic elsewhere. The new terminal arrangements are correctly outlined by Mr. Cook with the exception of those of the Great Northern Railway, which moved not to Wellington but to a temporary low level terminus known as Wellington Street on the north side of Central station. It is this terminus which may have confused some writers and led to the incorrect assumption that the original LNWR (LD&M) terminus was on the low level.

Again, it is quite clear that Central station remained virtually unchanged from the exodus in 1850 until 1 August 1854 when the GNR reverted to using it on the opening of the Leeds, Bradford & Halifax Junction Railway. Indeed, with only a handful of L&YR trains running into Central in this intervening period, it appears to have been sadly neglected for in March 1855, following an accident, the GNR concluded that "it would be impossible to make it safe for the running of passenger trains without the whole being relaid". The station partners agreed to a complete rebuilding at a cost not exceeding £20,000, but owing to the inevitable wrangling this work was not completed until 1857.

As stated in my *South & West Yorkshire* volume in the David & Charles Regional Railway History series, Central station "evolved" and there is no clear-cut opening date. It could be taken as 18 September 1848, when public traffic into the LNWR (LD&M) temporary terminus commenced: 16 March 1849, when it was resolved that the temporary terminus should form part of Central station; or 10 July 1849, when the extensions were largely completed and the term Central station came into more general use with the opening of the Leeds & Thirsk Railway. I fear I may have buried Mr. Cook's "pet theory", but it was certainly not 1 August 1854.

DAVID JOY



The inland waterways are yours to explore

If you are interested in canal cruising, fishing, canoeing, rambling, natural history and industrial archaeology, commercial waterways or just gongoozling, then you should read the award winning newspaper *Waterways News*, the only newspaper in the country that is entirely devoted to the inland waterways.

Published by, The British Waterways Board 11 times a year, the cost of one year's subscription is £1.50 running from April/March inclusive. This is proportionately reduced depending upon when you start your subscription. If you are interested in becoming a regular subscriber please write to the Editor.



Waterways News



The Editor, British Waterways Board,
Melbury House, Melbury Terrace, NW1 6JX
Telephone: 01 - 262 6711 Ext. 6386



All material for the November *Journal* must be with the Editor not later than 18 August 1977.

Charges for advertisements are as follows: for small advertisements, members 3p per word, non-members and commercial advertisers 6p per word. Minimum charge for any small advertisement 50p. A *full* page advertisement costs £15 and a *half* page £10. Remittance should be sent, with the copy, to Mr. Michael Stimpson, 83 Sunny Bank Road, Potters Bar, Herts. EN6 2NL.

Published by the Railway & Canal Historical Society
at Tuborg Halt, 34 Manor Avenue, Caterham, CR3 6AN
and printed by Hobbs the Printers Ltd., Southampton