



## JOHN GRUNDY'S DIARIES

### AND NOTEBOOKS

**Views and Observations of the Navigation of the River Stort in Hertford and Essex, and a Report of the Effects on the Drainage of the adjoining Low Grounds and Meads and Meadows made by order of Several Proprietors thereof by John Grundy Engineer. 1772.**

In pursuance of orders and instructions received from Paul Field Esq and Mr Black on Tuesday and Wednesday 12 and 13 May 1772, I view'd the said river from its junction with the River Lee at a place called the Rye to the upper end of Wallbury Cut and made the following observations, viz:

The present navigable course of the first reach of the R Stort is carried from the R Lee along the old course of the Stort, except two angles which are diverted by two straight cuts to the first lock at A (See the plan) (*Lower Lock*) which is fixed in a new cutt made across Mr Field's meads betwixt the old course and Roydon Mill stream and the navigation from thence is carried on the said stream to the second lock at B (*Brick Lock*) which is erected a considerable distance below Roydon Mill. N.B. The old course of the river is by this means diverted all the way from the new cut at A to the second (*Brick*) lock at B for it runs considerably to the N of the navigable course towards Briggins. The old course is much choak'd up and obstructed by weeds, sandbanks and other matter lodged therein since the change of currency thro' it and for want of proper attention to its being regularly scoured and kept open, by which means the floods (which are facilitated in their approach to the navigable course being straighter, wider, and deeper than the old course; but by the locks and dams which are erected therein must be thrown into this old river) are obstructed and thereby much sooner overflow the adjoining lands than heretofore.

The dam or weir which is erected above the first (*Lower*) lock at A is 20 ins higher than the adjoining meadows at low water and I am informed that the floods rise higher than the weir and run over the same with a column of water at least one foot thick so that the navigators have been under a necessity of raising banks on each side of the cut to more than 2 ft 8 ins above the surface of the ground. This navigable water being therefore by the works of the navigation at all times kept 20 ins and in floods 2 ft 8 ins above the surface of the adjoining meads not only occasions a constant soakage through the banks but sometimes may frequently overtop them as they are in many parts defective both in height and dimension and for want of proper interior drains to carry off this soakage and overflowing the waters are obstructed and retained upon and within the soil to the very great hurt of vegetation and lessening the value of the meads and low grounds aforesaid.

This mischievous effect of raising the navigable water above the soil in a greater or less degree operates upon all the adjoining meads and low grounds betwixt the first and the second lock for the navigable water is penned up eight ins above the soil to within a furlong thereof.

The weir or dam belonging to the first (*Lower*) lock is 17½ ft wide and made of stone to within two feet of the overfall which two feet is composed of horizontal drawboard. This is an obstruction to the floods by being made close at the bottom.

The second lock at B is fixed about 4 mile below Roydon Mill and pens 7½ ft of water. From this lock the river is carried by a new cut thro' Lord Tilney's land into the mill dam and from thence to the third or Lakes lock at C. This lock, weir and banks of the cut pen up the water very much above the surface of Lord Tilney's land and does great injury thereto by soakage

The weirs for this second reach are only the mill dam waste about 5 ft wide and one by Mr Blackman's bridge about 6ft wide. Both these are very defective and by much too narrow.

The third or Lakes lock (*Roydon*) is fixed in Lord Tilney's Mead near Mr Lake's house at C and is an intermediate lock its height not depending upon any mill dams.

From this lock the navigable course is carried through a new cut made through Lord Tilney's land to the first weir or waste (which is only 6ft wide in two draw doors) and from thence along the old river to the fourth lock which is by the side of Hunsdon Mill at D.

There is another weir or waste of about 6 ft wide made of brick by the small gate into the lower end of Hunsdon Mead which is 5 or 6 inches higher than the other.

The navigable water in this new cut is kept up by the aforesaid locks weirs and banks 17 ins higher than the surface of the Meads and low ground adjoining and it is for the reason before assigned very prejudicial thereto.

The old river or back course which receives the flood waters over the aforesaid weirs is much soil'd up and obstructed by sand banks woods etc on which account they are much sooner thrown over the banks.

The upper end of this reach is not prejudicial to the adjoining lands the navigable water being kept pretty well under soil. The fourth lock at D is 13 ft wide and pens 7 ft 8 ins water (*Hunsdon Lock*). From thence the navigable course is carried along the mill dam and old river to the fifth lock to Parndon Mill at E. (*Parndon Lock*)

The navigable water at the lower end of this reach is kept up the mill lock and weirs and banks about 1½ ft above the surface of the adjoining lands and the banks are in several parts defective by which means the said lands are damaged but as the navigable water seems no higher than the mill dam this damage seems rather more to belong to the mill than to the navigation. The upper end of this reach is properly below the soil.

The fifth (*Parndon*) lock at E pens 7 ft 5 in and from thence the navigation is carried through the mill dam and old river to Burnt Mill lock at F.

The lower end of this reach is somewhat above soil but the upper end is tolerably under it.

The sixth lock by Burnt Mill at F pens only about 5 ft water and the reach from thence to Latton lock is not exceptionable.

The seventh lock is by the side of Mr Altham's new Mill called Latton Mill at G and pens 6 ft 1 in water and the navigable course from thence to Harlow lock is carried through the mill dam and the old river. This lock and mill are made too high and the water gates are too narrow for a free discharge of the floods.

The back course of the old river is much impeded by beds of sand and gravel which obstruct the passage of the flood water. There wants a back drainage to lead the water from Mr Altham's Meads to below the lock.

The over fall from the Waste gates which are placed below the mill has washed away a great part of the bank which separated the mill tail and the navigation back courses and if not soon prevented will I think destroy the bank and be hurtful to the said mill.

There should be a wall or wharfing of about 120ft in length set on the foot of the bank and the lasserated parts thereof be filled up with earth. N.B. There is a brick wall on the navigation side 42 ft in length to preserve their bank from the like effect.

The reach from Mr Altham's Meads to Harlow Mill is kept pretty well under soil but the towing paths want raising in many parts.

The ninth reach from Harlow Mill at H to Pishobury Hall lock at I. (*Feakes Lock*). The tenth reach from thence to Sheering Mill at K. The eleventh reach from thence to Sawbridgeworth Mill at L. The 12th reach from thence to opposite the silk mill at M (*Tednambury Lock*) and the 13th reach from thence to Spelbrook at N are mostly through high meads and pretty well under the soil except about the mills and locks where it is above the same and injures the land thereabouts.

The 13th lock called Spelbrook lock at N is fixed in a new cut which is made through Mr Houblon's Meads about  $\frac{3}{4}$  mile in length and pens 6 ft 9 in water.

The 14th reach. (*From Spellbrook Lock to Twyford Lock*). The first weir or waste to this lock and canal is only 8 ft 4 in wide in three draw doors. The second is at the upper end of Wallbury cut with draw boards about 15 or 16 ft clear waterway.

This lock and weirs are made so high that the navigable water within the cut is (seen at the lowest gauge) 3 ft 5 in above the adjoining meads and 4 ft 5 in in floods, and as the banks made on each side the cut to sustain the same are composed of a loose sandy and

moorey soil there is a constant leakage and oozing through them to the very great prejudice of Mr Houblon's Meads adjoining. These banks are also in many parts too low so that floods overtop them. There is a small back drain about 6ft wide at the top and 3 ft wide at the bottom and 2½ ft deep made much too near the bank. The drain extends from the (*Spellbrook*) lock to the new bridge but is very inadequate to a perfect drainage.

The course of the old river as well as all the back courses and drains are very defective. By making this cut there is a narrow but long slip of land left betwixt it and the hillside which is in a manner spoiled by the leakage of the navigation. This new cut is much longer than any other so that a much greater body of water is constantly acting upon the banks and increasing the soakage more than in any other part.

Many of Mr Houblon's meads were intersected and separated by this cut which before had convenient ways and passages to them but now there is only one in the space of ¾ mile to the very great ill-conveniency of the occupiers.

By this cut there is also a piece of mead which lyes at its upper end thereof and contains about 1½ acres which has no drainage at all nor can have no convenient one otherwise than by a subterraneous tunnel under the navigation.

This reach is the most exceptionable one and seems the cause of more damage to the adjoining lands than any other part of this undertaking.

### **The Report.**

From the aforesaid views and observations it appears that in constructing the Stort Navigation the Proprietors have in parts thereof in order to obtain a sufficient depth of water for the purposes thereof and to save the expense of digging deeper at the upper end of the reaches raised the same very considerably above the surface of the adjoining meads and low grounds.

2. By thus raising the navigable water above the soil, the adjoining meads and low grounds are damaged by the soakage of these waters through the navigation banks.
3. These banks are in places too low so that the waters run over the same to the further damage of these meads and low grounds.
4. The weirs, wastes or overshots are mostly made too narrow and in many parts either wholly or in part composed of fixed dams so that the floods are obstructed in their passage which is another cause of their sooner overflowing the adjoining lands than heretofore.
5. The old course of the river is in many parts deserted by new and straight cuts made by the Proprietors of the navigation and the parts so cut off and deserted are for want of the usual and constant currency thro' them much grown up with woods sandbanks and other obstructions which is another cause of flooding the said lands.

6. There seems a total inattention to the drainage of the adjoining meads and low grounds as not only to the deserted parts of the old river but also all the back or waste courses of the navigation are suffered to grow up but also because there are no proper back or interior drains made on the premises for that purpose.

The parts most affected by thus raising the navigable water above the soil, obstructing the flood waters etc etc are the lands which lye adjoining the second reach betwixt the first and second lock. These lands are mostly belonging to Paul Field and Jno Archer Esqs.

Those lying on the third reach betwixt the second lock and Roydon Mill and on the lower end of the fourth reach betwixt Lakes Lock and Hunsdon Mill belonging to Lord Tylney. And more particularly on the 14th reach above Spelbrook lock belonging to Jacob Houblon Esq.

### **The Proposed Scheme for Removing these Evils.**

The best and most effectual means of remedying the aforesaid evils would be by lowering the locks, weirs, gauges, dams and overfalls to such a degree that the navigable water shall not when at the lowest be penned up any higher than within two feet of the surface of the adjoining heads and low grounds and so to enlarge the said wastes gauges and to make the same wholly of draw gates and to cleanse all the back passages that the floods may have a free discharge but this expedient would produce further and very considerable expense to the proprietors in deepening the navigable courses to the same degree as the waste gauges are lowered and would therefore be difficult to obtain. I shall therefore propose such expedients as I apprehend will be most eligible for the better advantage of these lands supposing the navigable pens and gauges remain at the same height as they are now.

The Proprietors to make the waste gauges upon the aforesaid reaches at least 20ft wide (viz in 5 gates of 4 ft wide each) and to be moveable to the bottom of the river in order that when they are drawn the floods may be discharged in a full column. In case the Proprietors or their agents should neglect to draw the said gates when the floods are within one foot of the surface of the adjoining meads and low grounds then the landowners to have the power of drawing the same and to keep them open until the floods are subsided to the same height.

The Proprietors to repair the banks where wanting and to raise them to such a height as to prevent any floods overtopping them.

Also to keep the old branches of the river where deserted and all the back courses for the waste water clean open and free from all kinds of obstruction.

Also to make proper and necessary back and interior drains in the lands so overflowed and soaked by means of the navigation; such drains being of proportionate width to the quantity of land affected and all of them 2ft deeper than the bottom of the navigable course and so made as to empty their waters below the respective locks.

To make bridges and other proper communications to such lands they have cut through and intersected so as to make the occupancy as convenient as heretofore. N.B. This is particularly wanting in Mr Houblon's meads above Spelbrook lock which is at present cut off and totally prevented from any drainage.

And also to make and set down the wharfing or wall and fill in the lasserated part of Mr Altham's bank and take out the beds of gravel and sand in the back course from the waste gates.

John Grundy, Engineer, London, 25 May 1772.

**Proposals made to Mr Jackson, one of the proprietors of the Stort Navigation by Mr Grundy an behalf of Paul Field Esq with the answers near as Mr Grundy can recollect from his memory made at the Admiralty 22 May 1772.**

Proposals. 1. As it seems practicable to remedy the defects of this reach without the proposed alterations by repairing Archer's weir at B and deepening the shoals within the said reach and as by making the proposed new cut, dams, gates and (unless done under proper restrictions) the adjoining meads may be very much injured. It seems most desirable to take the former rather than the latter method.

Answer. This can't be done because the Proprietors of the Stort have no power over Archer's Weir which is upon the Lee.

2. If however the proposed alteration is insisted upon then it is proposed that the top of the proposed waste gates to be erected on the Stort at C be made no higher than 2 ft under the surface of the adjoining meads in order that the navigable water may use no higher at low water than within 2 ft of their surface and no higher in floods than within one foot of the same to which degree under the soil the water always should be kept for perfect drainage.

Answer. As the gauge of Mr Field's weir which is upon the Lee must be fixed by the Trustees of that navigation the heights of the gates will depend upon that weir.

3. These proposed waste gates should together contain a clear space of at least 20 ft (viz gates of 4 ft wide each) and be moveable to the bottom of the river in order that when they are drawn the floods may be discharged at full column.

Answer. Agreed to.

4. That whenever floods rise within one foot of the surface of the adjoining meads or whenever they run over the tops of these waste gates in a column one foot thick that then it shall be in the power of Mr Field or his agent duly appointed to draw the said doors or gates and to keep them open until the floods have subsided so as to be one foot under the surface of the said meadow.

Answer. Disagreed to with respect to the power being in Field but promised it should be carefully done by their own agents.

5. Mr Field's weir on the Lee at A to be made of the same width it now is and always continued so and also composed wholly of a frame and drawgates of the same height and under the same restrictions as the aforesaid waste gates on the Stort provided that in case the aforesaid 2 ft under the surface of the adjoining meads shall exceed the height of 3 ft 9 ins on the present sill of Field's weir (the pen proposed by Mr Yeoman) that the pen at the said weir and at the said waste gates on the river Stort shall be fixed and for ever remain at the last mentioned gauge.

Answer. That is in the Trustees for the river Lee to do but will do all in his power to get it done so as to be no way injurious to Mr Field's property.

6. To prevent future disputes respecting the gauge of these gates a conspicuous mark shall be fixed and always kept legible upon the outside post of these gates exactly 2 ft and another at one foot below the medium surface of the adjoining meads which marks shall be so fixed from exact levels to be taken by two artists one to be appointed by Mr Field and the other by the proprietors of the navigation but in case Field's weir be fixed upon at the gauge aforesaid then the said levels shall be taken from thence to the waste gates on the Stort and the aforesaid mark fixed there from.

Answer. The answer the same or to the like purport with the last.

7. The land that will be destroyed by the proposal now at DE as well as the part KL which will be intersected and rendered useless and of no value to Mr Fields to be paid for as in sale of fee simple and the land to be covered by the earth coming out of this cut as well as the foreland to be also paid for at half value of the cut.

Answer. The land to be cut as well as the part intersected shall be paid for as proposed and to render it as little ill convenient to Mr Field as may be the earth shall be all carried to the insalated side.

8. The price of the land as per former valuation but Undertakers to pay the tenant for the crop now growing on the ground and also Mr Field's tenant Cooper for his crop on the ground where the cistern and new cut are made for the damages done in going over his ground etc all the time of executing the works and for damages by floods occasioned thereby.

Answer. Agreed as to paying for the land as per former valuation and the tenants for the crops on this ground. Disallow any damage to Cooper as the works were begun in November and also that he has received any damage by floods occasioned by the navigation works.

9. The Proprietors of the Navigation at their own costs and charges to lay down and for ever support repair and maintain a subterraneous tunnel under the Proprietors navigation cut and in the line of the fence, dike at M three ft wide and two ft high and also at their own proper costs and charges scour out cleanse and from time to time keep the said fence dike NO betwixt the tunnel and the old river Stort in good repair and of the same width and depth as heretofore been or now is.

Answer. Fully agreed to and will make the tunnel under if Mr Field desires it.

10. That some alterations and regulations may be made and settled in regard to the cistern and overshott on Cooper's land for the drainage and security against flooding the same

which now so frequently happens particularly as to the construction and power of drawing the overshot in floods and for back drainage.

Answer. Seemed willing to alter the overshott as desired but nothing determinate as to the rest.

11. That some method may be provided for preventing the ill consequences of the landing up the old channels of the river and for restoring a due and sufficient course of water into the same from those places wherein it is now diverted into the navigable channels by the obstructions near Mr Blackmore's bridge and by the drawgates at the end of the cut in Mr Lakes' mead and by the brick overshot higher up the river.

Answer. Seems to be of opinion that the Proprietors of the navigation have nothing to do with the deserted parts of the old river and that the Commissioners of Sewers may be summoned to order the repairs thereof. Denies any obstruction in the old overfalls and says the new gates built by the Proprietors are an additional discharge of the flood.

12. That the towing path on the intended new cut to be carried on the insalated side thereof.

Answer. Agreed to.

13. That Mr Field's right of fishery be renewed and acknowledged as well in all the new cuts through his land as in all other parts of the river where he before enjoyed the same.

Answer. Is of opinion that the right of fishery upon all new cuts is in the Proprietors but will readily make Mr Field a compound thereof.

14. That from henceforth no new cuts for navigation shall be made without his consent Mr Field herein not meaning to acknowledge any right of that kind at present to exist and the undertakers having declared in their answer as an inducement for dissolving the injunction that they have no intention in future for making any such in any other part of Mr Field's land.

Answer. Totally disagreed to and insists that they have a right to make any new cuts when and where they please if the navigation requires.

If any other matter proper to be provided for should hereafter occur Mr Field reserves the liberty of adding it to these propositions before the final conclusion thereon and to rectify mistakes herein if any.