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THE NORTHGATE TURNPIKE

N SPRY

For more than one hundred and seventy years the road from the city of Gloucester to the top of Birdlip Hill, and the road which branched eastwards from it up Crickley Hill towards Oxford and later London, was maintained from the proceeds of the various turnpikes or toll gates along it. This report examines the history and administration of these roads from their earliest period to the demise of the Turnpike Trust in 1871 and also details excavations across the road at Wotton undertaken in 1968.

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1 THE NORTHGATE ROADS

The road to Gloucester from Cirencester and the east is a section of the Roman road known as Ermine Street. The line of this road from Brockworth to Wotton has been considered to indicate a Severn crossing at Kingsholm one Km north of Gloucester, where, as late as the seventeenth century, a major branch of the river flowed slightly west of modern Kingsholm. The extent of early Roman archaeological material from Kingsholm makes it likely to have been a military site early in the Roman period. (1)

Between Wotton Hill and Kingsholm this presumed line is lost; the road possibly passed through the grounds of Hillfield House and along the ridge, now marked by Denmark Road, towards the river. A series of resistivity surveys across this presumed line at Hillfield yielded no proof of the original course. A similar series of surveys has been undertaken in the public gardens on both sides of the brook at the bottom of Wotton Hill; there opposite Estcourt Road, the present road passes some 15 m (50 ft) north of a line suggested on the larger scale Ordnance Survey maps, as joining the top of Wotton Hill and a point west of Elmbridge Road. Here also no evidence of a Roman road or its ditches has been found. (2)

The period of construction of the probable Roman road from Wotton Hill to Gloucester is uncertain. Inhumation and cremation burials of Roman date on both sides of the present London road at Wotton seem to be confirmation of the existence of such a road. From the Gloucester Northgate the present road has a straight alignment towards Wotton Hill but at a point opposite St. Margaret's Church it starts to curve south of the remains of the church of St. Mary Magdalen. This deviation from a straight alignment is the result of work undertaken in 1821 and 1822. Before the latter date the road passed to the north of St. Mary Magdalen's Church, Fig 1C. The church dates from the late Norman period and its associated hospital is first mentioned in a cartulary of 1154 - 89. (3) There is reason to believe that this more northerly course was both the Roman and post Roman road. Excavations behind the remains of the church have shown that road surfaces of a date earlier than the second half of the eighteenth century do not survive at this point. Roman metalling has been recorded between the inner and outer Northgate at Gloucester. (4) The previously mentioned excavations are published as Part 5 of this report.

The course of the Roman road between Elmbridge Road and the foot of Birdlip Hill is unlikely to have been materially different from that shown on the earliest issues of large scale Ordnance Survey maps, Fig 1A. This is not to say that slight changes of alignment have not occurred. What was assumed to have been the southern ditch and part of the make up of the Roman road was observed to extend northwards from the northern pavement of the present road at two points at the city boundary at Hucclecote. (5) In 1779 Rudder mentioned that at both Barnwood and Brockworth traces of the Roman road could be seen. In the Barnwood section he writes "The old Roman road from Gloucester to Cirencester runs through this place, but it is so worn out and destroyed as not to be discoverable by a slight observer." In the Brockworth section part of the entry is as follows "Brockworth lies on the ancient Roman Way called Irmin Street, some traces of which may still be discovered hereabouts where the land and stone of the old road being cut through by the long use of carriages appears in the banks on

the side of it distinct from the natural soil." Rudder's observations are not necessarily valid. (6)

More recently, about 1838, when the Cheltenham and Great Western Union Railway lowered the road when constructing Barnwood Bridge, it appears that a Roman road was met eighteen inches below the surface. This proved so hard that it had to be broken up by gunpowder. (7) Although the depth qualifies the argument that a Roman road was encountered, in the absense of a more detailed account, and upon reflection upon the quality of even early turnpike road surfaces, the possibility of this being merely turnpike metalling cannot be ruled out.

The public utilities and the surveyors departments of both the Gloucester City and the County Council have no record of specifically Roman road surfaces being observed; both London Road and Barnwood Road have been drastically reconstructed in recent years. The course of the road at Barnwood before its reconstruction as a dual carriageway was slightly towards the present northern carriageway.

From the foot of Birdlip Hill the Roman road is shown on the Ordnance Survey map passing along the ridge slightly to the north of the present road until the steepest section of the existing road is reached, Fig 1B. It has been asserted by St. Clair Baddeley that from the point where the Ordnance Survey map shows the modern road meeting the earlier line the latter turned southwards of the present road, across the fields, and mounted the escarpment by a zigzag course now covered by woodland. (8) By comparison with the present line there seems little to recommend this postulated course shown on the large scale Ordnance Survey maps.

The field evidence for this being a much used road is conclusive; althought there is no evidence of the period at which it was in use. The Section from the most southerly point on this road to Black Horse Lodge was remade by Sir Michael Hicks at the end of the seventeenth century as part of the coach road to his new Witcombe Park. (9)

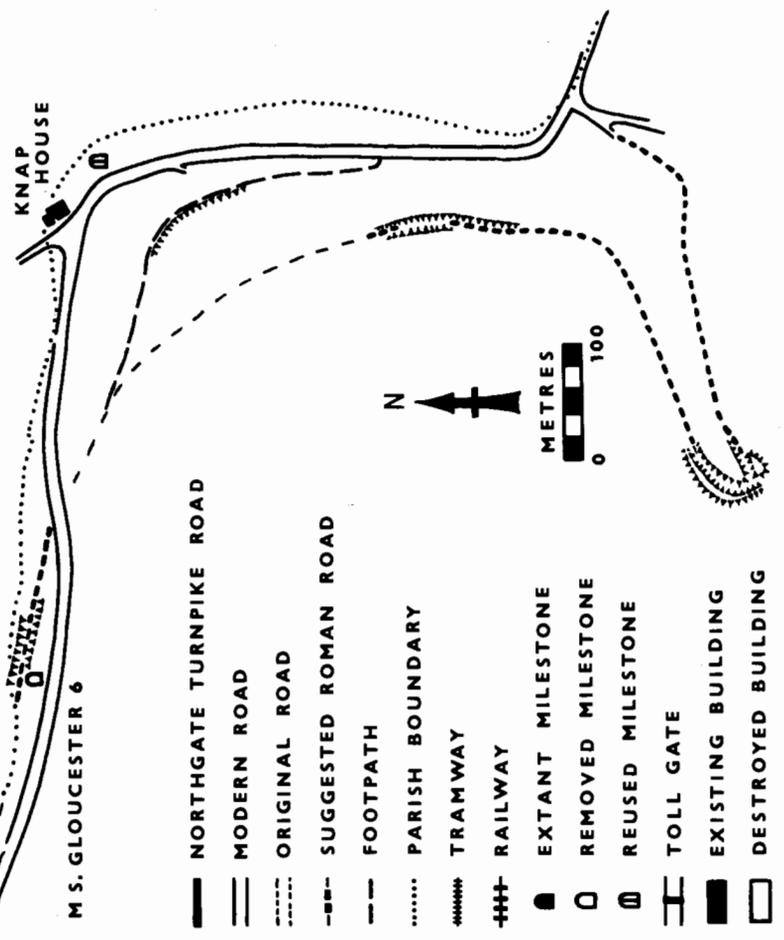
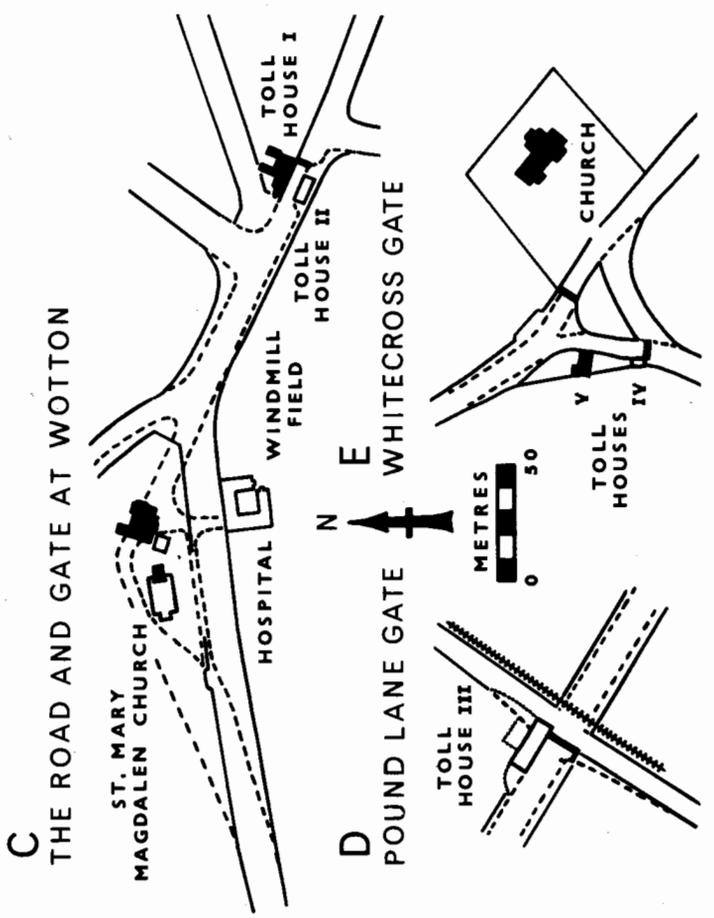
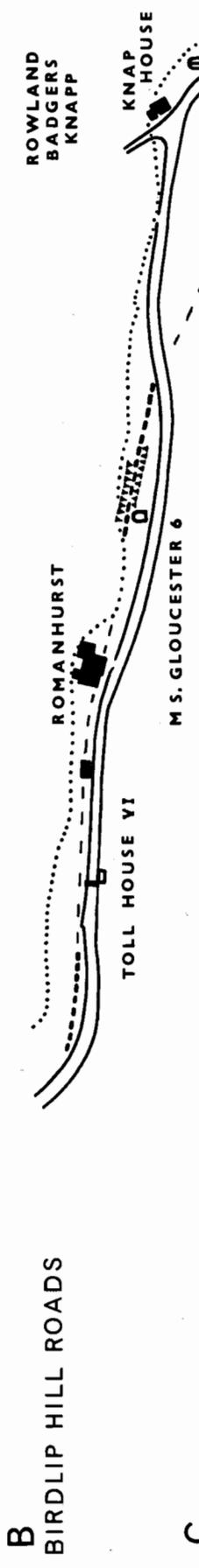
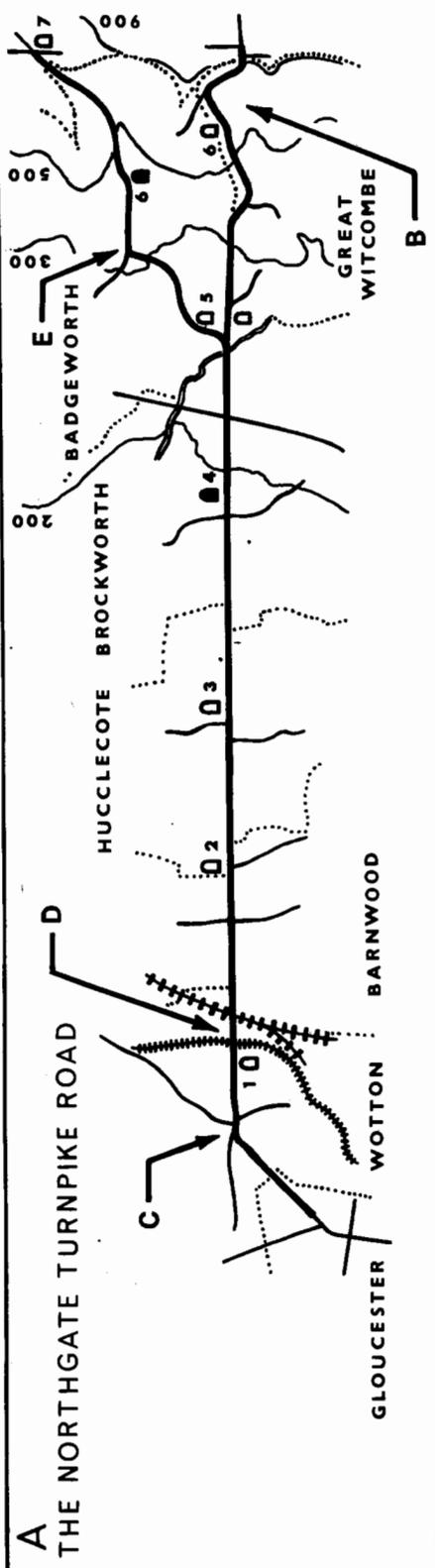
A further possibility is that the Roman and Medieval road continued along the ridge to the north of the present road and finally mounted the plateau by a route which is now almost obliterated by the extensive quarrying of the escarpment. The fact that the Witcombe tithe map shows this line as the parish boundary also points to such a possibility. (10) Camden writing in 1607 states that the Roman road on Birdlip Hill showed a very bold ridge and appeared paved with stone. (11)

Two dates, 1698 and 1731 (or 39) have been quoted by St. Clair Baddeley for major repairs to Birdlip Hill and he states that the modern cut dates from 1731 but his sources are not known (8) (12). There is evidence in the form of a map from a series surveyed about 1704, to disprove this statement. (13) On this map the road is drawn on a course similar to the present one. Although the following point has no relevance to the discussion it is intriguing to see that, where now is Knap House, a prominent mound is shown surmounted by a gallows. This mound bears the legend "Rowland Badgers Knapp". Unfortunately it has not been possible to identify this mound. Slightly eariler the cartographer John Ogilby in 1675, on a map sufficiently accurate for comparison, shows the course of the road on Birdlip Hill to be basically as it is now. (14) With the existence of the other tracks down the steepest part of the hill, any suggested course of the road before the modern one shown on the c.1704 maps must be treated with

suspicion. The road up Crickley Hill, Fig 1A, if not in use earlier, was by medieval times a route to the Cotswolds, and had by the 18th century developed into the main road to London. One of the 1704 maps shows the Crickley road as the Oxford road and a similar one shows the Birdlip road as the route to London. The early course of the Crickley Hill road is unlikely to have been much different to that shown on the earliest issues of the Ordnance Survey maps.

"The road at 5 miles and 1/2 divides. When I turn to the left and again to the right I begin to ascend the hill first by a gradual rise and afterwards by a very steep one, at the foot of the steep part is an alehouse like inn or inn like alehouse, about 1/2 way up is another the Sign of the Bell opposite to which is a fine spring well. The road near the top appears to have been cut through the rock, the ground on both sides of it standing very high." -

Francis Grose 1775. (31)



- NORTHGATE TURNPIKE ROAD
- MODERN ROAD
- ORIGINAL ROAD
- - - SUGGESTED ROMAN ROAD
- - - FOOTPATH
- PARISH BOUNDARY
- + + + TRAMWAY
- + + + RAILWAY
- EXTANT MILESTONE
- REMOVED MILESTONE
- REUSED MILESTONE
- TOLL GATE
- EXISTING BUILDING
- DESTROYED BUILDING

2 EARLY ADMINISTRATION AND THE TURNPIKE TRUST

From the middle ages Ermine Street was one of the King's Highways the width of which were supposed to be such that two loaded carts could pass each other upon them. The special position of these roads did not mean that the state made any special effort to keep them in repair, the responsibility for doing so devolved, as with other roads, upon the manors, and later the parishes, through which they passed.

The system whereby the upkeep of all roads was a local responsibility was confirmed by an act of 1555 (15). This act, the "Statute for Mending of Highways", authorised the churchwardens and constables of each parish to elect two parish surveyors annually, whose duty it was to enforce the four days statute labour demanded by the act, and to direct the repair of the roads. The provision for statute labour meant that all landowners were obliged to provide two men and a waggon, together with the requisite animals to draw it; and all other male inhabitants were required to present themselves, or send substitutes, on the four days appointed for road repairs by the surveyors whose authority was later strengthened by acts of 1562 (16); 1575 (17); 1586 (18); and 1662 (19). Once elected a surveyor had a legal obligation to fulfil his duties, if he failed to do so he was likely to be indited at Quarter Sessions as was any inhabitant who did not provide the required labour services.

The act of 1662 authorised a surveyor, with the consent of the Justices, to levy an assessment upon the inhabitants of the parish to provide extra money to supplement statute labour with hired labour. The accounts of the surveyors of the highways for the parish of Brockworth survive for the year 1696/97 and detail the payments of those assessed. (20) During this year the levy raised the meagre sum of L1.10s.10d to be spent in repairing all the roads in the parish. Almost the entire amount was paid to workmen who dug stone and it seems likely that, whilst the stone could be hauled and spread by the system of statute labour, the digging of stone was best accomplished by payment.

The major contributions were required from the large landowners. Will. Johnson Gent contributed 4s.7d whilst the Lord of the Manor, Sir John Guise Bart., whose name heads the list of the nineteen inhabitants who were assessed, was one of five who paid 3s.0d. Anne Dunne at the bottom end of the scale paid 3d.

Possibly Brockworth could keep its roads in repair under such a system but this was not true of the unfortunate parishes of Great Witcombe and Badgeworth.

Unfortunate because it was these two Parishes which were responsible for the road up Birdlip Hill and in the case of Badgeworth the road up Crickley Hill as well, Fig 1A. From the Quarter Sessions order book, Trinity Sessions 1676 (21) "Upon reading of a rule made at the last Assize holden for this County of Gloucester whereby it was referred to this court to reconsider of the great burden the inhabitants of Great Witcombe lye and petition upon account of the great decay of their highway lying between Birdlip and Horsbury Bridge and to provide for their reliefe either by allowing them a fund of money out of the County public stocks or otherwise. It is ordered by this court that the matters contained in the said petition be referred to Sir John Guise Bart. and Thomas Masters Esq two of the Justices of the Peace for this County to view the said highway and to consider what

it is fit to allow the said inhabitants for the sufficient and well repairing of the said highways....."

As a result of this in the Ephemery Sessions record 1677.....

"It is ordered by this Court that the Treasurer of the County Stocks do forthwith pay unto William Sigongeut and Richard Hellow of Witcombe Magna or either of them the sum of thirty pounds by them laid out and expended towards the repair of their highways....."

Despite, (in 1684) being relieved of the need to pay the County Bridge Money the inhabitants of the parish of Great Witcombe were constantly unable to maintain their highways, and in 1691, together with the parishioners of Badgeworth, they were fined at Quarter Sessions, both Witcombe's sum of L20.0s.0d and Badgeworth's L30.0s.0d were to be laid out in repairs to their roads.

It is obvious that by the end of the seventeenth century, despite imposition of parish levies to supplement statute with hired labour, this system of maintenance under the direction of parish surveyors had become increasingly ineffective due to growth in traffic.

In 1698 a turnpike act was passed, the preamble of which puts clearly the state of the roads:-

Whereas the highway between Birdlip and the said top of Crickley Hill in the County of Gloucester and the city of Gloucester being part of the ancient highway and post road leading from the city of London to Gloucester by reason of the great and many loads that are weekly drawn through the same, are become very ruinous and almost unpassable for at least five miles in length insomuch that it is become dangerous to all persons that pass that way and for that ordinary course appointed by laws and statutes of the realm is not sufficient for the effectual repairing and amending of the same neither are the inhabitants of the several parishes in which the said ruinous places in the said highway and roads to lye of ability to repair the same.....

Further acts followed in 1722 (23); 1743 (24); 1761 (25); 1787 (26); 1806 (27); and 1827 (28). The tolls charged for each item of traffic through the years are listed in part 3 of this report. The condition of the road in 1712 is shown in a Kip's engraving of "Wotton, the seat of Thos. Horton Esq." This plate, which poses more questions than it answers, due to an excessive amount of artistic licence, shows clearly the state of the road only one Km from the city. (29)

The 1698 turnpike act, the third in England and the first in Gloucestershire, confirmed the existing system whereby Justices of the Peace at Quarter Sessions were responsible for the overall supervision of the repair of roads but also authorised the levying of tolls to supplement parish levies and parish labour.

The act displays, on the part of its instigators, an underestimation of the extent of disrepair of the roads, also a certain degree of faintheartedness, no doubt resulting from opposition locally and elsewhere, to the imposition of what must have seemed no less than an unprecedented tax. The act required, providing no loans remained unpaid, that if the roads were repaired before the end of the twenty years period allowed by the act, tolls were to cease. Then follows the somewhat contradictory stipulation "that no turnpike to be created or toll charged until sufficient security had been given by able and sufficient persons to the Justices of the Peace or any five of them at Quarter Sessions that the said highway shall be within five years

sufficiently repaired and amended."

Traffic from Hereford on its way to London passed through Gloucester and the Justices of the Peace of the County of Hereford had to be similarly satisfied that the road would be repaired within five years. Surveyors, who were appointed each year, under this act were still responsible for the condition of the road. Tolls were to be collected by a paid turnpike keeper appointed by the Justices of the Peace and it was they who were to receive the money collected and with it reimburse those who by providing capital had undertaken to see that the roads were repaired. In the initial period following the act the toll collector, John Stratford, also collected the levy authorised by the act, of sixpence in the pound upon the parishes and twopence in the pound upon the hundreds through which the road passed. John Stratford was one of the two Hucclecote surveyors.

From the Quarter Session order book it is shown that as a result of the act the following appreciable payments could be made (30)

	1701	1702
Badgeworth	L30.0s.0d	L40.0s.0d
Barnwood	-	L 5.0s.0d
Brockworth	L30.0s.0d	L40.0s.0d
Hucclecote	-	L10.0s.0d
Great Witcombe	L25.0s.0d	L60.0s.0d
Wotton	L80.0s.0d	L20.0s.0d

The same source continues to record details relating to the turnpike road: a number of them are detailed below.

Trinity Session 1709:

"That Mr Cocks, Mr Guise and Mr. Gwinnett have agreed with Thomas Turner of Hucclecote for L5 to be aiding and assisting in putting the late statute in execution for obliging wagons to go with six horses on the road between Gloucester and Birdlip and also Crickley Hill from the first of September next to Michaelmas come twelve month.....the said L5 to be paid quarterly".

By this date the three Justices mentioned above had become known as the Justices of Roads.

Michaelmas Session 1709:

It seems that the collector John Stratford was in considerable arrears with his payment for the lease of toll collection and Thomas Turner was appointed to collect the parish levy of 6d in the pound.

Trinity Sessions 1710:

"It is ordered by this court that the profits of the toll of the turnpike for repairing Birdlip highway be let to Mr. James Pitt of the city of Gloucester for the term of three years....."

Details of yearly lease charges will be found in Part 3 of this report.

19th January 1714:

"Paid Anthony Edwards for making places in the highway at Crickley Hill for carts etc. to pass each other L7.0s.0d.

One is inclined to wonder what width of road prompted an observation made considerably later, in 1775 that "the road from Crickley Hill to Gloucester was extremely narrow". (31) The requirement of the Act of 1662 provides for a minimum road width of eight yards.

The following extract from the record of the Epiphany Session 1719 confirms that the turnpike ceased when the twenty year period of the 1698 act expired. Dispute had arisen between Badgeworth and Great Witcombe concerning repair of a common section of the Birdlip road and after discussion between the inhabitants of the two parishes and the Justices, Nathaniel Lye and John Cocks were formally and ungrammatically recorded to have observed that

"It did appear to us that the said Parish of Witcombe on the other side of the causeway and that the inhabitants of Badgeworth aforesaid and from time to time as often as required by the surveyor of the highways for the said parish of Witcombe hall and lay load for load of stone in the said highway between the Upping Stone aforesaid to Horsepury Bridge aforesaid for three score years last past and upwards except for some few years last past when the said highway was repaired out of the profits of the late turnpike....."

The Upping Stone, later to be called the Leaping Stone is likely to be the still extant mounting stone at S091301515.

Whereas the original act rested the supervision of the repair of the road with the Justices of the Peace, the next act of 1722 brings into being a new form of administration; a turnpike trust. There were, however, previous meetings of "Trustees" on at least three known occasions, as the Quarter Sessions order books show, in June and October 1712 and again in 1718.

The new act, included a long list of 46 persons who were appointed Commissioners and Trustees to execute the conditions of the act. Amongst these trustees were three Justices previously concerned with the road, Sir John Guise, Thomas Masters and George Gwinnett. The Mayor of the City of Gloucester whilst in office was also appointed as a trustee. The number of trustees at first sight seems large but at a meeting the quorum was a mere five persons. If the total number of trustees dropped below thirty a majority of those surviving could appoint others of sufficient status, provided that they had no private financial interest in the trust.

The act empowered the trustees to appoint surveyors and toll collectors but the new trust was required to account to any neighbouring Justice upon demand.

The Act of 1722 gives the number of statute days work as four. The figure was reduced to two in 1743 by an act which also clarified the limit of authority of the turnpike trustees on Crickley Hill as the junction of the parishes of Cubberly (Coberley), Cowley and Badgeworth. A further provision of this act was that for "the better regulating the price of the carriage of stone and gravel and other materials made use of in repairing the said roads.....the roads should be measured and divided into equal proportions by erecting stones or posts in or near the said roads at proper distances....."

By 1760 it was necessary to apply for another act. In 1762 to justify increased tolls, a pamphlet was produced by the appointed trustees which shows that despite over sixty years of effort conditions

had improved little....."Certain it is that the roads in question were always complained of as intolerably bad and foundeours, and to such a height did these complaints arise that in the year 1760 application was made to Parliament and an act obtained for laying on several additional tolls in order to make one effort more towards repairing a road, which from scarcity and softness of materials, expence of halling them, and the excesses of weights bourne by the broad wheel waggons, was deemed very difficult to be done."

The minutes of the trust have survived from 1761 to 1842 and they provide a clear picture of the administration and the finances of a turnpike trust. No attempt will be made in this report to discuss the details of procurement and repayment of the loans needed to sustain the trust. (32) A further interesting reference to broad-wheeled waggons and to the effect of weights which they were able to carry occurs in the minutes of a meeting in December 1767....." Whereas it has been represented and made appear to us ten of the trustees. That it is impracticable for any waggon or four wheeled carriage, with the weight to them respectively allowed by law to be drawn up the hill called Crickley Hill, within the parish of Badgeworth, in the County of Glos., lying in and upon the said turnpike road by the number of horses commonly used and allowed without manifest inconvenience and hazard and that the said hill from the six mile-stone from Gloucester, to a post near the termination on the top of said hill, which divides said parish of Badgeworth and parish of Cuberly, is in extent 3/4 of a mile or thereabouts. We therefore, the Trustees by virtue of and under the power of the Statute, in that case made and provided. Do allow any number of horses, not exceeding ten for waggons with 9" wheels and a number not exceeding six for waggons of less breadth than 9" to be used in waggons or four wheeled carriages, for the purpose only of drawing up the said hill".

A similar order was made for Birdlip Hill. With the new act came new vigour. An experiment in road construction was conducted at Horseferry Bridge (now Horsbere Bridge) to the west of the junction of the parishes of Brockworth and Witcombe, which was the most "foundeours" part of the road, Fig 1A. This experiment, conducted at the expense of Colonel Narborne Berkeley, was successful and in the next three years long stretches of road were repaired in the same way. The condition of the road was improving. After details of work done in 1764 on the Fairmile, i.e. the mile spanning the Hucclecote - Brockworth boundary, the note below appears in the turnpike minutes....."This work was completed notwithstanding the weather proved the most unfavourable that ever was known, it is moreover to be observed that during all last winter which was the longest continuance of wet weather in the memory of man, the care taken of the roads, by racking off the mud and by repairing every breach in time, preserved them in better state for travelling than ever they were in before in that season of the year".

The hill sections necessitated constant repair and no doubt a considerable proportion of the income of the trust upon them was expended. In 1776 a late surveyor, William Haviland, proposed to keep the roads from Horseferry Bridge to the top of Birdlip and Crickley hills in repair during the year March 1776 - March 1777 at a cost of L140.

He appears again in the minutes of the trust in 1781 when it was ordered that he be prosecuted for defrauding the pike by driving a

number of sheep over ground by the side of the turnpike road.

The road was normally kept in repair by roadmen appointed and paid by the trust, but, when major reconstruction was to be undertaken, it was usual to invite tenders from a number of road contractors. As a result of being asked to estimate the "expence of throwing in the bank and making a cast road", in 1779, Smart Lane and Co. proposed to take up the stone in the old road in the Fairmile and haul the earth and finish a new road at five shillings and sixpence a yard.

As an example of more routine expenditure, in 1780, William Blunt a roadman regularly employed to work on the Crickley and Birdlip roads was paid 8s.0d per week during the months of June to November and 7s.0d per week week during the remainder of the year. An idea of the wages of a casual labourer, in this case working within the city, may be gained from a record in the City Treasurer's accounts: 27 September 1764 "To Timothy Watts for digging sand and gravel and for work on the highway for one year L7.14s.8d. (33)

From the same source we learn that in 1769 and 1771 the city paid two parts of a subscription towards the repair of the Northgate Turnpike road amounting to L100. There are many further references in the accounts to work done on this road, later referred to as the London Road, but no further payments are made to the trustees. (34) It appears that the city was responsible for the condition of this road within its own boundary and, particularly at a later period, this responsibility extended to the turnpike gate which was at Wotton, Fig 1c. An enterprising example of this responsibility occurs in July 1787. "To John Brown and Daniel George for stone by them collected out of the ditches of the Northgate Road 10 shillings.

The turnpike gate was replaced in 1769 and, as a result, the following sums were paid L1.11s.8d for a new lock, key and ironwork and L1.7s.3d for the gate itself. A table of tolls was fixed to the tollgate house at Wotton in 1778.

The year 1782 saw the acquisition by the trust of a weighing machine, which was erected near the turnpike gate for which James Edgale of Frome was paid the sum of L45.0s.0d. The charge for the use of the machine was not to be less than a shilling for a waggon or cart, payable to the keeper of the gate.

In 1782 it was ordered that the "milestones be polished and that cast iron letters be fixed similar to those on the Painswick road". Only one milestone is to be found in its original position on the road from Gloucester to the top of Birdlip Hill. It stands on the north side of the road at Brockworth opposite the "Flying Machine" public house at S089251630, Fig 1A. The stone, which has a worn semi-circular top, is 40 cm (16 ins) wide 30 cm (12 ins) deep and carried a plate in the form of a semi-circle of 9 cm (3 1/2 ins) radius on top of a rectangle 27 cm (10 1/2 ins) wide and about 15 cms (6ins) high. At S092401480 a similar but badly eroded stone is built into the eastern end of the roadside wall around Knap House on Birdlip Hill. This may be the 6 mile stone from a point lower on the hill at S092001485, Fig 1B. However on the Crickley Hill section another stone stands on the south of the road outside Crickleigh farm at S091951580. This stone is basically circular in a section 30 cm (12 ins) in diameter and, possibly, originally had a domed top. It is understood that until recently it carried a plate, similar in form to that of the Brockworth milestone with distances shown in Roman numerals - Gloucester 6 Oxford 40.

Originally the plates on the three milestones on Crickley Hill gave the distances to Oxford together with the distance to Gloucester; whereas those on the Gloucester to Birdlip road gave only the distance to Gloucester. A stone at the top of Birdlip Hill, which bore the inscription - Gloucester 7 Cirencester 10, was erected by the Cirencester Road Trust. It was stipulated in the act of 1761 that milestones should be inscribed with the respective distances to Gloucester from each. The differences in information given on these milestone plates on the two sections of road does not necessarily suggest that the plates were fixed at different periods, but possibly, that the inscription on the Crickley Hill stones contained more information because, by the date of fixing the plates, this route to Oxford had become the primary one to London as well.

Whether the extant milestones are of an early period is not known, but it is possible to suggest on stylistic grounds, that the Crickley Hill stone was one of the original stones erected as a result of the 1743 act, and to which a plate was fitted after 1782; and that the Brockworth stone is of a later date. It is, however, known from the 1761 act that a four mile stone had been erected by that date and it is therefore possible that the present stone is not the first to occupy its site.

The distances on the milestones were calculated from the Outer Northgate of the City of Gloucester and it was possibly here that the first turnpike was set up, a fact also suggested by the name of the turnpike trust, Fig 1A.

Hall and Pinnells map of 1780 shows a constriction of the road and a building extending into the road opposite Portland Street (S083851885) at the city boundary at this time. If this was also a site of a turnpike house the lack of a gate across the road is explained by it having been moved to Wotton before the existing minutes begin in 1761. Hyett's estate map of 1780 shows a turnpike gate spanning the road between junctions with the road branching northwards to Cheltenham and with the road now known as Horton Road.

In 1787 it was "proposed to erect a second tollgate near the turnpike at Wotton on the road leading through Windmill Field into the highway leading to Stroud." The highway mentioned was the Painswick turnpike road. The Windmill field at this period was a large open field, which is shown on the 1780 estate map and also confirmed by an enclosure map and schedule of 1799 to extend from Hyde Lane to Armscroft opposite the present Elmbridge Road. (35) (36), Fig 1C.

The road upon which the tollgate was to be erected was the field road later called Horton Road. An order similar to the one of 1787 had been made in 1779, but it appears not to have been implemented and no gate is shown on the 1780 map. If, as a result of the 1787 proposal, a gate was erected, it had a short life and is not shown on the 1799 enclosure map or the second edition of Isacc Taylor's map of Gloucestershire in 1800.

Since 1761, when the turnpike records start, a pike-house had been rented for L2.10s.0d per annum; but in January, 1792, Mr. William Hill, the then owner, refused to accept less rent than L5.0s.0d. The 1799 enclosure map shows that William Hill owned a building at the junction now formed by Kenilworth Avenue and London Road (37), a building also shown on the 1780 estate map. On this site (S084501890) now stand two attached houses, which from their construction, appear contemporary with each other and of an early eighteenth century date.

They must be later than 1712 for they are not shown on Kip's engraving of Wotton. Of the two houses it seems more likely that the eastern one was the original pike-house. The other house, the present Wotton post office, has been deceptively extended westwards at a relatively recent date. The estate map shows the gate on the eastern side of these houses.

The trustees considered that the new rent required by William Hill was too great and ordered that a new house should be erected. The house was built in 1793 by "George Stroud of Gloucester, Bricklayer," on a site within the road, opposite the original house, and midway between it and the lane across Windmill Field. (37) The year 1792 saw the erection of a "Necessary House" or privy but the site and details of this amenity are not specified.

In 1794, twelve years after installation, the weighing machine was in need of repair. These repairs were effected but, after a similar period, in 1805 it was replaced by another supplied for the sum of L31.10s.0d by a Mr. William Jarret who agreed to keep it in adjustment for a further seven years.

Windmill Lane, now only a footpath, which from Armscroft ran parallel to the turnpike road, seems to have been used as an alternative route into Gloucester to avoid paying tolls. As a result of this avoidance it was resolved in March 1819 "that a toll board be erected and set up at the east course of the lane called the Windmill Lane opposite Pound Lane in the Parish of Barnwood which in the opinion of the meeting supersedes the necessity of erecting a side bar or chain across the said lane". Pound Lane is now known as Elmbridge Road.

Although a list of tolls had been fixed to the original toll house at Wotton in 1778, (and no doubt removed after 1792), it was ordered in 1820 that a toll board be erected at the gate and illuminated by a lamp provided at the expense of the trustees.

On 5 March 1821 it is noted in the Northgate Turnpike records that the trustees of the newly constructed road from Cheltenham to Painswick were allowed to construct a toll house at the junction with the Northgate Turnpike road at Brockworth, Fig 1A. This house stood in the north-east angle formed by the junction at a point now occupied by the Cross Hands Hotel.

The first mention of the realignment of the road at St. Mary Magdalen's Hospital occurs in September 1820. The outcome of negotiations with the City Corporation and with the trustees of the Cheltenham and Tewkesbury Turnpike, whose road joined the Northgate Turnpike road at Wotton Hill, resulted in the cost of alteration being shared between the trustees of the Cheltenham road and Northgate Turnpike in proportion to the receipts of tolls at their Wotton gates. The Corporation undertook to keep the new road in repair forever, as they had done previously. The City Treasurer's accounts show that in 1822 the trustees of the Northgate District of Roads were paying an allowance of L35.0s.0d per annum to the corporation. A previous record in 1819 of a four and a half year allowance is the first mention of such a payment. (38)

Estimates for the construction of the new road were invited and in May 1821 it is recorded that the following tenders had been received:

L578. 3s.0d
L570. 0s.0d
L290. 0s.0d

L272.10s.0d
L662. 0s.0d
L665.15s.0d
L761. 0s.0d
and 10s a yard

The line of the proposed new road, following an established path, passed in front of the hospital building and across the burial ground which separated it from the church of St. Mary Magdalen, Fig 1C. A letter was drafted to the Bishop of Gloucester seeking permission to take the land required for the alterations and an undertaking was given to hand over a piece of ground of equal extent in exchange. If any human remains were found during road construction, the proposal was made to immediately rebury them at a depth of five feet.

From the minutes of the Cheltenham and Tewkesbury Turnpike Trust we learn that on 23 May 1821 the tender of Thomas Holland to construct the road for L570.0s.0d was accepted and that work was to be completed within four months (39). Whether he completed the work on time we do not know; but in November an application for a further L154.18s.0d in payment for work done by him, although not included in the original agreement, was successful.

That the old road was filled in is attested by an entry in the City Treasurer's general payments on 23 January 1823....."Paid Mr. Barnett for filling up the old road near St. Mary Magdalen's Hospital at Wotton L4.3s.2d." (38) The construction of the new road had an adverse effect on the Hospital building. Shown by the Cheltenham Road minutes of 22 February 1822..... ".....Ordered that the footpath on the new line of road at Wotton in front of St. Mary Magdalen's Hospital and the land adjoining it be lowered and the necessary underbuilding for the preservation of the hospital be made.....". Towards an alternative scheme, the complete rebuilding for L200.0s.0d of the front of the hospital, the Northgate Turnpike trustees offered a sum of L50.0s.0d. if the corporation undertook to pay the remainder. That this alternative was chosen is confirmed by an entry in the city accounts for 15 August 1823.

Following the realignment of the road at Wotton a decision was taken on 30 October 1822 to transfer the toll house and gate to a new site west of Pound Lane near to the Gloucester and Cheltenham Railway, (S085101860). A survey of the track of this horse tramway fortunately shows a plan of the Pound Lane turnpike house the major part of the site of which is now under the Barnwood Road west of its junction with Elmbridge Road, Fig 1D. The lines shown on this plan to the north of the building have been copied from the original drawing. (40)

At the same time that the turnpike was moved to the tramway a new weighing machine was acquired and set up at the same site. This machine was obtained for L100.0s.0d from a Mr. John Hutchinson. The weighing machine was leased in the same way as toll collection, for a fixed yearly payment. At a trustees meeting on 29 November 1826, a representation was made that the money produced by tolls at this weighing machine was not sufficient to pay the expenses of keeping it and that the rent of L40.0s.0d paid annually by Mr. Benjamin Newmarch for the machine and machine house was too great. It is obvious that, as with toll collection, the operation of the weighing machine was only profitable if the proceeds exceeded the yearly payment. In the case of Benjamin Newmarch, a Cheltenham solicitor, who was later to become the

agent of the Gloucester and Cheltenham Railway, this was not happening. (41) At the trustees meeting the Gloucester and Cheltenham Railway Company was empowered to manage the weighing machine "at their own expense and to render an annual account of the penalties received by them in respect of the machine and pay such penalties in aid of the funds of the trust."

Few structures of the turnpike remain. One of these is Horseferry Bridge, (Horsbere Bridge), now widened by modern reconstruction, across the stream west of the junction of the Crickley Hill and Birdlip Hill roads, Fig 1A. Despite an estimate made in October 1829 that construction of a bridge at this point would not cost the trust more than 100 guineas, it was not until August 1831 that a final resolution was passed.

The records of the trust indicate the sites of two further turnpikes, one on the Birdlip Hill section and the second on Crickley Hill. A site was chosen on the sandy flat on Birdlip Hill at S091651490 and a catch gate erected in 1833, Fig 1B. Full tolls were charged at the gate possibly to take account of traffic due to the intersection with the Cheltenham Turnpike. A similar increase would no doubt have occurred on Crickley Hill.

There is no mention in the trust minutes of the early history of the gate on Crickley Hill, nor is one shown on the first edition Ordnance Survey map of 1830 or Bryant's map of 1824, but gates and a house, (or shelter) are shown at S091451610 on the Badgeworth enclosure map of 1846 and also on the tithe map of 1838 (42) (43). It can be seen from Fig 1E that the road was gated in two places so that traffic from the Cheltenham and Painswick road, reaching the Northgate Turnpike road through Bentham, would not escape toll. Between this period and 1871 the original toll house was replaced by the present building at Whitecross which has a door opening onto the road and windows facing in both directions. This late toll house is one of only two survivors on the Northgate Turnpike roads.

In January 1836 the trustees considered proposals made by two railway companies to cross the road at Barnwood. One by the Cheltenham and Great Western Union Railway who proposed a line similar to the present one was opposed. The scheme proposed by the Birmingham & Gloucester Railway to construct a line 200 metres to the East was received with favour. (44) This plan was soon changed and the present line constructed jointly by the two companies, was built over the turnpike road, Fig 1A. As a result of this in September 1839 the turnpike trustees resolved "that the width of the archway constructed by the Cheltenham and Great Western Union Railway Company over the turnpike road at Barnwood was insufficient for the due accommodation of the public and the traffic upon such road, and will be attended with danger." A separate archway for pedestrians resulted from discussions with the railway directors. This bridge was replaced by a modern one in 1936.

A national Highway Act of 1835 authorised the payment of a salary to a parish surveyor, and it seems that as a result of this act, despite an attempt in 1837 by the Northgate Turnpike trustees to form a joint board with the trustees of the Cheltenham and Tewkesbury; Maisemore and Over; Southgate; Stroud and Painswick; and the Cirencester roads; actual repair of the Northgate Turnpike roads reverted to the parishes.

In July 1842 the trust arranged to pay the affected parishes

twenty pounds a mile for one half year and ten pounds for the following half year. Tolls continued to be collected until the Northgate Turnpike Trust was wound up by a general act of 1871. (45)

Further highway acts of 1862 and 1864 authorised parishes to combine into highway boards.

The part of the Northgate Turnpike road between Gloucester and Brockworth went into the Gloucester Highway District (46) and the other sections of the road in the parishes of Badgeworth and Great Witcombe became the responsibility of the Badgeworth Highway Board. (47) The turnpike trust still acted as agent for the collection of tolls and in the minutes of the newly formed Gloucester Highway Board it is recorded that on 31 January 1865, "The clerk directed to apply to the clerks of the several turnpike trusts within the Gloucester Highway District for payment to the treasurer of such sums as are due from them to the Highway Board."

The Northgate Turnpike Trust continued in existence until 1 November 1871, the three surviving toll houses at Whitecross (North Crest), Birdlip and Barnwood passed into the hands of the highway boards who in turn disposed of them. The Badgeworth Highway Board obtained valuations of its two toll houses; at the Whitecross gate L42.10s.0d and at the Birdlip Hill gate L19.0s.0d. They were offered for sale to owners of adjoining properties at these prices. In December 1872 the toll house and garden at Bentham was conveyed to the trustees of the Dame Joan Cookes Charity. The deeds of the property start at this date and so yield no information about the date of construction of the building. For the Birdlip Hill toll house at Sandy Flat there appears to have been no offer, and since it is not shown on the 25" Ordnance Survey map of 1884 it was presumably speedily dismantled.

The Barnwood toll house at Elmbridge Road was let by the Gloucester Highway Board for a rent of L7.0s.0d per annum, but it survived only until 1881 when it was sold for a total payment of L122.5s.0d and then removed.

To the Gloucester Journal of 4 November 1871 will be left the final comment upon the demise of the turnpike: "The turnpike gates near Gloucester on the Tewkesbury Cheltenham and Barnwood roads have this week been abolished, Tuesday night twelve o'clock being the time appointed. The officers of the Northgate Road were so anxious for the change that they threw down the bars at Birdlip and Witcombe a day before the legal time. The road from Gloucester to Birdlip is now clear of obstructive toll bars."

3 TOLLS, EXEMPTIONS AND TRAFFIC

Details of toll charges are given in all the acts from 1698 to 1827. During this period individual charges, not surprisingly, increased and the acts allow for a steadily increasing number of exemptions from tolls. The turnpike charges authorised by the first act are shown below, together with any toll changes which occur in the later acts. Exemptions have been listed separately, further on. The various charges have been conflated for simplicity and therefore the following list does not represent the exact wording used in the acts.

- 1698 ACT Every horse 1d.
Every stage coach, or hackney coach, coach, calash or other chariot 1s.
Every waggon 6d.
Every score of hogs or pigs 3d and for every greater or lesser number proportionately.
Every score of oxen or neat cattle 8d and for every greater or lesser number proportionately.
- 1722 ACT Every saddle horse, mare or gelding not drawing any coach, cart or carriage 1d.
Every pack horse, mare or gelding, ass or mule 1d.
Every coach, chariot, berlin, chaise, calash, waggon, cart or carriage 1s.
Every score of hogs etc. 2 1/2 d.
Every score or sheep and lambs etc. 2 1/2d.
- 1743 ACT Every horse, gelding, ass or mule, laden or unladen and not drawing 1d.
Every waggon, wain, dray, cart or other carriage drawn by four horses or other cattle 9d.
and by three horses or cattle or less 6d.
Every coach, berlin, landau, chariot, calash or chaise drawn by four horses or other cattle 1s.
and by two horses or cattle 6d.
Every chaise or chair drawn by one horse 3d.
Every score of oxen etc. 10d.
Every score of hogs, pigs, calves, sheep or lambs, etc. 5d.
- 1761 ACT Every horse ox, mule, ass or beast drawing any coach, chariot, chaise, chair, calash, waggon, cart, car, dray or other carriage 4d.
- 1787 ACT Provision for double tolls on Sundays, otherwise the tolls as before.
- 1806 ACT Every horse, mare, gelding, ass, ox, mule or other beast laden or unladen 2d.
Every horse, mare, gelding, ox, mule or other beast except an ass drawing any coach, chariot, landau, berlin, curricule, chaise, chair, calash or any other such carriage or any waggon, wain, cart or any other such carriage 6d.
Every ass drawing any cart or other carriage 2d.
- 1827 ACT All provisions for tolls as before.

EXEMPTIONS Detailed below are those people and types of traffic

exempt from tolls, under the terms of the respective acts. Exemptions are only listed when they differ from those of the previous acts.

- 1698 ACT Exempt were - those going through the gate twice a day.
- people of neighbouring parishes and of parishes through which the road ran.
- soldiers and their waggons
- those riding Post.
- 1722 ACT Exempt were - those going through the gate twice in a day except when passing with a different load.
- vagrants being returned with passes and their waggons.
- 1743 ACT Exempt were - coaches, berlins, landaus, chariots, calashes, chaises, and chairs and passengers on horseback when there was an election of a Knight or Knights of the Shire to serve in Parliament for the County of Gloucester.
- 1761 ACT Exempt were - people returning on the same road upon producing a note or ticket denoting payment of the toll except those people passing or repassing with any laden waggon or cart and travelling for hire. Also not exempt from a second toll were those laden waggons and carts travelling beyond the four mile (Brockworth) milestone.
- farming implements and waggons with farm materials and all waggons in the service of those mending the roads.
- cattle etc. going to water and pasture.
- coaches or the like on election day or the day before or after.
- 1787 ACT Exemptions are as before.
- 1806 ACT Exempt were - horses or carriages of any description used description used for carrying the mails or letters and express.
- soldiers and persons belonging to the Corps of Yeomanry or volunteer cavalry.
- rectors, vicars or curates going to divine service.
- cattle or carriages carrying a corpse or people going to a funeral in neighbouring parishes.
- 1827 ACT Exemptions are as before.

The provision in acts of exemptions from payment of tolls could lead to abuse. The trustees in July 1767 received a complaint from the turnpike keeper "That great quantities of coal have been laid up at a certain place or places near the turnpike gate, which were carried through the gate in one day but were afterwards fetched away at several days, whereby the toll has been greatly defrauded." Fearful that such abuse should become common the trustees ordered that sections of land where dumping was likely to occur be chained off to prevent it.

The task of analysis of the traffic upon the turnpike road and of the year to year variation is not an easy one. The sources of information are few and irregular and only complete in the early years of the 1760's. For other periods it is lucky to find a record of the

total receipt of tolls for a given year or even the yearly payment for which toll collection was leased.

During the first four years of collection 17 July 1701 to 17 July 1705, when securing the turnpike for L160 per year John Stratford received in all L735. It seems justified for simplicity to approximate that at this period the turnpike produced some L185 each year.

Suitable information is absent from this early date until 1761. The detailed trust records following the fourth act indicated that during the seven years 1761/62 to 1767/68 the total receipt from tolls dropped fairly steadily from L671.15s.10d. to L528.8s.9 1/2d. The full yearly figures are reproduced later in this part of the report.

It is of interest that in addition to the figure for 1761/62 the trust received L15 for the seizure of horses. (48) At a trust meeting in 1762 Edward Hudd, the turnpike keeper, employed by the trust for 10s a week, reported being assaulted by Baker, a pig driver. Had the dutiful Hudd attempted to forfeit one of Baker charges?

In March 1778 an advertisement of the auction of tolls provides the information that during the year 1777/78 the sum of L642.12s.6 1/2d. in excess of the cost of collection was produced, (49) a total figure of around L670 when the wages of the collector are included. A final bid of L720 was not honoured neither was one of L700 in October of the same year and in March 1779 William Barrow was appointed by the Trustees to man the turnpike for 10s a week until collection could be let.

In 1790 knowing the previous years total receipt of around L490 William Hayden bought his license to lose money for L570 per year. Two consecutive payments by William Nicholls of Stroud, in 1805 and 1806 suggest that at the respective costs of L551 and L567 per year, collection was profitable. It is unlikely that he manned the gate personally therefore if to L567 and a profit margin of some L40 a weekly salary of 12s is added (the last figure paid by the trustees), a total receipt of about 1640 is indicated.

On 21 January 1826 the trust minutes record that the tolls were let for L520. Finally from a national survey of 1847 it is learned that the Northgate Turnpike Trust had a yearly revenue from tolls of L453 (50). Whilst the following tentative and incomplete table resulting from the discussion above can give only a guide to the pattern of traffic, tables 2 and 3 below it are unquestionably accurate.

TABLE 1 - YEARLY INCOME

Year	Turnpike Trust Income
1704	L185.0s.0d.
1761	L672.0s.0d.
1768	L528.0s.0d.
1777	L643.0s.0d.
1790	L490.0s.0d.
1806	L640.0s.0d.
1826	L520.0s.0d.
1847	L453.0s.0d.

TABLE 2 - QUARTERLY RECORDS
1761 - 1763

Quarterly Period	Beasts in Draft @ 4d	Single Horses @ 1d	Cattle @ 10d a score	Sheep & Hogs @ 5d a score	Quarterly Total Turnpike Income
6. 7.1761 - 27. 9.1761	5,713	5,978	4,926	1,120	L131.11s.1d
27. 9.1761 - 27.12.1761	9,905	6,409	6,807	4,146	L211.12s.5d
27.12.1761 - 28.3.1762	9,024	5,400	516	2,962	L177.1s.2 1/2d
28. 3.1762 - 20. 6.1762	7,120	5,912	2,627	2,672	L151.11s.1 1/2d
20. 6.1762 - 27. 9.1762	6,428	6,297	2,061	1,910	L139.13s.1d
27. 9.1762 - 27.12.1762	9,448	6,338	7,281	3,726	L202.18s.6d
27.12.1762 - 27. 3.1763	6,728	4,700	400	3,030	L135.14s.1 1/2d
27. 3.1763 - 19. 6.1763	7,412	5,555	3,090	2,838	L156.1s.5 1/2d

TABLE 3 - YEARLY RECORDS
1761 - 1768

Yearly Period	Beasts in Draft @ 4d	Single Horses @ 1d	Cattle @ 10d a score	Sheep & Hogs @ 5d a score	Yearly total Turnpike Income
1761 - 1762	31,842	23,699	14,876	10,900	L671.15s.10d
1762 - 1763	30,016	22,890	12,832	11,504	L634.7s.2d
1763 - 1764	30,297	22,409	14,594	15,062	L644.8s.3 1/2d
1764 - 1765	27,933	20,547	13,587	12,426	L592.8s.3d
1765 - 1766	22,916	17,996	14,816	19,450	L508.0s.10 1/2d
1766 - 1767	23,054	19,960	12,728	23,140	L518.0s.5d
1767 - 1768	23,583	20,793	13,838	15,926	L528.8s.9 1/2d

Amongst a number of observations which can be made about Tables 2 and 3 perhaps the most significant is the direct relationship, shown in Table 2 between income and the number of draft animals used upon the road. This fact results from the tolls upon draft animals accounting for 77% of the total turnpike income during the period 1761 - 1768. Variations in other sections of traffic have a much less pronounced

effect. This relative importance of draft animals may explain the disparity of turnpike income (shown in Table 1) between the period of the first act and the 1760's. A disparity resulting from the methods of assessment rather than from a two or three fold overall increase in traffic. Whilst pack horse traffic, at 1d, is likely to have constituted a larger proportion of the whole at the early period, four or even six horse waggons would have been in use and charged a toll of 6d. Under the 1761 act the toll in the latter case would have raised 2s.0d.

Single horse income follows a seasonal trend with increased traffic in the last three months of each year and reduction during the winter quarter. The column for beasts in draft although similarly peaking in the autumn surprisingly shows reduced traffic upon the road between July and September.

It is perhaps a matter for regret that sheep and hogs are listed together, however the combined figure, rising in the autumn quarter in part must mirror the movement of fattened sheep into market. For the same reason the column for cattle shows the characteristic autumn rise. To these must be added those drove cattle from Wales and elsewhere, moving towards the eastern half of the country whose drovers were less adept at bypassing turnpiked roads or more particularly their gates (51). With little real detailed information a calculation of daily traffic cannot be considered valid, it is however, possible to suggest that on an average day (in autumn 1761), during the busy period of the year, the turnpike keeper was accounting a minimum of fifty wheeled vehicles, one hundred horses and some one hundred and seventy animals.

Table 3 confirms the dependence of the total income of the trust upon the number of beasts in draft. From it can also be seen that the number of single horses has reduced, that the figure for cattle is steady and for other animals is tending to increase.

4 ROAD MATERIALS

It is only possible to surmise that, during the period for which no records exist, the materials used for road repairs were those locally, and therefore most easily available. A specific power granted to the surveyors by the 1698 act, additional to the right of taking gravel, sand or stones from common land, was that they could remove gravel from private grounds in their own and adjoining parishes. This suggests a considerable dependence upon this material. The enclosure, in 1727, of the common land of Churchdown Hill is likely to have adversely affected the trust. When the Turnpike records begin in 1761 the hill was the source of the hardest local stone and no doubt this stone was used in earlier periods also.

In the mid-eighteenth century the road-making materials were obtained from Cooper's Hill and Birdlip Hill as well as from Churchdown Hill. The table below shows the quantities of stone obtained during the first seven years after the Act of 1761.

Year	Stone from Churchdown Hill	Stone from Birdlip Hill and Cooper's Hill
1761 - 62	973 tons	3878 tons
1762 - 63	not recorded	4145 tons
1763 - 64	725 tons	4968 tons
1764 - 65	593 tons	6507 tons
1765 - 66	206 tons	2290 tons
1766 - 67	795 tons	4011 tons
1767 - 68	210 tons	3135 tons

During this period the stone from Churchdown Hill was obtained for 6d per ton and the softer stone from Birdlip and Cooper's Hills for 3d per ton.

In 1768 is the first mention of the use of slag as a road material, when an order in the minutes of the trust on 27 August 1768 was "that part of the Northgate Turnpike Road which lies between the said turnpike and the Swan at Wotton be covered with slag." Although for more than a decade slag was delivered at Gloucester Quay and used on both the city's roads and on the Northgate Turnpike, local stone continued to be used as a road material by the Northgate Turnpike Trust. The use of slag continued until 1782. In 1783 it was ordered that the surveyor should procure slag, provided that its cost did not exceed 3s.6d per ton.

The previous year a source of slag is quoted, when it is represented in the minutes of the trust that "a combination had been entered into between some of the servants of the Copper Company at Bristol and one William Nicholls to monopolise all the Company's slag by means whereof the publick are deprived of the benefit of it for repair of the roads." The benefit derived by William Nicholls from this monopoly was considerable. The Gloucester City Treasurer's accounts show that in the year October 1781 to September 1782 William Nicholls sold to the city for repair of the roads, slag to the value of £80.16s.9d which at the then current price of 3s.6d per ton amounted to nearly 500 tons. (52) There were several companies smelting copper in Bristol during the eighteenth century but none is specifically

called the "Copper Company". The main Bristol company used Crew's Hole, on the north bank of the Avon, two miles east of Bristol and although variously named, it is for convenience now referred to as the "Bristol Brass Company". Other sites also came under the control of this company.

There was another large company which could have provided slag. This was the "Joseph Percival and Copper Company" which during the 1760's became the "John Freeman and Copper Company". This company with headquarters and works at Bristol, actually smelted in Swansea, but they did refine some copper in the Bristol area and so would have had slag available. Another company appeared for a short time from about 1775 to 1785, under the name of "Issac Elton and Copper Company"; it appears to have used part of the Bristol Brass Company premises for smelting, possibly at Crew's Hole. (53)

An alternative, and because of the problem of transport, less likely source of slag is suggested by part of Rudders entry for the Parish of Newland (near Monmouth) in his New History of Gloucestershire of 1779. "There is an iron furnace in this parish and two copper works at a place called Red-brook". (54) Both the Upper and Lower Redbrook Works were in existence during the period 1768 to 1782 but there is a doubt whether the Upper Redbrook works was still functioning at this date. (55)

The cessation of the use of slag for road repair in the early 1780's could be the result of its use as a building material. Marshall, in 1789, records that "Until of late years it was cast away as waste, or used as a material of roads, only. Now it is thrown while hot, into moulds of different figures and dimensions, and thus becomes an admirable building material". (56)

Although there are no references to the use of iron slag on the city's roads or on the Northgate Turnpike roads it will be seen later (Part 5 II and III) that iron slag was also used as a road material. Rudder's record of an iron furnace at Newland gains significance when it is considered together with his remarks about the number of such furnaces operating in the Forest of Dean; all of which would have produced slag. (57) (58)

The source of iron slag may be more distant than this. Iron slag used in glass making at the Gloucester Glass Works, which was operating up to about 1780, is likely to have been produced in South Wales.

It has been suggested that when the glasshouse closed unused slag was sold or possibly given away. (59) If this latter case is true it may account for the lack of documentary detail of its procurement.

During the following years there are few records of the materials used in road construction and it must be assumed that mainly local stone was in use. Although another material, called Bristol Stone, was used for a time in the city, immediately after the use of slag, it is not until the Highway Board records begin in 1863 that there is evidence for its common usage on the turnpike road. Marshall records that below Gloucester the roads were made with stone of St. Vincent's Rock near Bristol (60) and that the Bristol Stone had a somewhat flint-like appearance, and was of a close, hard and uniform texture. It had a dark reddish colour sparkling with sparry particles and flew under the hammer like glass; it contained no marine shells. Tests of the stone were considered by the Gloucester Highway Board to show that one ton of Bristol Stone was equal to one and a half tons of limestone. This stone which appears to have cost 3s. per ton in 1784, cost 7s.6d

per ton by the mid 1860's.

John Loudon McAdam in his remarks upon the system of road-making in 1816 commented "The Bristol Limestone is of two kinds Whitestone and Blackstone rock; the latter is the best and will wear under a considerable use, at an inch perpendicularly annually. That is to say a road properly made, coated with four inches of Black Rock Limestone and exposed to much use, such as between Bristol and Bath will not require any repairs for four years". (61)

In the Northgate Turnpike minutes there is no mention of pebbles, the most recurrent material used upon the City's roads in the latter part of the eighteenth century and presumably therefore upon the section of the Northgate Turnpike maintained by the City.

5 EXCAVATIONS AT WOTTON 1968

I SUMMARY

The documentary evidence about the nature of the materials used on the Northgate turnpike road was tested by excavation, at Wotton, in the summer of 1968.

The present London Road near Wotton Hill dates only from 1822, before which date it passed to the north of the present Chapel of St. Mary Magdalen, Fig 1C. This change of the course of the road provided a site where it was possible to excavate a road undisturbed by modern surface or by the works of the public utilities. Both the west line into Gloucester and the east line towards Birdlip were considered likely to be on Roman alignments and so there also existed the possibility that Roman road surfaces would be encountered. Excavation across both the west line and the east line has established the existence of successive road surfaces which are unlikely to date from before the mid-eighteenth century.

II THE EXCAVATIONS

A Trench 1.2m (4 feet) x 7.9m (26 feet) (trench B) was cut across the east line behind the chapel and one 1.2m (4 feet) x 7.3m (24 feet) (trench A) was cut across the west line. Both trenches were taken at right angles to the hollow way existing in the burial ground, Fig. 2A.

THE EAST TRENCH Fig 2B

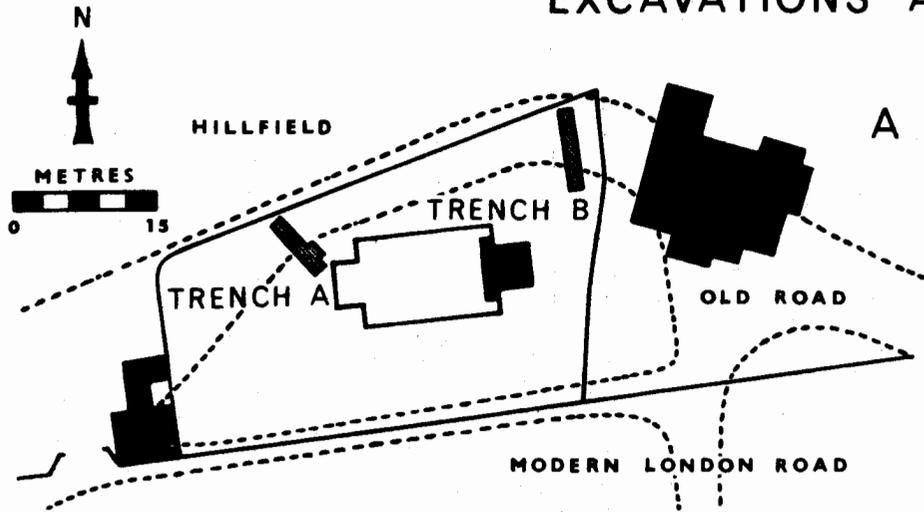
In the east trench the road was found at 1.2m (4 feet), see section Fig. 2B. The highest surface was a spread of gravel, layer 11, slight at the north of the road but up to 10 cm. (4 inches) thick at the kerbstone line. The kerb which was cut back into the natural clay and gravel was mainly composed of water-rolled carboniferous limestone boulders pitches vertically as shown in section. These stones measured up to 30 cm (1 foot) lengthwise along the kerb. At this kerb the gravel surface overlay the filling of the gutter or ditch of the previous road.

Exposed at the north of the trench, and also at the centre where it was sealed below the gravel surface, was a road surface composed of small stones and compacted gravel, together with a large proportion of slag, + layer 12. This material, absent on the southern half of the road varied in thickness between 3 cm. (1 1/4 inches) and 10 cm. (4 inches) and was deepest in the well-defined vehicle ruts of the underlying road surface. This latter surface, layer 14, was well made of small stones and up to 7 1/2 cm. (3 inches) thick. The ruts did not run parallel to the line of the road nor were they continuous, thus no interpretation concerning axle widths can be made.

Below these later surfaces, one of a more substantial nature was found. This area of metalling was composed of between 7 1/2 cm. (3 inches) and 17 cm. (7 inches) of carboniferous limestone which had been broken into pieces some 3-4 cm. across, and highly compacted, layer

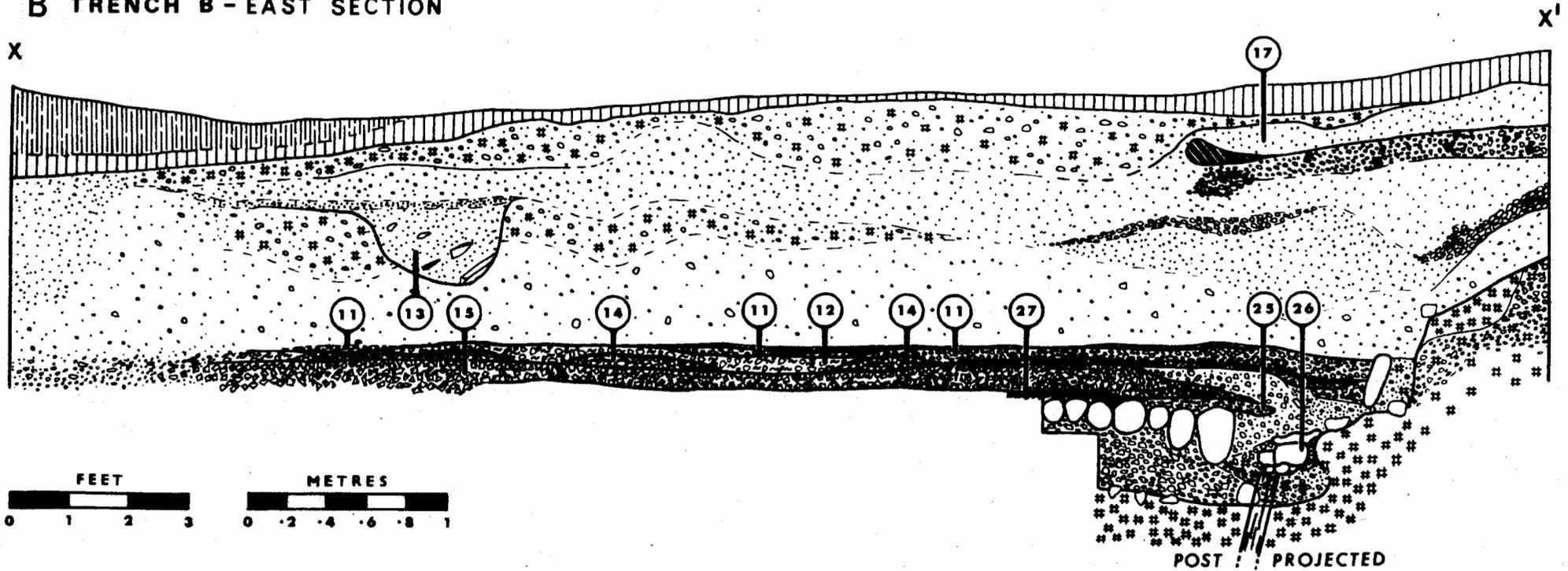
+ FOOTNOTE: Analysis, (the report on which is available for inspection) shows that this material and similar material recovered in the excavation is iron slag. A small proportion of copper, 5%, in one sample is perhaps surprising but the high iron content of all the samples, (Fe₂O₃ = 45%), exactly matches that from similar slag used locally towards the end of the eighteenth century. (59)

EXCAVATIONS AT WOTTON 1968

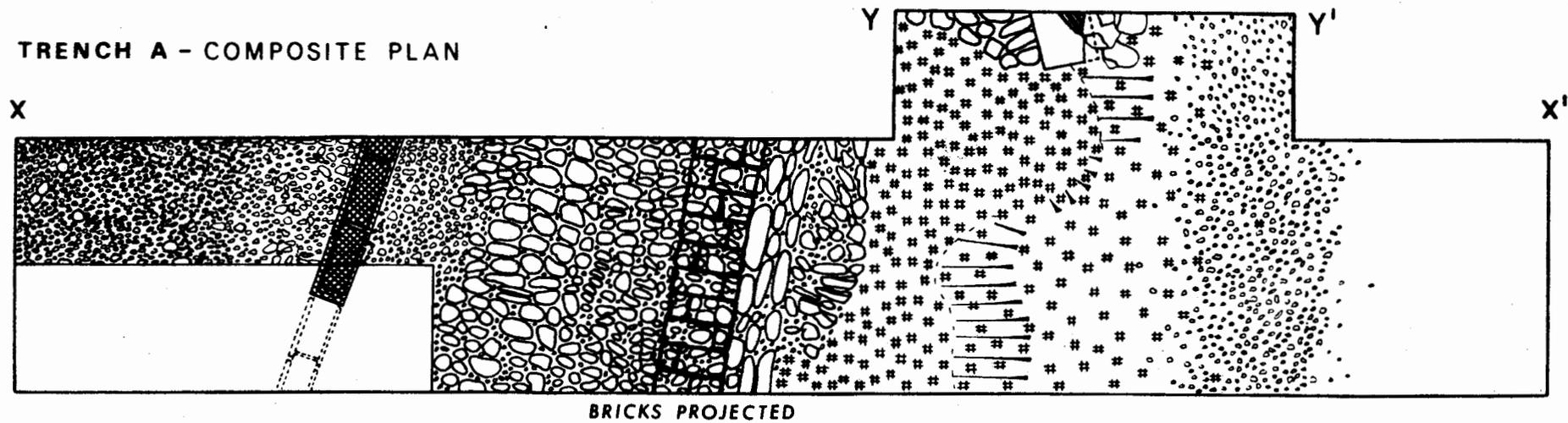


- | | | | |
|--|----------------------|--|---------------|
| | BLACK SOIL. | | SLAG. |
| | DARK SOIL. | | BROKEN STONE. |
| | BROWN SOIL & SILT. | | BRICK & TILE. |
| | SAND, GRAVEL, STONE. | | MORTAR. |
| | CLAY. | | ASH. |

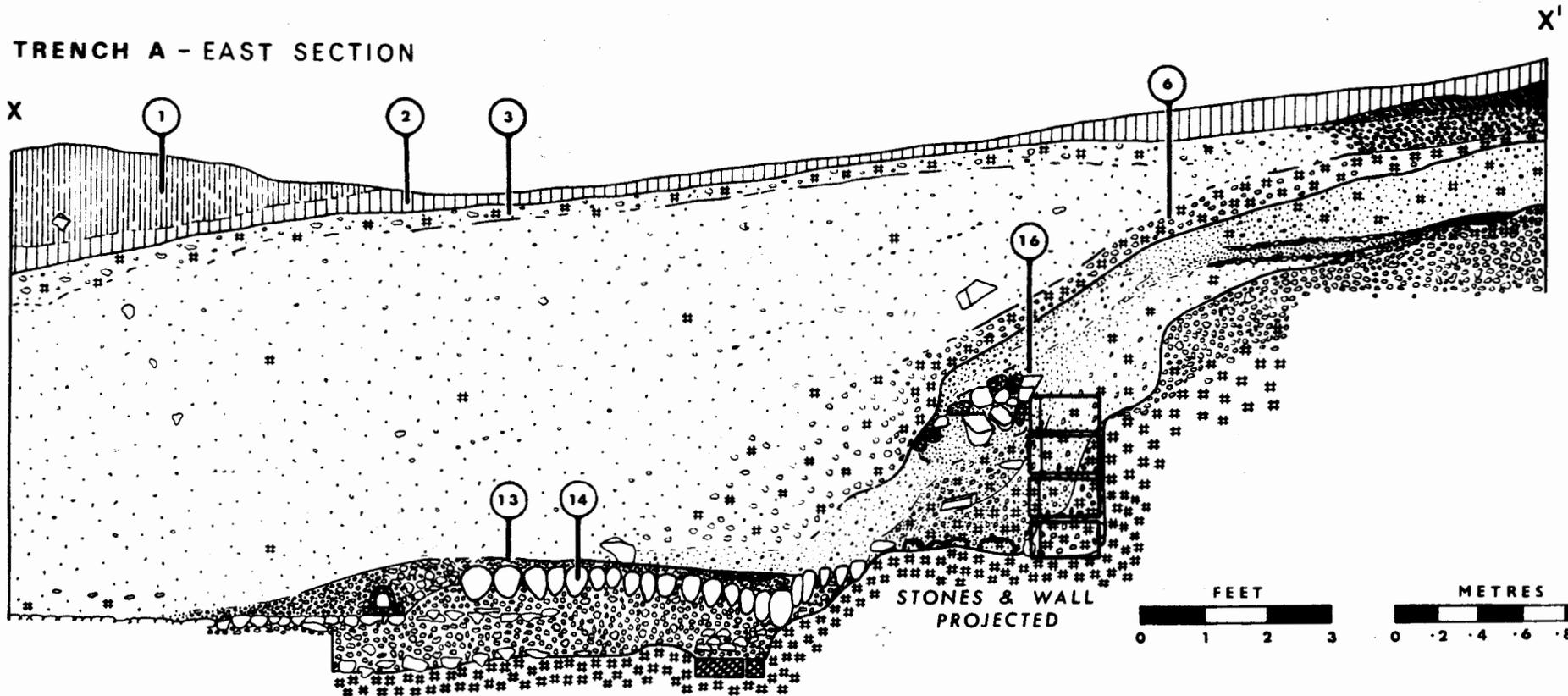
B TRENCH B - EAST SECTION



A TRENCH A - COMPOSITE PLAN



B TRENCH A - EAST SECTION



15*. Despite its hardness the surface had been ground smooth. The road at this period did not extend as far south as it did later. It appears not to have had a kerb, but it had a roadside ditch which became covered by the gutter and kerb of the later road. At the north the road surfaces were considerably looser than in the rest of the trench, possibly indicating the limit of the road.

Although water made complete excavation impossible, sufficient was possible at the southern end of the trench to establish the nature of earlier road materials and techniques. Here the preceding level of metalling was of compacted broken carboniferous limestone, layer 27, joining one of slag. The slag surface, layer 25, possibly a remaking or southern extension of the compact stone one was 7 1/2 cm. (3 inches) thick and laid over an earlier roadside ditch.

The earliest road levels surviving at this point were exposed below this thin slag and compact stone layer. Unlike the layers already described which were apparently the result of resurfacing the earliest road was constructed at one period and consisted of large water-rolled pebbles embedded in a 40 cm. (15 inches) foundation of orange gravel and limestone which in turn rested upon natural blue lias clay. The pebbles were regularly pitched and formed a cobbled surface. Whilst smaller stones were used towards the centre of the road the road edge stones were considerably more substantial. Originally there was a ditch to the south of the edge stones of this road and the bank of the ditch appears to have been revetted. It was not certain whether the stones which represent this revetment, layer 26, were in position at the south of the ditch, having been placed there some time after the ditch was constructed, or whether they had slumped into the ditch from above.

Also shown in the section, Fig 2B, below the remains of this revetment is a wooden post, the top portion of which no longer survives. This post, which has been shown projected from the centre of the trench, into the eastern section, causing it to appear to be below the revetment stones, in reality seems to have retained them. Another less likely possibility is that the post has survived from an earlier road removed when the cobbled one was constructed.

Although backfilling had taken place in 1822 (38) not all the accumulated material was the result of this. At the north of the trench all material in and above the pit, layer 13, is later than this date and it also seems likely that layers stratigraphically above the building debris, layer 17, are later than 1861, the date of the demolition of the main part of the Church of St. Mary Magdalen. (62)

THE WEST TRENCH Fig 3A & B

In the west trench the road was uncovered at a depth of 2 m. (6 1/2 feet), Fig 3B. The latest material proved to be a 5 cm. (2 inches) surface on a substantial cobbled road. The material used in resurfacing was mainly slag, although a certain amount of broken stone and gravel was included, layer 13.

* FOOTNOTE: In Part 5 II of this report the term Carboniferous Limestone is used to collectively define the hard stones encountered in the excavations. A full report, (which is available for inspection), on the various types of stone encountered during the excavations shows Carboniferous Limestone often from the Bristol region to be the most common material.

The cobbled road had a well defined camber and appeared to be made of water-rolled stones of carboniferous limestone. These stones in the order of 13 cm. (5 inches) long by 10 cm. (4 inches) in diameter were pitched in broken stone and gravel 32 cm. (13 inches) thick, laid directly upon natural blue clay. The southern edge of the road was defined by a gutter and edging of much larger stones, which although smaller than the ones in the eastern trench weighed up to 18 Kg (40 lbs). To the south of the road and level with the edging or kerb stones appeared to be a pavement which will be described later.

Thirty centimetres below the gutter of this road, sealed below the broken stone and gravel foundation for it, was excavated a continuous line of interleaved bricks - composite plan and section of west trench Fig 3A & B. These bricks were subsequently dated to around 1750 by comparison with other local examples. The most feasible explanation of this feature is that it was the bottom of a roadside ditch or gutter of a road previous to the surviving one of cobbles and broken stone.

At the northern end of the trench, where the depth of the trench and the proximity of the burial ground wall made further excavation inadvisable, interpretation is difficult. Here the road surface of small stones or pebbles was 28 cm. (11 inches) lower than the cobbled road surface. The cobbled road surface, only 1.7 m. (5 1/2 feet) of which survives, when constructed would have continued north and presumably have been bounded by a gutter and road edge stones. The section, Fig. 3B shows that into this cobbled surface near the centre of the road had been inserted a tile drain of the type common for land drainage c 1800. From the composite plan it will be seen that the drain consists of flat roof tiles upon which have been placed inverted semicircular channels. The lower tiles used in this drain rested upon a compact level of broken stone. It is uncertain whether this stone was laid at the time of the drain construction or whether it was a harder strata in the foundation stone of the cobbled road. The drain was covered with gravel. Even if this gravel fill was included the total road width would now be only 2.3 m. (7 1/2 feet), which leads to a conclusion that the road must have been more to the north at the time the ditch was inserted. Two possibilities suggest themselves, firstly, and the much less likely one, that traffic proceeded at different levels in different directions and that the later small cobbled surface was the north half of such a road which extends a further metre or so to the north.

Alternatively the small stone surface belongs to the southern end of a complete new road, the northern edge of which is now outside the burial ground in the Hillfield Park. In this latter case the original cobble road with its slag surface could have become a pedestrian footpath; there is evidence that before the disuse of this course of the road in 1822 the original road edge and pavement had been lost from sight.

It is necessary at this stage to consider the roadside bank and its revetment. At the time when the cobbled road was in use, if not before, a curved area of similar construction existed to the south of the road-edge stones. A similar cobbled area was excavated in the eastern extension of the west trench. These stones which appear in the section Y-Y1 have been projected in the drawn section X-X1 and are shown boldly outlined. This latter section also shows the contiguous wall which survived to four courses in the extension; this wall has been similarly projected and outlined. This probably formed an early

revetment and is unlikely to have continued much further west. There was slight evidence that stone had been removed from where the clay bank is shown cut bank in the plan. It cannot be overlooked that the cobbles and wall possibly formed a path and roadside entrance to the Church of St. Mary Magdalen, and that the wall was the one around the Church.

The bank to the west of the wall carried impressions of angular stones no doubt similar to ones which covered the top of the wall in the extension of the main west trench.

Although showing less clearly in the section X-X1 than in the unpublished section Y-Y1 it seems that before the closure of the road the following sequence of events had taken place. The wall and higher cobbles in the extension had been covered over; a path layer 11 (around the church) seals the encroaching materials higher on the bank. Secondly a pile of large road stones and slag, layer 16, had been collected at this point and thirdly, and less conclusive, that the resurfaced cobbled road edge had been covered. If this latter point is accepted then all material down to the lower edge of layer 6 with the exception of layers 1, 2 and possibly 3 is likely to be the result of back filling after 1822.

At the highest level of this trench, in layer 3, amongst material which is unlikely to be the result of the early backfilling was excavated a human skull fragment which had undergone incomplete anatomical dissection. The report of this has been published elsewhere. (63)

The latest date range of pottery from the layer which contained the skull fragment is 1835-40. In the east trench a similar layer to the one from which the skull was recovered is considered to be dated post 1861.

III DISCUSSION

During the latter years of the eighteenth century and the first decades of the nineteenth, with the upsurge of turnpiking, the country's major roads entered a period of more systematic repair and reconstruction. The contributions made to the design of roads by Telford (1757-1834) and McAdam (1756-1836) are well known but to these names W.T. Jackman in The Development of Transportation (64) provides a third; that of Daniel Paterson (1739-1825). Paterson is perhaps better known for the various editions, from 1771 onwards, of the Description which bears his name (65) (66).

This period of turnpiking is not surprisingly also that at which the precise techniques of road construction are first recorded.

It is fortunate that the time of both activity and documentation falls within the period during which the various road surfaces observed in the excavations at Wotton appear to have been in use. Before considering the dating of these surfaces and the other features excavated in 1968, it will be worthwhile to review the designs of Paterson, Telford and McAdam.

Jackman citing a treatise attributed to Paterson (which the present writer has unfortunately not been able to locate for study) states that he recommended a road should be formed upon a convex bed and have a foundation of large broken stones, the size of these depending upon the effectiveness of the drainage to ditches on both sides of the road. (67) Onto this foundation some 15-20 cm. (6-8 inches) of broken stone 5-7 1/2 cm. (2-3 inches) in size should be laid

to form a metalled road 3 1/2-4 m. (14-16 feet) wide. Paterson advocated the spreading of sharp gravel upon a newly constructed road to bond the upper surface.

Telford, best known as a road builder for his road from Shrewsbury to Holyhead (1810), considered that the drainage of a road was the critical factor and so provided drains at intervals, across a road, under the foundation layer. The curved foundations of Telford's road was of large stones pitched vertically with their narrowest end uppermost and the remaining spaces were firmly rammed with small stones. Onto this foundation small broken stones 5 cm. (2 inches) across were laid to a thickness of around 15 cm. (6 inches) and this was then covered by a 2 1/2 cm. (1 inch) layer of gravel to allow seepage of surface water. (68)

In the reports of McAdam the progressive experience of countless surveyors comes to its logical conclusion. He observes, whilst still advocating the drainage of the land on which a road is built, that water should be excluded from the road itself particularly by the prohibition of water bearing materials, such as clay or chalk, from the make up of the road. His road having less curvature than was used previously was to be constructed of small broken stones no more than 2 1/2 cm. (1 inch) long upon an impervious foundation of stone or flint. (69) (70) (71)

Returning now to the results of the excavation at Wotton. With the exception in the west trench of the line of interleaved bricks which probably formed a roadside ditch of an earlier road (c 1750?), the earliest road of cobbles seems to be of a date in the 1760's.

McAdam, in 1816, remarks that in Shropshire and Staffordshire excellent roads were possible using large pebbles mixed with sand. (72) It would be satisfying to be able to establish that in the mid-eighteenth century stone was shipped down the Severn for use as a road material but unfortunately only one of the samples of the pebbles examined (from west trench Layer 14) may have a Shropshire origin, the others being derived from an upriver trade from Bristol, or from the Forest of Dean.

Although mentioned again at a later date, the purchase of pebbles for use on the roads repaired by the city virtually ceased when slag became the main material obtained for road repair. Slag was in use on the Northgate Turnpike road from 1768 to 1782 thus the road surfaces (trench A Layer 13 and trench B Layer 25) being composed of slag were likely to have been laid between these dates or, allowing for the stockpiling of materials, very soon afterwards.

For other road surfaces, particularly in the east trench-trench B, even the provision of imprecise dates is difficult. The date of the pottery from the ditches taken together with the terminal date of the old road of 1822 and a measure of intuition suggest the following chronology. In trench B, the broken stone surface (Layer 15) was laid c 1785-1790; the small stone surface (Layer 14) - c 1795-1800; the reused slag and stone surface (Layer 12) - c 1805-1810; and the gravel (Layer 11) - c 1815-1820. It seems likely that the hard stone is that known as Bristol Stone.

It has been previously remarked in Part 5 II, west trench that the absence there of the later road surfaces observed in the east trench suggests that at these later dates the southern part of the road was out of use, to this negative evidence however can be added positive. From the City Treasurer's general payments- 7 September 1815 "T Syms

for drain on London Road and repairing at Constitution Walk L14.14.0d" and again 15 March 1819 "Thomas Syms, Pitcher for work at Boothall and for making a drain up London Road L23.13s.9d". (73)

It has been previously observed that the repairing of the road at Wotton, at this period, was the responsibility of the City for which the trustees of the Northgate Turnpike made annual payments of L35.0s.0d. It is indeed possible that the drain encountered in 1968, and still carrying water was that laid by Thomas Syms in 1819.

Neither of the sections exposed in the excavation displays a road of the form advocated by the progressive designers, more particularly in the respect of drainage. This is not surprising for in a hollow way 3 m (10 feet) below the land to the south one would be forced to make the best road possible in the conditions prevailing. There must always be a tendency to disparage the quality of early roads but if the road surfaces investigated at Wotton are examples of typical ones at the end of the eighteenth and the beginning of the nineteenth centuries then the work of the early road builder was more durable than one would suppose. The large cobbles of the first road in both trenches produced a road of impressive strength and of surprising surface uniformity. It was however the later surfaces of small broken stones or slag, although excavated in extremely wet conditions, which were the most difficult to fracture. To these types of road surface, in use at Wotton as early as the 1780's McAdam may have owed a great debt.

ACKNOWLEDGEMENTS

- Mrs J. Day for her valuable information on the Bristol copper industry, Mr M. Savory and the Chosen Hill School Laboratory for reporting upon the slag, Mr J. Cooper of Bristol Museum for examining the pottery from the site, and Mr G.F. Margretts for his report on the stones used in road construction. I am grateful to Mr H. Middleton for allowing me to examine his unpublished notes on the road, to Mr L.E.W.O. Fullbrook-Leggatt and to Mr B.S. Smith for reading and commenting upon the draft report. In the excavations at Wotton I was assisted by Mr J. Bayes, Mr M. Bennett, Mr J. Punshon, Mr B. Roberts and other fellow members of the Gloucester and District Archaeological Research Group; this help is particularly acknowledged.

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A TOLL BOARD AT HUCCLECOTE

Whilst collecting information about the Northgate Turnpike I was kindly allowed to examine a toll board in private ownership at Hucclecote. Although this board was without doubt originally painted none of its paint now survives and in places the raised letters on the board are now unfortunately indecipherably weathered. Where the letters are intact it has been only necessary to define them with chalk to obtain a photograph. (Plate 1).

The lettering on the board does not appear carved but raised by pressing the board whilst wet (and conceivable hot), against a bed of hollow reversed type. The charges for each item of traffic are not similarly raised and although underlined on the board it seems were merely painted in. The information given on the Hucclecote board unlike that on others is confined to toll charges and does not register the ever significant exemptions from toll. These may have appeared on a second board.

The board, which can be studied by contacting the writer, is no longer complete. It lacks one side of its frame, possibly also a line at the bottom which will have stated the name of the Clerk to the Trustees and the top two lines have also been damaged and of these top lines the first is the most regrettable because the information about the original site of the board would have been given there.

Although this toll board was originally considered to have been erected by the Northgate Turnpike trustees, possibly at the Pound Lane, Barnwood, gate the wording used does not comply with that use in the list of charges contained in the Northgate Acts. For example there is in these acts no mention of any differential charges for broad wheeled waggons. Similarly the board does not appear to belong to the other local turnpike roads, of the Cheltenham and Tewkesbury Trust and of the Cheltenham to Painswick road trust, and information leading to the confirmation of this enigmatic board would be appreciated.

In the transcription below of the Hucclecote toll board the letters printed in lower case type have been tentatively inserted.

For every horse, mare, GELDING, OX, MULE OR OTHER BEAST (EXCEPT AN ASS) DRAWING ANY COACH, CHARIOT, LANDAU, BERLIN, CURRICLE, CHAIR, CHASIE, CALASH OR ANY OTHER SUCH LIKE CARRIAGE THE SUM OF ----
 FOR EVERY HORSE, MULE, OX OR OTHER BEAST (EXCEPT AN ASS) DRAWING ANY WAGGON, WAIN, CART OR OTHER SUCH CARRIAGE HAVING THE FELLIES OF THE WHEELS THEREOF OF LESS BREADTH OR GAUGE THAN 4 1/2 INCHES FROM SIDE TO SIDE AT THE BOTTOM OR SOLE THEREOF -----
 FOR EVERY WAGGON, WAIN, CART OR OTHER SUCH CARRIAGE HAVING THE FELLIES OF THE WHEELS OF THE BREADTH OF 4 1/2 AND LESS THAN 6 inches or for the HORSE OR BEAST OF DRAUGHT DRAWING THE SAME for every waggon, WAIN, CART OR OTHER SUCH CARRIAGE HAVING the fellies of the WHEELS THEREOF OR FOR THE HORSE OR HORSES DRAWING THE SAME -----
 FOR EVERY ASS DRAWING ANY CART OR CARRIAGE THE SUM OF -----
 FOR EVERY HORSE, MARE, GELDING, MULE OR ASS OR OTHER BEAST LADEN OR UNLADEN AND NOT DRAWING THE SUM OF -----
 FOR EVERY DROVE OF OXEN OR NEAT CATTLE PER SCORE AND SO IN PROPORTION FOR ANY GREATER OR LESS NUMBER -----

FOR EVERY DROVE OF CALVES, SWINE, SHEEP OR LAMBS PER SCORE AND SO IN PROPORTION FOR ANY GREATER OR LESS NUMBER -----

TOLL FOR HORSES OR OTHER BEASTS DRAWING DIFFERENT CARRIAGES TO BE PAID EACH TIME OF PASSING.

TOLL FOR HORSES OR OTHER BEASTS DRAWING ANY STAGE COACH OR WAGGON, VAN, CARRAVAN, CART OR OTHER CARRIAGE CARRYING PASSENGERS, GOODS FOR PAYMENT, HIRE OR REWARD TO BE PAID EACH TIME of passing.

TOLLS PAYABLE FOR EVERY HORSE OR OTHER BEAST LET OUT FOR HIRE AND any POST CHAISE OR OTHER CARRIAGE FOR EACH TIME OF PASSING OR REPASSING on THE ROAD WHENEVER ANY FRESH HIRING THEREOF SHALL TAKE PLACE.