

# The design for the initial drainage of the Great Level of the Fens: an historical whodunit in three parts

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## Abstract

This article challenges the received view that it was the Dutchman, Sir Cornelius Vermuyden, who designed and oversaw the draining work done in the Great Level of the fens when Francis, fourth Earl of Bedford became its Undertaker in January 1631. It first shows that Vermuyden did not become Director of Works under the Earl or a partner in the undertaking before arguing that the design employed was not the one offered by Vermuyden the previous year. The final part demonstrates that the work done while the Earl of Bedford was Undertaker responded to the long held aspirations of local landowners, the group from which Commissioners of Sewers were drawn. Finally it suggests what the grounds may have been for depriving the Bedford group of the reward for which they had invested so heavily.

It has long been accepted that it was Sir Cornelius Vermuyden who designed the drainage scheme carried out by Francis, fourth Earl of Bedford when, in 1631, the latter undertook 'to do his best endeavor' to make the fen grounds to the south of the Welland 'fairly fit for arable, meadow or pasture'. Samuel Wells, the nineteenth-century historian of the Bedford Level Corporation, tells us that 'Strange as it may seem, the Earl was induced to take into his service the very person (Sir Cornelius Vermuyden) to whom the Country had always shown the greatest aversion, and with whom they had declined to enter into any contract whatever'.<sup>1</sup> Wells gives no reference to substantiate this assertion, and what is more, the second point is patently false: in September 1630 the Country *had* contracted with Vermuyden, as Sir William Dugdale (a contemporary) tells us, adding that the latter was to receive 95,000 acres for his pains and charges.<sup>2</sup> Nevertheless, since then, historians of the man and of the Level have accepted Wells' statement at face value, and repeated it with varying emphasis.<sup>3</sup> Yet, so far as I have found, no

<sup>1</sup> S. Wells, *The History of the Drainage of the Great Level of the Fens called Bedford Level* (2 vols, 1830), I, p. 120.

<sup>2</sup> Sir William Dugdale, *The history of imbanking and drayning* (1662), pp. 408–9.

<sup>3</sup> See the following: S. R. Gardiner, *History of England, 1603–42* (10 vols, new edn, 1894–5), VIII, p. 295; H. C. Darby, *The Draining of the Fens* (sec. edn, 1956), p. 41 and id., *The Changing Fenland* (1983), p. 65; L. E. Harris,

*Vermuyden and the Fens* (1953), p. 64; D. Summers, *The Great Level* (1978), p. 68; *Dictionary of National Biography, sub Vermuyden, Sir Cornelius* (by A. F. Pollard), and c.f. the corresponding entry in the *Oxford Dictionary of National Biography* by Joan Thirsk: 'Vermuyden became formally committed to the project as an "adventurer" and was made the director of the works, effectively being the undertaker'.

one who wrote about the Great Level before Wells made any such assertion. All follow closely the account given by Sir William Dugdale, and all, like him, are silent on the question of who designed the plan of draining carried out by Francis Earl of Bedford.<sup>4</sup>

Now while there is ample contemporary evidence that Vermuyden was employed by Charles I following the latter's assumption of the Undertakership in 1638, and again by William, fifth Earl of Bedford from 1650, I know of no direct evidence that the fourth Earl employed Vermuyden. On the contrary, there is every reason to believe that he did not. The case for this I present in the first part of this paper. I shall then explore the more difficult problem of who *was* responsible for the design followed by Bedford.

## I

Contemporary records are patchy, but this much is known.<sup>5</sup> When the Commissioners of Sewers struck their bargain with Francis, fourth Earl of Bedford in January 1631, the idea of a general draining of the Wash fens had been contemplated since at least the 1590s and a number of determined attempts had been made by local interests, the royal government and would-be undertakers, in varying combinations, to launch such an enterprise.<sup>6</sup> One, headed by Chief Justice Popham, had reached so far as the cutting of a new sewer before it collapsed. No later initiative fared better. However, by the summer of 1629, interest in the idea had reached a new pitch, both on the part of those responsible for finding new sources of income for Charles I, following the dissolution of the Parliament of 1628–9, and on the part of fen landowners. A major project – Cornelius Vermuyden's undertaking in Hatfield Chase and the Isle of Axholme – had been completed with apparent success, Vermuyden had been knighted, and he and his participants were busy developing the lands they had received in return for their investment. The problems which would bedevil that enterprise over the next six years were not yet apparent, at least in England.<sup>7</sup>

There was intense competition for the contract to drain the vast fen grounds in the hinterland of the Wash. The front runners appeared to be a group headed by Sir Anthony Thomas, a longtime player in this field who, in association with Sir William Ayloff, his father-in-law, had made a determined but finally unsuccessful bid for the job of Undertaker eight years earlier. This time, Sir Anthony had secured from the king a letter to the Commissioners of Sewers for Suffolk, Norfolk, Cambridgeshire, the Isle of Ely, Huntingdon, Northamptonshire and

<sup>4</sup> Dugdale, *Imbanking*, pp. 408–9; C.N. Cole, *A collection of laws which form the constitution of the Bedford Level Corporation together with an introductory history thereof* (sec. edn, 1803); W. Elstob, *An historical account of the Great Level of the Fens* (1793); Thomas Badeslade, *The history of the ancient and present state of the navigation of the port of King's Lynn* (1725); Jonas Moore, *The history or narrative of the Great Level of the Fens called Bedford Level* (1685).

<sup>5</sup> The records kept in the London office of the Bedford Level Corporation were lost in 1666 in the Great Fire. Information on the first drainage may have been

destroyed at that time, but presumably Dugdale had access to whatever had been there in compiling his history of 1662.

<sup>6</sup> See Mark E. Kennedy, 'So glorious a work as this draining of the fens' (Unpublished Ph.D. diss., Cornell University, 1985) for a very thorough account of these efforts up to the end of the reign of James I.

<sup>7</sup> The only large scale draining enterprise completed at an earlier date than Vermuyden's – that of Thomas Lovell in Deeping Fen a generation earlier – had failed to accomplish any lasting improvement.

Lincolnshire naming himself and his partners Charles' chosen agents for draining the fens 'as well on this side Boston as beyond', together with Charles' promise of every possible support to them in their enterprise and his injunction to the Commissioners to aid and assist them.<sup>8</sup> The Commissioners were less than enthusiastic about contracting with Thomas. Writing on 1 October they asked deferentially but firmly to be excused from dealing any further with Sir Anthony. He had, they said, asked that a tax of 10s. the acre be laid on every acre of the Great Level.<sup>9</sup> Yet he had been unwilling to disclose what works he proposed to do to effect a drainage. This, they said, made it impossible for them to impose a tax, since the Statute of Sewers required that only those who should obtain some benefit from the work might be taxed towards it. To judge who would derive benefit they must know what the plan was. Their letter also alluded to another group 'whose judgments in such works are greatly approved by us' who offered to perform the work for £35,000. The name of Francis Bedford headed the list of signatories of this letter.<sup>10</sup>

By 20 February 1630 a turning point had been reached. Charles himself wrote to the Commissioners of Sewers for Lincolnshire that 'we have taken into our own hands the care of the draining of the said Level of the six counties because we found from them [the Commissioners] no respect nor conformity to our pleasure signified unto them by our letters, but rather such a proceeding as could not but induce distraction, and in the end the overthrow of the whole business'.<sup>11</sup> What more reasonable at this juncture than for Charles or his advisers to turn to Vermuyden? Certainly the Council that spring was treating him as a man of consequence, directing that he be furnished with post horses and a guide for a journey to Boston and thence to Hatfield in Yorkshire.<sup>12</sup> We know that he used the occasion to resign his responsibilities as Undertaker of the Hatfield Level into the hands of the major investors in the project, of whom he, of course, was one, and that it cost him £1000 to do it.<sup>13</sup> He also initiated a settlement of outstanding differences between himself as Lord of Hatfield Manor and his tenants there.<sup>14</sup> We may guess that he was clearing his slate in preparation for a major commitment elsewhere. By July his star was clearly in the ascendant, as witness Bedford's oft-quoted letter of July 25 to Sir Harry Vane, England's ambassador at the Hague.

And touching the fen business, I do assure your Lordship it is so feasible and may be so profitable, the quantity and extent of the drowned grounds by fresh water being three hundred and three score thousand acres makes me very willing to force you into such an Adventure, that I mean to venture some part of my own shrunk fortune for the draining of that. For

<sup>8</sup> TNA, SP 16/144 no. 84.

<sup>9</sup> A contract with an undertaker could only be made when such a tax had been laid and not paid. Such no-payment was taken to clear the way for a 'sale' to the undertaker of a portion of the lands in arrears in return for the contractor's commitment to drain the whole and keep it dry in perpetuity. See M. M. Albright, 'The entrepreneurs of fen draining under James I and Charles I: an illustration of the uses of influence', *Explorations in Entrepreneurial History* 8 (1955), p. 56.

<sup>10</sup> TNA, SP 16/150, no. 2.

<sup>11</sup> TNA, SP 16/161, no. 34.

<sup>12</sup> TNA, SP 16/166, no. 56.

<sup>13</sup> TNA, C 2/Charles I/U1/63.

<sup>14</sup> *Sir Cornelius Vermuyden's agreement with King Charles for draining Hatfield Chase, etc.* (1794). This title is misleading. The pamphlet is a resumé of a court case begun in 1733 and concluded in 1758. The point at issue was whether the lord of a manor retained right to the soil in that portion of land assigned to tenants and commoners as their share of a drained marsh. The Lords ruled that he did not.

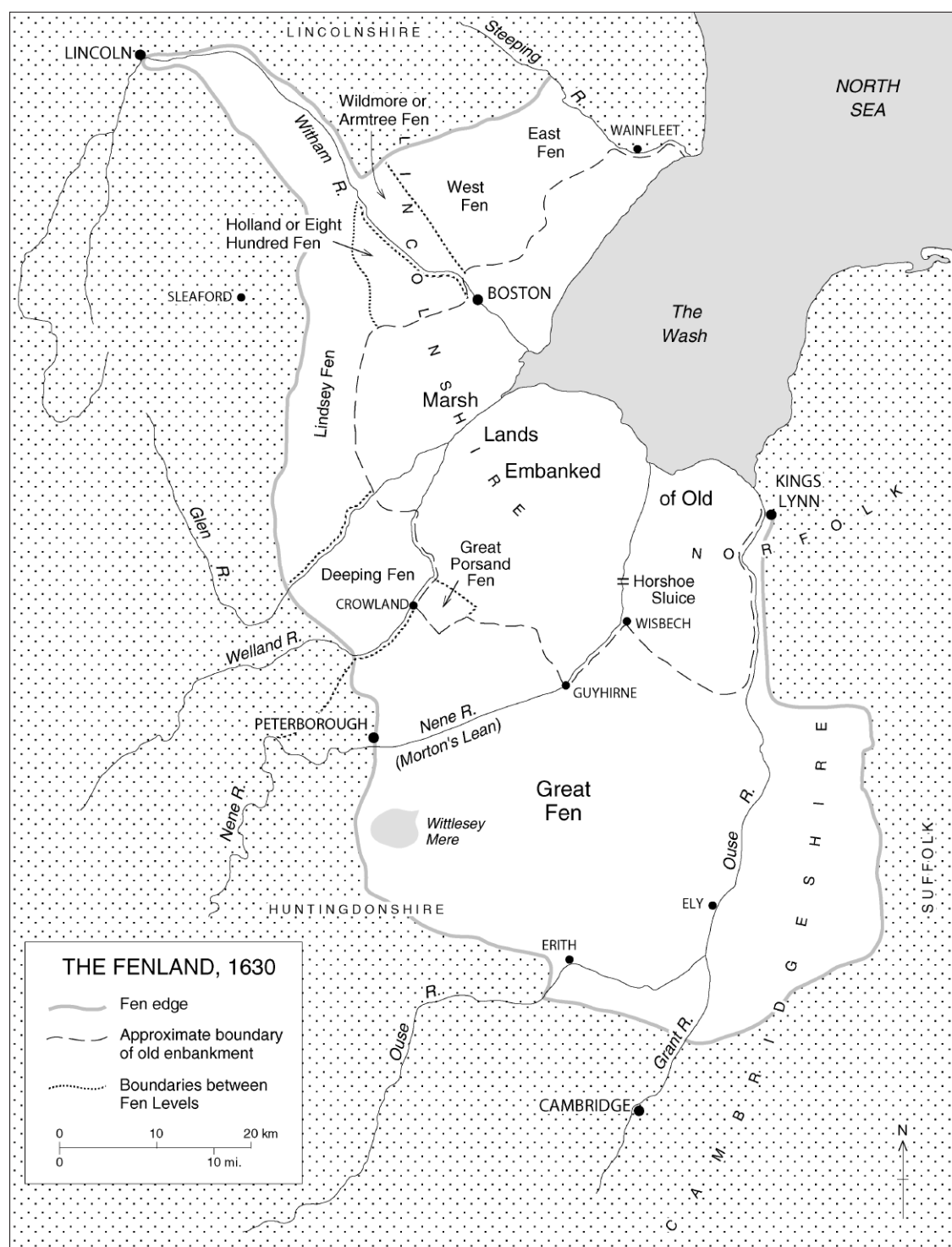


FIGURE 1. The Fenland c. 1630 showing main rivers only. It omits the spider's web of causeys, old river beds, boundary ditches, cuts made for ease of transport, and even drains then active.

that purpose I expect some persons of quality and judgment to be here from you to join with Vermuden, and that to be by the 14th of our August next if it may be.<sup>15</sup>

Presumably that meeting went well, for, as noted above, Dugdale tells us that on 1 September the Court of Sewers contracted with Vermuyden to undertake the draining of that portion of the whole Fenland lying to the south and east of the River Glen (Figure 1 shows the fens before the commencement of Bedford's drainage scheme).<sup>16</sup>

Dugdale's terse mention of that meeting can now be fleshed out by the minutes of a further sitting, held the following day.<sup>17</sup> The record is dated 2 September 1630 and is titled 'The Acts of Sewers at the General Session at Lynn'. It begins with a list of the 43 commissioners present that day, the presiding commissioner being the Earl of Bedford. We learn that after long debate of a proposition specially commended to them by the King, they concluded that it was feasible, honourable and profitable to the whole kingdom to drain the estimated 360,000 acres of fens lying south and east of the Glen (in later terms, the Great Level plus Deeping Level), and resolved that the work should be undertaken.

But in respect that the difficulty of doing the work appeared to be so great that it was not possible to be done by the private proprietors, much less by a popular undertaking of the Country which might breed confusion. It was therefore ... resolved by this Court that some person should be found out and pitched upon who as well for his arts and skill in such business as for his other abilities in securing the Country from loss might best undertaker the work ... And for that it seemed unto the Court that Sir Cornelius Vermuden was a man every way sufficient to undertake the work, therefore it was thought fit and so ordered by the Court that [he] ... be the undertaker thereof.

His reward for bringing the same 'to full perfection' was set at 90,000 acres 'of an indifferent condition according to the quality of the residue of the grounds remaining to the Country'. He was also to maintain the drainage at his own charge, and for security thereof, the whole 90,000 acres were to be charged and liable 'in such sort as may be agreed upon between the Counsel of the Country and the undertaker'. The Commissioners also stipulated that landowners within the level should be admitted to adventure in due proportion with Vermuyden, and after them, other gentlemen of the Country, up to a maximum of 45,000 acres. Further, former owners of the soil should have first refusal of any land Vermuyden offered for sale.

A committee of ten headed by Sir William Russell and Sir John Carleton was established to inform themselves of the quantity and quality of the grounds within the compass of the work. Mr William Heywar and Mr Thomas Thorpe were appointed surveyors to assist the committees,<sup>18</sup> and these 12 were 'entreated' to meet with Vermuyden at Wisbech on 18 October to review their findings and to prepare a report to be given the rest of the commissioners at their next general session.

<sup>15</sup> TNA, SP 16/171, no. 30.

<sup>16</sup> Dugdale, *Imbanking*, p. 408.

<sup>17</sup> Norfolk County Archives, Hare Ms, S136 219X3. The document is a copy made and certified by William Davy, clerk of the Court. The following summary is

based on it.

<sup>18</sup> In this context Heywar is surely a misspelling of Hayward, the well-known cartographer of the fens, associated with the Bedford group until at least 1636.

A second meeting was also set up for all commissioners who could attend at the Attorney-General's chamber in the Inner Temple on 20 November when they were to take order for the penning of a law and perfecting of a contract between the Country and the general undertaker, by the advice of the counsel for both parties, with the proviso that the particulars were not to be binding until confirmed at the next general session. That session was set for 13 January at King's Lynn. We see that (for once) Dugdale was inaccurate: it was an agreement in principle that was reached on the first and second of September, not a full contract and it allotted Vermuyden 90,000 acres, not 95,000 acres. More of that anon.

A fortnight later, Sir John Carleton, one of the Commissioners present at the September sittings, wrote to his uncle, Secretary Dorchester, to the effect that the Commissioners of Sewers had agreed with Sir Cornelius Vermuyden for the draining of the fens. The King was to have 30,000 acres for his favour and Carleton urged his uncle to seek a grant of 3,000 acres. If he did not hurry to do so, he would be prevented by others, 'for this business was never in that forwardness it is now'.<sup>19</sup> Still all is smooth sailing. Then something went wrong for Vermuyden. By 13 January he had been displaced as undertaker by Bedford.

The accepted explanation of this about face has been that the Country objected to contracting with an 'alien born or any other stranger'. Nothing in the minutes of the 2 September session suggests that any such objections were raised then. Quite the contrary. L.E. Harris suggested that the real difficulty was more likely to have been that the Commissioners refused to allow Vermuyden the 95,000 acres he asked for as his reward, offering him 90,000 instead.<sup>20</sup>

It could well be that Vermuyden did raise his demand to 95,000 acres when he learned the results of the labours of the Committee of ten and that Dugdale didn't pick his figure out of thin air. Their findings are appended to the minutes of the sitting of 2 September, and are also in the clerk's hand. There is, first, a list of the various fens within the level, a valuation of each parcel (ranging from 2s. per acre to 8s. and 10s. for embanked grounds), their acreages, the fraction to be surrendered for the draining, and the total number of acres. This is followed by a revised summary of the foregoing, which distinguishes four qualities, of 1s., 4s., 6s., and 10s. valuation per acre, and applies fractions of  $\frac{1}{2}$ ,  $\frac{1}{3}$ ,  $\frac{1}{4}$  and  $\frac{1}{14}$  to the several qualities to determine how much of each is to be surrendered. In this calculation, Vermuyden was promised his 90,000 acres (out of a total now estimated at a little more than 344,500 acres). However, on my calculation, the average value of his acres came to only 4s. 6d. per acre, whereas the average value of the acres left to the Country came to 6s. This scarcely represented the 'indifferent' apportionment promised him, especially of the fourth category of lands worth 10s. an acre. He had cause to complain, and probably did. A further 5,000 acres of best quality land would not have been an unreasonable demand, but it could not have been made before 18 October, when the Committees assembled their report at Wisbech. However, there is evidence, contained in a hitherto overlooked letter among the State Papers, that Vermuyden was in serious trouble some little time before that date. Its writer was Thomas Blechynden, a cleric in the service of Sir Henry Vane, and the letter, dated from London on 2 November, was addressed to Vane at the Hague. The pertinent passages are as follows:<sup>21</sup>

<sup>19</sup> TNA, SP 16/173, no. 29.

p. 408.

<sup>20</sup> Harris, *Vermuyden*, p. 61; Dugdale, *Imbanking*,

<sup>21</sup> TNA, SP 16/175, no. 8.



On the 8th of October my Lord of Bedford writ unto me to put myself in a timely readiness to wait upon your Lordship, and to crave the noble favour of so much respite from your Lordship's service as to see his two sons conveniently accommodated at Leyden. On the 17th of the same month (and before the receipt of that command) his Lordship sent a gentleman expressly unto me into the west with a countermand to his former letter and with an intimation that because my Lord Treasurer had made some alteration in the business of the fens his Honour's purpose was changed in the time of sending over his sons ... Again on the 23rd of the same month I received enclosed in a despatch from his Lordship the noble command of your Honour, the trust reposed in me to receive his Lordship's clear instructions and full resolution in the affair of the fens ...

Postscript: When I came to London and found not my Lord of Bedford there nor clearly understood his meaning in the letter which he sent me into the West Oct. 17 concerning the business of the fens, and conceiving that it might be a matter of much advantage to your Honour to be an adventurer in that work and therefore studious to give your Lordship some account of it by this passage. So soon as I came hither (which I was not willing to mention until I had some answer) I dispatched a messenger presently to his Honour, to crave his information how that affair stood and what should be the reason of that sudden change in so settled a serious resolution. Now the reason I find by his Lordship's letter to be because the College of Drainers on that side will not trust Sir Cornelius Vermuden with the oversight of the work, but from some misunderstanding of his former proceedings would question him before them, who is here in good esteem and that business and great work of draining now conceived so feasible and so full of hope that he shall have bearers and sharers sufficient in England to carry him through that vast undertaking. My Lord of Bedford desires to be pardoned for not answering the last dispatch from your Honour until he speak again with Vermuden, assuring me that he will reserve a considerable quantity of acres for your Honour's adventure, whosoever in the conclusion prove to be the Undertakers, so he commanded me to convey unto your Lordship these two enclosed papers being the acts of their last meeting at Wisbech and this is all the service I am able to perform in this affair who am in all other things solicitous how I may best express myself. ...

Sometime between 8 and 17 October Bedford learned, to his evident surprise, that the Lord Treasurer, the Earl of Portland, had had a change of heart about the existing arrangements for draining the Great Level. Keeping in mind that under the Crown's contract with Vermuyden, the King, for his goodwill, was to have 30,000 acres out of the 90,000 Vermuyden had been allotted as payment for his services, one must suppose that only a very serious problem could have moved Portland to re-open the question of the Undertakership. That problem sprang from distrust of Vermuyden on the part of the College of Drainers 'on that side', i.e. in Holland.<sup>22</sup> The difficulty, we may suppose, was the unwillingness of Dutch investors to back the project. Bedford's message to Blechynden suggests that an effort was being made to raise all the capital

<sup>22</sup> 'College of Drainers' I take to be an English rendering of a Dutch term used for a group of the principal investors in a particular dykage, seen as the corporate entity that would govern the dykage once the initial drainage was satisfactorily completed.

in England, but that it had at least crossed Bedford's mind that Vermuyden might have to be replaced as Undertaker.

All the original investors in Vermuyden's Hatfield dykage (to use the Dutch term) had been Dutch. From 1629 on they became increasingly dissatisfied on several counts with his management of the enterprise. His personal integrity was called into question, with suggestions that he had sold to investors more land than he actually had at his disposal. He was faulted for making the Level suitable for pasture only and not for arable; that is 'summer' ground only and not 'winter' ground. This evidently fell short of what many investors had expected, even though Vermuyden's contract with Charles had only bound him 'to do his best endeavor' to make the land fit for arable, meadow, or pasture. Finally there were allegations that the basic design of the work had been inadequate.<sup>23</sup> Some of all this must have become known in government circles, if only because Sir Philibert Vernatti, a principal investor in the dykage, was also a Gentleman of the Bedchamber to Charles. Perhaps it was he who warned Portland of the College of Drainers' dissatisfaction with Vermuyden. Later, in response to a suit brought against him in the Court of Chancery by a group of the investors in the dykage, headed by Vernatti, Vermuyden gave a persuasive account of himself as a man who had done his best under severe difficulties not of his own making.<sup>24</sup> It is not necessary for present purposes to try to sort out the rights and wrongs of this quarrel. True or not, the allegations clearly had a profound impact upon Vermuyden's career. They cost him, I would suggest, not only the Undertakership of the Great Level, but also any share in the enterprise either as Adventurer or as designer of the drainage.

It can only have been in November of 1630, after Vermuyden's problems with Dutch investors had come to light, that the Country prevailed upon Bedford to assume the role of Undertaker. For him it wasn't simply a matter of acquiescing in their demand; he would have to assure himself that he would be able to draw into the enterprise a sufficient number of able investors, and even more critical, he would have to cut a deal with the Crown. Without Charles' goodwill he could not proceed, for only the king, by giving it his assent, could make the contract between Commissioners and Undertaker legally binding on all parties, including himself.

That it wasn't easy to secure the necessary commitments of capital within England is strongly suggested by the most striking difference between Bedford's contract and Vermuyden's. This lay in the drastic reduction in the acreage reserved to the King out of the Undertaker's portion: 30,000 acres under Vermuyden's contract but only 12,000 under Bedford's. It was a huge reduction, even allowing for the fact that Bedford's contract covered a smaller area than had Vermuyden's: 307,000 acres as against about 344,500.<sup>25</sup> Surely, the very survival of the project must have been at stake for the Crown to accept such a sacrifice. And the sacrifice had its personal as well as its state aspect: what would become now of Dorchester's hopes of getting 3,000 acres out of the King's share? The price of rounding up a group of English investors (and all but one who initially became co-adventurers with Bedford *were* English, the exception being

<sup>23</sup> C2/Charles I/U1/63.

<sup>24</sup> Ibid.

<sup>25</sup> The contract made with Bedford at Lynn did not cover the fens between the Glen and Welland Rivers.

They were dealt with separately, and there too, Bedford became an undertaker, in partnership with Sir William Russell and Sir Robert Bevil, *Calendar of State Papers Domestic* [hereafter CSPD], 1631-3, p. 296.



Vernatti, a denizen), seems to have been to leave a significantly larger part of the reward in land to the actual investors. Of course Bedford would need a drainage plan too, but that might seem to present no problem: he and his colleagues had found Vermuyden's satisfactory only a few weeks earlier.

So on 13 January 1631 the Commissioners gathered at Lynn to make a contract, not with Vermuyden, but with Bedford. That contract, the Lynn Law, includes several clauses bearing on design issues, but no specification of the major works Bedford would make to drain the Great Level. This is somewhat surprising. Bedford, it will be recalled, headed the list of those Commissioners who demurred at contracting with Sir Anthony Thomas precisely because Thomas refused to disclose what works he proposed to do to accomplish the draining.<sup>26</sup> Again, when the Commissioners contracted with Vermuyden, he had shown them a 'map or card (which) described the said fenny marsh, waste and surrounded grounds, and the outfalls thereof, by lines and other descriptions, and also by writing, expressed and set down to the Commissioners of Sewers, what drains, sasses, sluices, banks, cuts and other works he intended to make for the draining of the said surrounded grounds, which was well approved of by the said Commissioners now present'.<sup>27</sup> Note that phrase 'now present'. 'Now' was 13 January 1631. The Commissioners had accepted Vermuyden's plan the previous September, and in January they went out of their way to endorse it again, while at the same time offering reasons for rejecting Vermuyden as Undertaker: half truths at best meant to gloss over the awkward situation he and they found themselves in. It does seem that both Bedford and the Commissioners were expecting Bedford to adopt Vermuyden's plan and that Vermuyden would remain associated with the project under its new head.

If there were discussions between Bedford and Vermuyden about the latter's further role in the enterprise, they have left no trace in contemporary records. All Dugdale says is that 'The said Earl and his participants ... began the work and caused these several channels to be made'. He then lists them, together with other works in the nature of sluices and sasses, and concludes 'But above all, that great stone sluice below Wisbech at the Horshoe to hold the tides out of Morton's Leam, which cost above eight thousand pounds'.<sup>28</sup> But equally, Dugdale says nothing about who directed the work accomplished after 1638 while Charles was the Undertaker. Yet in that case there is clear evidence from other sources that the engineer then in charge was Vermuyden.<sup>29</sup> We must look further.

Throughout his career Vermuyden was as much a speculator in drainable land as he was an engineer. Even for his very first job in England, the closing up of a breach in the seabank on the Thames estuary at Dagenham, a job he carried out none too successfully, he eventually received payment in land.<sup>30</sup> Then, when in 1649 Francis' son, William fifth Earl of Bedford and his associates recommenced the draining of the Great Level, Vermuyden made a contract with them for the post of Director of Works. We know that the negotiations at that time were long and difficult; that they were broken off entirely several times; and that they took nearly nine months

<sup>26</sup> See above, pp. 24–5.

<sup>27</sup> From the preamble to Lynn Law, which rehearses the recent history of the effort to launch a general drainage of the Great Level. Wells, *History*, II, p. 101.

<sup>28</sup> Dugdale, *Imbanking*, p. 409.

<sup>29</sup> CSPD 1639, p. 510.

<sup>30</sup> Harris, *Vermuyden*, pp. 37–8.

to complete. There were sharp disagreements over what compensation Vermuyden should have and the extent of the authority to be vested in him to determine what should be done and at what cost. Throughout, his one unshakable demand was to be admitted to the enterprise as an Adventurer for one share of 4,000 acres out of the land the investors were to receive as their reward. From this he did not retreat, though in the end he compromised extensively on his salary demands and also on the degree of autonomy he would have in making design and cost decisions.<sup>31</sup>

In the light of the priorities this reveals, it is significant that when, in February 1632, Francis Bedford and his co-adventurers drew up the Indenture of Fourteen Parts (by which they undertook to contribute to the cost of the work in proportion to the amount of land each adventured for), Vermuyden was not one of the parties to the contract.<sup>32</sup> However, only nineteen of the twenty 4,000 acre shares of adventure land were accounted for among the fourteen adventurers. Had the remaining share been held in reserve for Vermuyden on the assumption that he was to become an Adventurer once his contract as Director of Works had been settled? There is one piece of evidence which points in this direction. When the Dutch cartographer Hondius published a revised edition of Mercator's atlas in 1632, he included in it a map of the Great Level which carried on its face the names of the Bedford Adventurers, with Vermuyden's name among the rest. Hondius may have been working from information he received while it was still assumed that Vermuyden would become both engineer and sharetaker in the undertaking. However, no other listing of the Adventurers includes Vermuyden, not even those showing secondary investors who had bought shares or part-shares from one or another of the original fourteen. There is, in the British Library, a near-contemporary and very detailed printed schedule of the allocation of the 80,000 acres which made up the 20 shares, accompanied by manuscript maps, but no land is shown as allocated to Vermuyden.<sup>33</sup> Nor is Vermuyden included as a participant in the charter of incorporation of 13 March 1635 which created the Company of Conservators of the Fens.<sup>34</sup> To be the drainage engineer on a project and not acquire a stake in the land to be won is out of character for Vermuyden. If Vermuyden was not an Adventurer in the Bedford undertaking, it is a good bet he was not the engineer either.

Work in the Great Level began in the summer of 1631, for a document of December reports that Bedford and his partners have made 'a fair and hopeful beginning of the said work with the expense of many thousand pounds'.<sup>35</sup> Of the work in progress we catch rare glimpses only. In testimony before the Commons Committee for the Fens, given in 1646, Andrewes Burrell, local gentleman and Adventurer, reported that the head of the Bedford River had been set out in 1632 or 1633.<sup>36</sup> Some travellers journeying from Norwich to Wisbech and Spalding in August 1634 noted with interest small armies of men at work on the Wisbech and Welland Rivers; and Burrell tells us that in 1635 he was directing the deepening of the Wisbech river, and

<sup>31</sup> See the well-documented account in Harris, *Vermuyden*, pp. 92–111. It is noteworthy that throughout these negotiations no one mentioned any earlier contract between Vermuyden and Francis. Had there been one, it might have served as a useful precedent in dealing with the thorny issue of the proper powers of Adventurers and Director of Works, respectively, in managing an

enterprise of this kind.

<sup>32</sup> Wells, *History*, II, pp. 111–12.

<sup>33</sup> BL, 290.b.43, item 3. This book contains four disparate items bound together.

<sup>34</sup> Wells, *History*, II, p. 126.

<sup>35</sup> TNA, SP 16/204, no. 39.

<sup>36</sup> Harris, *Vermuyden*, p. 88.

the building of the Horseshoe Sluice.<sup>37</sup> In June 1636 the Commissioners adjudged the contract fulfilled.<sup>38</sup> So the critical years are 1631 to 1636. Let us see what we can learn of Vermuyden's whereabouts in those years.

Sightings of Vermuyden in contemporary sources are numerous for these six years. The Privy Council registers show that the Council dealt with Vermuyden and his affairs on no less than 37 occasions, 20 of them in 1633 alone! The great majority of these interventions had to do with disputes arising out of the Hatfield project. None related to events in the Great Level. What the man *was* doing is harder to pinpoint. By an agreement with his tenants ratified in court in November 1630 he undertook to complete a vaguely specified piece of work in the Hatfield Level by 24 August 1631. In 1633, in the dispute over debts he owed as a member of the group or 'college' of investors in the Hatfield Level, he referred to costs he had incurred for work done there, so we may suppose that he spent part of the working season of 1631 and perhaps 1632 too in Yorkshire.<sup>39</sup> We know that in May 1631 he began work on the embanking and draining of Sutton Marsh, outside the seabank of the township of Sutton, Lincolnshire, and that in the following year he was referred to as a landowner there.<sup>40</sup> In the autumn of 1631 he was presumably living in Abingdon Magna, Cambridgeshire, since the church register there records the baptism of a Gyles Vermuyden on 30 September.<sup>41</sup> In October of the same year Sir Robert Heath, Chief Justice of Common Pleas, took Vermuyden into partnership in his lead mines in Derbyshire.<sup>42</sup>

Most interesting of all, on 24 May 1633, at the height of the legal difficulties arising from the drainage of the Hatfield Level, Vermuyden was committed to the Fleet by the Star Chamber and again for good measure on 31 May by the Privy Council, for refusing to cooperate in the Court's and councillors' efforts to resolve the complex disputes between Vermuyden, the participants, and the local landowners and commoners.<sup>43</sup> In September Sir Robert Heath wrote to Secretary Coke that 'his restraint hath fallen out unseasonably for our mines in Derbyshire where he should have been long since'.<sup>44</sup> But Heath was also, for a time, a shareholder in the Bedford undertaking<sup>45</sup> and might have been expected to be concerned at the inconvenience to the latter enterprise of having its chief engineer – if such Vermuyden was – confined to the Fleet. Yet on 25 September Vermuyden was still in prison, though allowed a fourteen day

<sup>37</sup> BL, Lansdowne Ms 213, fo.316; Andrewes Burrell, *A briefe relation discovering plainly the true causes why the Great Level of Fenns ... have been drowned ...* (1642), p.8 and id., *Exceptions against Sir Cornelius Vermudens discourse for the draining of the great Fennes, &c: which in January 1638 he presented to the King for his designe, wherein His Majesty was mis-informed and abused, in regard it wanteth all the essentiall parts of a designe, and the great and advantagious workes made by the late Earle of Bedford, slighted, and the whole adventure disparaged* (1642), p.8.

<sup>38</sup> The date of the decree of draining is sometimes given as 12 Oct. 1637, but a careful reading of the Law of that date shows that the decree of draining had been made on 13 June 1636 at Peterborough, and that the Law of October 1637 amended and confirmed an award

of 95,000 acres to Bedford originally made on 11 Aug. 1636.

<sup>39</sup> *Vermuyden's agreement*, p.13.

<sup>40</sup> TNA, C 2/Charles I/U3/66, U5/59, U58/48; PC2/42, p.21.

<sup>41</sup> *Fenland Notes and Queries*, 3, p.258.

<sup>42</sup> F.H.Fisher, 'Sir Cornelius Vermuyden and the Dovegang Lead Mine', *J.Derbyshire Arch. and Natural History Society*, 25 (1952), p.93.

<sup>43</sup> TNA, PC 2/43, 31 May 1633.

<sup>44</sup> TNA, PC 2/43, 5 Sept. 1633.

<sup>45</sup> Heath disposed of his share sometime between 20 Feb. 1632, when he signed the Indenture of Fourteen Parts, and 13 Mar. 1635, when his name fails to appear as a participant in the Company of Conservators of the Fens. Wells, *History*, II, p.126.

leave to raise security for debts he allegedly owed in respect of the Hatfield enterprise.<sup>46</sup> Is it to be believed that Vermuyden could have spent a full working season under restraint in London and no notice have been taken of that fact by Bedford and his fellow Adventurers if Vermuyden had been their Director of Works? It is equally hard to believe that the Privy Council would have put the project in such jeopardy, given the interest of the Crown in the enterprise, both as a fen landowner and as the prospective recipient of 12,000 acres, once the work was completed.

Most important of all, Vermuyden himself made no claim in his *Discourse* of 1639, or at any later time, to have been employed by the fourth earl.<sup>47</sup> Indeed he was quite condescending about what Francis had accomplished. Did it give him some quiet satisfaction, one wonders, to fault Bedford, as he himself had been faulted in 1630, for making 'summer grounds' only? Nor does Vermuyden's severest contemporary critic, Andrewes Burrell, take exception to any of the works constructed while Bedford was Undertaker, but only to the ideas put forward in Vermuyden's *Discourse*, and with work Vermuyden directed while employed by Charles.

Let me summarize the argument so far. The only contemporary evidence connecting Vermuyden with Bedford's undertaking is Hondius' map. The unassigned twentieth share in the co-partnership may or may not be a clue to why Hondius believed Vermuyden to be an Adventurer with Bedford, but his belief, however he came by it, was mistaken: Vermuyden was not a share-taker in the enterprise. There is *no* evidence that Vermuyden was employed by the Bedford group in any capacity. Moreover, Vermuyden never claimed to have been so employed, and he is known to have been engaged on other projects in the years 1631 to 1636: embanking Sutton Marsh, working in Hatfield Chase, draining a lead mine in Derbyshire and cooling his heels in the Fleet. None of the numerous references to him and his affairs in the Privy Council registers or the State Papers relate to events in the Great Level. We may safely conclude that Vermuyden was not directing work in the Bedford Level while Francis was Undertaker.

## II

That leaves two questions unanswered. If Vermuyden was not directing the work, who was? And, might it be that, though others were in charge, it was Vermuyden's design that was used? He had explained his intentions very fully to the Commissioners in September 1630. They accepted his plan and reiterated their approval of it at the session which struck the contract with Bedford. Might Bedford have employed the design if not the designer?

The assertion that Vermuyden was Bedford's engineer was first made by Samuel Wells two hundred years later. Perhaps it gave him someone other than a Russell to blame for the anger the draining inevitably provoked in some quarters, and its less than perfect success. Or perhaps he misread what Badeslade wrote in 1725:

And indeed many arguments were printed against Vermuyden's scheme, and against setting

<sup>46</sup> TNA, PC 2/43, p. 249, 25 Sept. 1633.

<sup>47</sup> C. Vermuyden, *A discourse touching the drayning*

*of the Fennes*, presented to the King in Jan. 1639 and published in 1642.

banks of rivers at a great distance asunder, about the time of the undertaking for draining: I shall enumerate a few out of a piece written by Edmund Scotten (in answer to Vermuyden) who had been employed by the Earl of Bedford.<sup>48</sup>

A hasty reading may have turned this rather awkward sentence into evidence of Vermuyden's employment by Francis. However, in his pamphlet of 1642 Scotten states very simply and clearly that he, Scotten, had been employed by Francis Earl of Bedford and his friends (though in what capacity he doesn't say), and his criticisms were leveled not at what *had* been done up to that time (Francis had made no washes) but against what Vermuyden was proposing should be done in his recently published *Discourse*. 'If I should now be silent, I should not know how to frame myself an excuse; having heretofore been a servant to the Right Honourable, the Earl of Bedford and his honourable friends in the draining'.<sup>49</sup>

Andrewes Burrell also tells us that he was employed by Bedford 'from the first day to the last of the late Earl's undertaking'.<sup>50</sup> He also tells us how he was employed. Reading his second and third pamphlets together, we learn that in 1634 and 1635 he was at work deepening the Nene outfall and building the sluice at the Horshoe which so impressed Dugdale. Well it might; a sluice over a major tidal river was the most challenging task confronting a draining engineer of that era. One of such fame as Humphrey Bradley, the Brabanter, lost a sluice he built at about the same place.<sup>51</sup> Vermuyden lost the one he placed in Tydd Marsh<sup>52</sup> and no less than four he built to drain Sutton Marsh – if Burrell is to be believed!<sup>53</sup> Burrell's sluice still stood in 1649: 'that gallant sluice' Dodson called it.<sup>54</sup> Burrell was evidently no amateur engineer; yet he made no claim to have had oversight of the work as a whole. In the preface to his second pamphlet he wrote: 'I offer this the rather, to show you that a work of so great consequence ought not to be led by any one man's design ...'.<sup>55</sup> It was a principle he took seriously, for after putting forward what he considered his single most important proposal – the placing of a sluice on the Ouse to keep the tides out of that river – he added: 'but the making of that sluice is a work of so great consequence, that of myself I dare not absolutely resolve it'.<sup>56</sup>

Burrell's comments are those of a man bred up in the traditions of the Courts of Sewers. Commissioners had always made their decisions collectively, usually relying on information and advice provided by juries of local landholders as well as on their own knowledge and experience. They usually left it to local township officers to enforce routine orders for repairs, but more recently had hired surveyors and other officers to carry out their more ambitious decrees. Always

<sup>48</sup> Badeslade, *Navigation*, p. 44.

<sup>49</sup> Edmund Scotten, *A desperate and dangerous designe discovered* (1642), p. 1.

<sup>50</sup> Andrewes Burrell, *An explanation of the drayning workes which have been lately made for the King ... by the direction of Sir Cornelius Virumuden* (1641), p. 11.

<sup>51</sup> A. Mary Kirkus and A. E. B. Owen (eds), *The records of the commissioners of sewers in the parts of Holland, 1547–1603* (3 vols, Lincoln Record Ser., 54, 63, 71, 1959–77), II, pp. 113–4. This source tells us that Bradley was engaged on building a sluice at the Horshoe in June 1589 – a sluice never heard of again, unless it was the one,

mentioned in Sir Clement Edmondes' report of 1618 to the Privy Council (pr. *Acts of the Privy Council, 1618–19*, pp. 292–9, hereafter 'Edmondes' Report'), which stood not seven days.

<sup>52</sup> Dugdale, *Imbanking*, p. 415.

<sup>53</sup> Burrell, *Exceptions*, p. 9.

<sup>54</sup> William Dodson, *A discourse concerning the draining of the Great Level of the Fens*, (1665), pr. in Wells, *History*, II, p. 432.

<sup>55</sup> Burrell, *Exceptions*, Introductory Epistle (unpaginated).

<sup>56</sup> Burrell, *A briefe relation*, p. 20.



such persons were servants, not masters, of the Courts. In drainage matters, the Commissioners spoke for that elusive entity, the Country.

The Commissioners certainly considered themselves perfectly capable of understanding what needed to be done. In their minds, all they lacked was the capital and authority to carry out the necessary works, though agreement and resolve had often eluded them too. Thus by the second decade of James' reign, they had accepted the necessity of contracting with an Undertaker,<sup>57</sup> but that did not mean they had surrendered their right and duty of determining what work should be done. This is plain both before and after 1631. Before the Commissioners had made their agreement with Chief Justice Popham in 1605, they had arranged for a representative group of Commissioners to receive a detailed, on-site explanation of what work John Hunt, 'the artist of this design', was proposing to do. The committees 'not knowing how far this new project will be approved by the rest of the Commissioners' submitted their report to a full sitting of the Court at Cambridge on 28 June. That sitting then decreed a nine-point plan incorporating Hunt's main proposals. Point eight is particularly interesting. 'We decree that all the fenny and surrounded grounds between the River Ouse and the upland grounds of the counties of Norfolk, Suffolk and Cambridge shall be drained and cleared of inundation in such order and manner and form as shall be for that purpose hereafter set down by the Commissioners of Sewers.'<sup>58</sup> Further, the making of the agreement in principle with Popham on 13 July was followed up immediately by work on a bill for presentation to Parliament which also included provisions related to the work Popham should do as Undertaker.<sup>59</sup>

The same care to preserve the powers of the Courts of Sewers is shown in the Act of 1607 for the draining of the Ring of Waldersey and Coldham. It gave power to the undertakers 'to make of new or to repair in all places needful the necessary drains, etc. (not being in Marshland within the Old Podike), with this proviso, that the authority given them ... shall not extend to give any power to cut or drain through any other grounds in any other manner than by the laws and statutes of this realm heretofore made they may lawfully do'.<sup>60</sup> Thus, before work could begin, a Court of Sewers had to be convened to lay out in minute detail the new course by which the undertakers were to do the draining.<sup>61</sup> We have already noted the unwillingness of Commissioners to deal with would-be undertakers who refused to divulge their plans.<sup>62</sup> In 1630 Vermuyden had provided a full account of what he proposed to do before the Commissioners made their agreement with him. In the Lynn Law, as already noted, no plan is specified, though a clause is included which requires that the division dikes needed to separate off the new severals in the drained level should be made with the advice of Bedford but at the direction of Commissioners of Sewers.<sup>63</sup> Even when Charles superseded Bedford as Undertaker in the Levels south of Glen, the Commissioners, respectfully, reaffirmed their responsibility: they advised the Privy Council that

<sup>57</sup> See above pp. 24–5.

<sup>58</sup> Cambridge University Library, Ely Diocesan Records [hereafter CUL, EDR] A/8. This is not a single document, but a large box of sewer records, including an incomplete register, loose sheets once a part of the register and other related papers variously numbered.

<sup>59</sup> Dugdale, *Imbanking*, p. 386; Badeslade, *Navigation*,

p. 23.

<sup>60</sup> Statutes of the Realm, 4 Jac. I, c.13.

<sup>61</sup> CUL, EDR, A/8, Session of Sewers held 20 May 1611 at Stowbrink.

<sup>62</sup> See above, p. 25.

<sup>63</sup> Dugdale, *Imbanking*, p. 409.



it might not be left to the power of the Adventurers, or any others that should undertake the same draining, under his Majesty, to perform it by any ways or designs, other than such as his Majesty or the Commissioners should approve, and direct by new Acts of Sewers in that behalf, as the best and most convenient for the perfect draining of their fens, and the benefit of other the fens and parts of the Great Level thereunto adjoining; in regard otherwise the draining of these might prove very prejudicial to the general work.<sup>64</sup>

The Commissioners were well aware of the inter-relatedness of the several projects then afoot in the Fenland as a whole, and clearly considered themselves best-fitted to exercise overall control. Nor did they hesitate to act on their convictions. When, at the Session of 5 August 1640 at Peterborough which considered 'the published design of the present intended draining by his Majesty's Agent, Sir Cornelius Vermuyden', the Court learned that 'the river of Ouse should now be wholly diverted from its former ancient course from Erith and so to be conveyed to Salter's Load', it at once took alarm. Judging that navigation between Lynn, Cambridge and other towns along the Ouse 'must of necessity be made worse', the Court ruled that Vermuyden must not proceed with this part of his design until he had satisfied the committee's representative of the interests at risk 'that the said navigation shall not be hurt or impaired'. 'And it is ordered likewise that the said Cornelius nor any other Agent for the work of draining shall not put that part of the said design of diverting the said River of Ouse into execution or begin *any other work* until this Court by the report of the said committees be satisfied of the preservation of navigation to the said University and towns in all respects as is aforesaid.'<sup>65</sup> As for Vermuyden's plan to divert most of the waters of the Welland to the Wisbech outfall, it may have been vetoed outright. Andrewes Burrell, one of the commissioners sitting on 5 August, wrote the following year of Vermuyden's *Discourse* that 'Whereas it *was intended* that part of Glen and all Welland should be conveyed in a new channel to Morton's Leam, and so to Wisbech Outfall', which suggests that that part of his plan had not been approved; certainly we hear of it no more.<sup>66</sup>

In this context, it should now be apparent that at Lynn the Commissioners chose to treat their meeting of 13 January as the normal next step in the process of contract-making begun the previous September. The adjustment in the undertakership and the area to be drained were details that did not necessitate starting the process all over again from scratch; in short, that Vermuyden would continue to participate in the Adventure and supervise the implementation of his design. It didn't work out that way, for reasons still obscure. I incline to think that Vermuyden refused to participate in the undertaking on the terms Bedford was prepared to offer; that is, that Bedford would not agree to allow Vermuyden the authority as director of works the latter believed it essential to have. However, two of the men who did become Adventurers, Sir Philibert Vernatti and Sir William Russell, were also major investors in the troubled Hatfield Level, and may have been averse to associating with Vermuyden on any terms. It piques one's curiosity to find that the unassigned twentieth share soon shows up in Vernatti's hands, giving him two shares as against his original one, and that a long list of Dutchmen became investors

<sup>64</sup> Dugdale, *Imbanking*, p.205, dated 24 July 1639. Note: Acts (or Laws, Ordinances or Decrees) of Sewers were made by a Court of Sewers and in some cases needed royal assent to be enforceable. By insisting that

design decisions be embodied in Acts of Sewers, the Commissioners were claiming power to approve them.

<sup>65</sup> CUL, CUR 3.1 (emphasis added).

<sup>66</sup> Burrell, *Exceptions*, p. 5; again, emphasis added.

in the project as subcontractors to him.<sup>67</sup> He and Sir William Russell each held two shares. Did it perhaps come down to a choice for Bedford between them and Vermuyden?

Be that as it may, Vermuyden's withdrawal, however it came about, would have posed dual problems of direction and design. As for direction, experience of the difficulty of defining a role for a Chief Engineer or Director of Works within the framework of their Undertaking might well have led Bedford and his associates to revert to the familiar practice of hiring a surveyor to carry out each major piece of work. After all, a core group of them – Bedford himself, Sir Miles Sandys, Sir Robert Bevill, Dr William Sames, Andrewes Burrell – were seasoned Commissioners and local landholders as well as Adventurers. What evidence there is points to the adoption of this solution. Burrell is a case in point. It is suggestive that two of the new cuts – Bevill's Leam and Sam's Cut – bear names of Commissioner/Adventurers. Each lies in the part of the Level where the Adventurer memorialized held his lands. As Undertaker, Bedford would of course carry most weight within the partnership, and he was certainly very active personally, but he seems to have chosen to work with a group of his associates rather than rely on a hired general manager. The notion that such a person must have existed is anachronistic for this period. Of the other Undertakings of this time – and there were five of them – only the Earl of Lindsey's seems to have had one. The very difficulty with which agreement was reached between Vermuyden and William, fifth Earl of Bedford and his partners in 1650 suggests that the role of such an officer was being hammered out then for the first time.

We may surmise that by July 1631 the design had been settled. In that month, Sir Christopher Hatton wrote to Bedford wishing him to take notice that the Earl of Exeter was willing that the Royal assent (for Lynn Law) should pass the Great Seal and be delivered to him, Bedford.<sup>68</sup> Exeter was the major landholder in the Deeping Level to the north of Welland, an area liable to be profoundly affected by measures taken to drain the Great Level (Figure 1). For example, the diversion of some of Welland's water to the Wisbech outfall (one of Vermuyden's recommendations of 1639) could scarcely fail to damage the Welland outfall, and impair navigation on the Welland to Spalding and Stamford. Bedford, we may suppose, had had to satisfy Exeter that he did not intend to drain Thorney fens by drowning Deeping's! Only then would Exeter give the go ahead. We may conclude that by July 1631 Bedford's plan was known to and accepted by the Country. As we saw, work began that summer.<sup>69</sup>

Was the design Vermuyden's? If we knew what Vermuyden's plan of 1630 had been, we could probably reach a ready answer by comparing it with the work done under Bedford. Unfortunately, no trace of that plan has been found. Still, some of the work done before 1636 and shown in Figure 2, in particular the new straight cut from Erith Bridge to Salter's Lode, is perfectly compatible with Vermuyden's style both before and after this period, and a case can be made that washes<sup>70</sup> (which Bedford didn't use) were not part of Vermuyden's design of 1630, despite his later devotion to them. The argument goes like this. The Commissioners had twice approved the plan of 1630 and seemed to expect that Bedford would follow it. Yet they included

<sup>67</sup> Earl of Bedford's answer to Vernatti's Bill, TNA, SP 16/257/23 (6 May 1638); petitions by Vernatti, SP 16/373, no. 20; 406 no. 43

<sup>68</sup> TNA, SP 16/196, no. 70.

<sup>69</sup> TNA, SP 16/204, no. 39.

<sup>70</sup> A wash is created by setting the banks along a river or drain far apart, leaving room between them for sudden surges of water to bed upon.

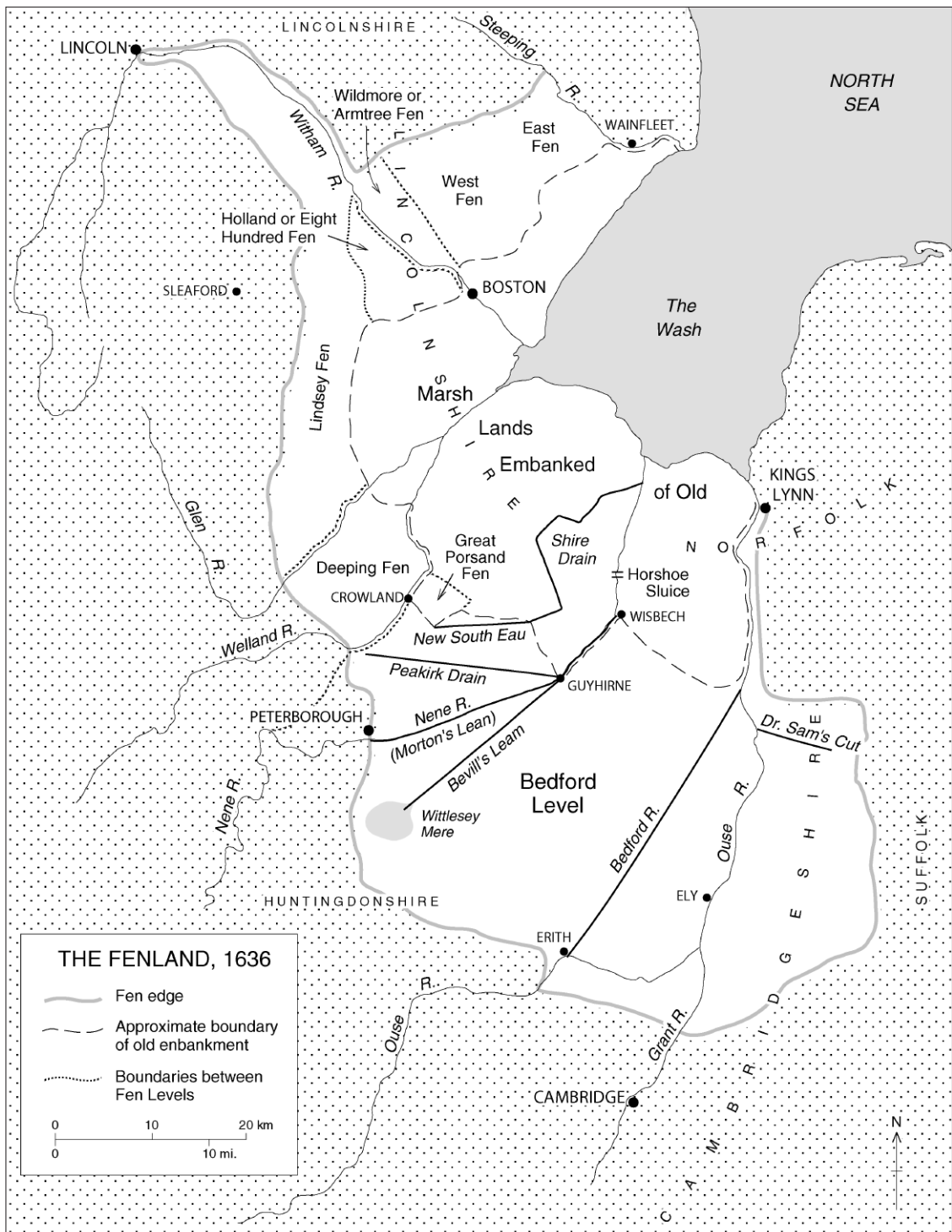


FIGURE 2. The Fenland c.1636 showing new cuts of six miles or more. Shorter cuts connecting existing drains are omitted. It also cannot show the rehabilitation of the Morton's Leam portion of the Nene or the deepening of Nene by eight feet from Guy Herne to its outfall or the like deepening of the Welland by six feet.

in their contract with Bedford a clause limiting to 50 or 60 feet at most the forelands he could leave between rivers and their banks,<sup>71</sup> thus effectively ruling out use of washes in the form in which they became the hallmark of Vermuyden's later work. The outcry against them when Vermuyden proposed to use them as Agent to Charles in itself suggests they were a novelty at that time. So the fact that Bedford used no washes need not mean that the design he followed was not Vermuyden's. So far only can one go on present evidence in comparing Bedford's work with Vermuyden's plan.

An alternative is to compare the work done to 1636 with the advice Vermuyden gave the King in his well-known *Discourse* presented to Charles in January 1639 and published in 1642. With royal government already in crisis, Vermuyden could barely begin to carry out his plan. Dugdale provides us with lists of the works done under Bedford and under Charles.<sup>72</sup> It is, in fact, not difficult to show that what Bedford's workmen did was seriously at odds with Vermuyden's ideas in 1639 and with his later practice. Yet this is inconclusive, for it assumes that Vermuyden's views did not change significantly between September 1630 (when he first presented a plan to the Commissioners) and January 1639 when he submitted his *Discourse* to Charles.

Much happened in the interval. In the Hatfield Level, the participants, including Vermuyden, were forced by the Privy Council to complete a major new cut, known ever since as the Dutch River, to remedy an alleged flaw in Vermuyden's original design of the work there.<sup>73</sup> That experience alone may have prompted him to review his ideas about draining inland fens. There was also, it seems, a major fiasco connected with the (first) Bedford River. The incident is undated but can be assumed to have occurred in the early 1630s. It too may have given Vermuyden second thoughts. The evidence comes from a report on the South Level written by C.N.Cole in 1777. He tells how the Old Bedford River (i.e. the cut made under Francis) had been designed to take 'the surcharge of water' coming down the Ouse, and how it had been embanked on both sides 'as near the river as might be'.

After great labour, pains and expense attended with a firm expectation of its successful operation, the first great flood that was to manifest its excellence being let into it in the presence of the Country and of Sir Miles Sandys who took a journey from London to see the experiment, that flood, to the terror and disappointment of all present, broke down the barriers intended to confine it, and overflowed the adjacent country. So satisfied were those that saw the experiment of the impracticability of such a passage for the flood waters that came down to that place (for still the passage of part of them through the Ouse was open), that it was at once abandoned, and the Old Bedford River never more made use of for that purpose.<sup>74</sup>

Vermuyden had not used washes in the Hatfield Level but one or both of these events may have turned his thinking in that direction.<sup>75</sup>

<sup>71</sup> Dugdale, *Imbanking*, p. 409.

<sup>72</sup> *Ibid.*, p. 416.

<sup>73</sup> Harris, *Vermuyden*, p. 53. In fact, the intent was to turn 'summer' grounds into 'winter' grounds.

<sup>74</sup> Cambridgeshire RO, C.N.Cole, 'Extracts from the report of a view of the South Level, part of the Great Level of the Fens, taken in 1777', pp. 81–2.

<sup>75</sup> Harris is ambivalent about whether or not Vermuyden used washes in the Hatfield level. See Harris, *Vermuyden*, pp. 45, 77. However, a copy of the map of the Hatfield drainage which Dugdale used, dated 1639, shows no washes. Land adjacent to the rivers is either labelled 'common' or shown as several. BL, Add. Ms. 5011.

Be that as it may, two other key parts of Vermuyden's *Discourse* of 1639 flew in the face of the work Bedford had carried out as Undertaker. As already noted, Vermuyden's solution to the chronic silting up of the Wisbech River was not to dig it out (again) and sluice it, but to redirect most of the Welland to the Wisbech outfall in the belief that the two together would be able to keep a channel open to the sea. He put his money on fewer but better outfalls. Bedford did the opposite. Not only did he deepen both Welland and Nene by six feet, but he also provided another outfall to the sea between these two by re-opening Clowes Cross alias Shire Drain, an ancient sewer forming part of the boundary between South Holland and Cambridgeshire. Again, on the question of whether or not principal rivers should be sluiced, the two parted company. In the debate between those who advocated sluicing rivers to defend them against silting up when they ran low in the summer, and those who believed rivers should be left tidal to provide the extra water needed to scour out their beds at each ebb, Vermuyden was firmly for leaving rivers tidal.<sup>76</sup> Yet Bedford had Burrell build a sluice over the Nene below Wisbech, as we have seen. As Director under William, fifth earl, Vermuyden relegated Burrell's sluice to stately uselessness by cutting a new channel for the Nene to bypass it.<sup>77</sup> Could there be a more dramatic expression of his disdain for this key feature of Francis' work?

### III

There is a third possible way of looking at the sources of Bedford's design, and that is to compare what he did with the past efforts of the Courts of Sewers to improve the drainage of their fens. The result is quite striking. Each of the main projects Bedford carried out had been identified, discussed, wrangled over and even worked at for at least a generation before 1631, some for much longer. They were: the deepening and banking of the Welland river from Waldram Hall, where it entered the fens, to the sea; the deepening and widening of Nene from Guyhirne to the sea and its sluicing at the Horshoe below Wisbech; the reopening and remaking of Clowes Cross alias Shire Drain; and the making of a new straight cut for the western branch of the Ouse from Erith Bridge to Salter's Lode. If one asks who set the design for the work Bedford carried out, I suggest that the most reasonable answer is that the Country did. Over generations the Courts of Sewers had identified these works as crucial to the draining of the various segments of the Level. In Bedford the Commissioners had secured an Undertaker who was one of their own and would do the work for them, after their mind. So he must, for at the end of the day it was they who had the authority to judge the draining satisfactorily done – or not. Bedford implemented the collective wisdom of the fen community – or, if you prefer, its collective wish-list.

Let us look at the histories of these projects in turn. The effort to bank the Welland began as far back as the reign of Edward III, as Dugdale informs us, and the first recorded attempt to establish responsibility for scouring and repairing its lower reaches was made in the same reign.<sup>78</sup> In more recent times, a very complete view and presentment on the state of the river had

<sup>76</sup> Vermuyden, *Discourse*, p. 25.

Fens, 1665, pr. in Wells, *History*, II, p. 432.

<sup>77</sup> Burrell, *Exceptions*, p. 9 and William Dodson, 'The designe for the perfect draining of the Great Level of the

<sup>78</sup> Dugdale, *Imbanking*, pp. 213–14, 216.



been made in 1552.<sup>79</sup> This initiative seems to have lost impetus with the death of Edward VI. A similar, though perhaps less ambitious effort to improve the river begun in 1566, and with better results, for the accounts for dyking the part of the river for which the Queen was held to be responsible have survived.<sup>80</sup> Ordinances for the recovery of Welland ('if it may be') were made again in May 1588, but a year later a key part of the dyking remained undone. A renewed effort in 1591 also failed to be completed.<sup>81</sup> In 1605, when John Hunt and a group of commissioners viewed the river, they found it in dire need of amendment.<sup>82</sup> So too did Sir Clement Edmondes (representing the Privy Council) and the group of commissioners who escorted him over the same terrain in August 1618. At that date the Welland below Spalding was not navigable even for small craft.<sup>83</sup> Little wonder that the resurrection of Welland was on Bedford's agenda.

The need to do something about the Nene and its outfall below Wisbech had an even longer history. A problem was evident as early as the reign of Edward I when Norfolk Marshlanders complained of damage to their fen and river banks from waters which had once taken the Wisbech route to the sea but were now tending to run by Well Creek to what was then known as Wiggenhale Ee but was progressively becoming the eastern branch of the Ouse. The initial reaction of the Crown's commissioners was to try to force the waters back into their old course, but in the longer run this solution proved untenable, and the Marshlanders had to accept the new role of the Ouse as the main drain of the southern fens.<sup>84</sup>

Moving ahead a century, a Commission of 1437/8 ordered that 'the River of Wisbech should be scoured and enlarged in all places defective from Guyhirne to the sea, as often as need requires, by all the landholders within the said Hundred, each man in proportion to his holding'.<sup>85</sup> How often it was actually done is another matter. Bishop Morton, at some time during his tenure of Ely (1479–86), carried out a major improvement of the Nene-Wisbech drainage system. It involved not only dyking and widening the river from Guyhirne to the sea, but also the making of a new cut from a point on the Nene a little below Peterborough directly to Guyhirne: the New Leam, alias Morton's Leam.<sup>86</sup> How the work was authorized or paid for, we don't know.

Under Elizabeth there were two significant developments in the struggle to keep the Wisbech outfall open. The men of Wisbech Hundred began to insist, first, that the onerous task of dyking the river should not fall on their shoulders alone, but should be shared by all who drained their waters that way, i.e. by all the fen towns of the Nene catchment area, and second, that the only long term solution lay in sluicing the river below Wisbech to keep out the tides and the silt they so abundantly deposited in the river bed. Thus, in 1571, laws were made for Wisbech Hundred based on a most comprehensive jury verdict which included, for the first time, a call for placing a sluice at the Horshoe below Wisbech.<sup>87</sup> A sluice was indeed built there in 1575, at a cost of

<sup>79</sup> Kirkus (ed.), *Records of the Commissioners of Sewers*, I, pp. 33–46.

<sup>80</sup> Owen (ed.), *Records of the Commissioners of Sewers*, II, pp. 17–21.

<sup>81</sup> Ibid., p. 116.

<sup>82</sup> CUL, EDR A/8.

<sup>83</sup> Edmondes' Report.

<sup>84</sup> The story is long and involved, marked by the usual clashes of interest between marshlanders and the inland

fen towns, navigation interests and drainage concerns, personal profit and the common weal. Dugdale provides relatively full documentation: *Imbanking*, pp. 246, 248, 300–06.

<sup>85</sup> Ibid., p. 328.

<sup>86</sup> Richard Atkins' report to the Bishop of Ely, 1618, printed in Wells, *History*, II, pp. 71–97.

<sup>87</sup> Dugdale, *Imbanking*, pp. 339–47, item 32.



£1000, but faced the following year with the job of dyking the river, the Wisbech men pleaded with the Privy Council for financial help from the upstream towns. The Council wrote to the local Commissioners urging them 'to induce [their communities] by all good means that you can to contribute to so good a purpose as this is'.<sup>88</sup> The results were what one might expect.

The great river of Wisbech was again ordered to be dug in 1581, and in 1583 a great sluice which cost £1400 was made near to the four gotes.<sup>89</sup> This was overthrown by the sea after only a month.<sup>90</sup> As noted above, the sluice Humphrey Bradley placed at the Horshoe in 1589 was also short-lived.<sup>91</sup> By 1594, most of the dyking ordered five years earlier had been done, but one mile of the river, for which the Queen was responsible, remained to do. 'If the said mile ... being a several fishing belonging to the See of Ely, now in her Majesty's hands, be not dyked, all the charge of the dyking already bestowed and which hereafter might be bestowed upon other rivers above Guyhirne will be utterly lost'.<sup>92</sup>

Well before this date, the inland fen towns of the Nene system had begun to cast about for an alternative means of suing their water to the sea. They fixed their hopes on the reopening and remaking of Shire Drain. The first moves in this direction were made in the 1570s, and after the usual false starts, objections, and cross purposes, a well articulated plan was enacted into law by Commissioners for the interested areas in September 1596.<sup>93</sup> Most of the necessary work was actually carried out, though with very limited success; it proved difficult to build reliably solid banks of the height required along a two mile section of its course.<sup>94</sup> A more fundamental problem was that many experienced commissioners doubted if the Nene carried enough water to keep open the outfalls of both the Shire Drain and the Wisbech River. Indeed, the Shire Drain had been stopped up in Bishop Morton's time, specifically to direct more water to the Wisbech outfall.<sup>95</sup> Nevertheless both the Hunt-Popham plan of 1605–6 and the plan expounded to Edmondes in 1618 (see below for these) called for perfecting both the Shire Drain and the Wisbech outfall – though not for a sluice at the Horshoe. Yet down to 1631 it had proved impossible to get effective action on either project. Bedford was a good politician; it is not surprising to find that he met the long cherished and long frustrated desires of the partisans of each of these project by completing both, including the sluice at the Horshoe.

The project on our list with the shortest history was the last, the proposal for a new channel for the Ouse by a straight cut from Erith Bridge (where the Ouse enters the fens) to a point on its lower reaches at the infall of Maid Lode or thereabouts. It first appears in the records as one part of the plan detailed to a representative group of Commissioners by John Hunt in June 1605.<sup>96</sup> Hunt, originally a London merchant, had become possessed by the challenge of marsh and fen drainage. He had bought from the estate of an earlier draining enthusiast, George Carleton, extensive properties in South Holland and the Ring of Waldersey and Coldham which stood in need of draining. He had worked at laying them dry to little effect. He had been named a Commissioner of Sewers and in 1604 had launched the first drainage proposal to take in the

<sup>88</sup> TNA, SP12/108, no. 36.

<sup>89</sup> Gote (git, goat etc.): another word for a sluice, usually not very large. It was safer to put several small gotes in a seabank than one large one.

<sup>90</sup> Dugdale, *Imbanking*, p. 347; BL, Add. Ms. 35,171, fo. 47v.

<sup>91</sup> See above, p. 11.

<sup>92</sup> Lansd. Ms 76, no. 56.

<sup>93</sup> CUL, EDR, A/8.

<sup>94</sup> Atkin's Report (1618), pr. Wells, *History*, II, p. 77.

<sup>95</sup> CUL, EDR, A/8.

<sup>96</sup> Ibid.

whole of what was to become known as the Great (or Bedford) Level.<sup>97</sup> A country gentleman, even one with London connections, would need powerful associates to carry through so ambitious a project. Whether it was Hunt who recruited Lord Chief Justice Popham, or Popham who appropriated Hunt and his plan, it is not possible now to determine, but by the summer of 1605 the project was headed by the Chief Justice and Hunt was described as ‘the artist of this design.’<sup>98</sup>

Hunt’s plan, as he described it in the course of a seven-day traverse of the fens in company with a group of commissioners representative of the areas concerned, covered both major issues and a host of lesser details. Occasionally the commissioners raised questions or objections, and received answers which seemed to satisfy them. I summarize the plan’s major features here, because, as will be seen, they bear a remarkable resemblance to the work actually carried out between 1631 and 1636 by Francis and his associates. Hunt’s major proposals were as follows: to deepen, straighten and bank the Welland; to remake Morton’s Leam, adding new fifty-foot banked indikes to parallel it on either side; to finish work already begun on the Shire Drain and heighten its banks to match those of the South Ea; to deepen the Wisbech river from Guyhirne to the sea, provide it with indikes, and cut a new outfall channel for it through the salt marsh to direct its waters away from their existing course, so dangerously close the sea banks of Norfolk Marshland; to provide a substitute for Well Creek since that drain could not be enlarged without major damage to the towns of Upwell and Outwell; to cut a new channel, or channels, of 120 feet of waterway for the western branch of the Ouse from Erith Bridge to a place near Salter’s Lode; to place a great sluice with a double set of doors on this new cut at its junction with the eastern branch of the Ouse in order to keep out the tides and retain water in the new cut in summer; to bank the lesser rivers falling into the Ouse from the east (Mildenhall, Brandon, Stoke) and to make land eas<sup>99</sup> along the upland edge of the whole area.<sup>100</sup> It was a comprehensive and ambitious plan, and deserves to be recognized as the first design for a general draining of the Great Level.

It was also a good deal more elaborate than the work Bedford actually carried out, but the basic similarity in concept between the two is very striking. The one major difference was that Bedford placed a sluice on the Nene below Wisbech, an item not included in Hunt’s plan. A sluice in that location was not in any way a novel idea in the 1630s, as we have seen. In other respects, Bedford’s work presents itself as a stripped down, economy version of Hunt’s plan. To give one example only, Hunt called for the new cut for the Ouse to have 120 feet of waterway in one or a pair of channels. Bedford made a single 70 foot cut. The point to note here, however, is that Hunt’s main innovations, the new river from Erith Bridge to ‘such place between Salter’s Lode and Maid Lode as the undertakers think best’; his proposal to bank the Mildenhall, Brandon and Stoke Rivers; and his plan for land eas along the upland edge of the fens were all carefully written into the draft bill drawn up immediately after the meeting at Wisbech on

<sup>97</sup> Kennedy, ‘So glorious a work’, pp.100–1.

<sup>98</sup> Dugdale, *Imbanking*, p.381. See also Kennedy, ‘So glorious a work’, pp.100–31 for a carefully researched account of what is still a puzzling story.

<sup>99</sup> Ea (ee, eau) a drain; land ea: a drain skirting the

upland edge of the fens to receive the water of springs, and rills entering the fens from the uplands.

<sup>100</sup> CUL, EDR, A/8. The new channel for Well Creek was actually cut, and was known ever after as Popham’s Eau.

13 July 1605, the meeting which launched the project by accepting in principle the undertakers' proposals. A summary of the draft is given by Badeslade.<sup>101</sup> Dugdale provides a summary of the bill as presented in Parliament in 1606.<sup>102</sup> Both show that the work to be done was specified at some length, and Badeslade's version makes it clear that many details – of the precise placement of banks, etc. – were left to Commissioners to settle. The Commissioners did not surrender one jot of their right to determine what the Undertakers were to do.

Sir Clement Edmondes' report to the Privy Council of 20 September 1618 on what the Commissioners believed needed to be done in the Great Level reiterates long held positions. The Welland should be deepened and banked from Crowland to the sea; the work necessary to the re-opening of Shire Drain should be completed; the Nene should be deepened and banked below Guyhirne, but should be sluiced only if experience proved it necessary – this despite the fact that Wisbech men argued that experience had long since proved it necessary. Hunt's proposal for a new cut for the Ouse is passed over in silence, and the Commissioners recommended improving the Ouse system by resuscitating certain ancient but long neglected sewers and by making a number of shorter cuts to straighten particular stretches of the river. These proposals for the Ouse closely resemble plans a group of Isle of Ely commissioners had attempted to carry out in 1608–10, without success.<sup>103</sup> Edmondes noted that they still kindled fierce dispute in the region they purported to serve.<sup>104</sup>

When Vermuyden lost his footing, first as Undertaker for the Great Level, and then as engineer and Adventurer in Bedford's project, I suggest that the Earl and his good neighbours, the local Commissioners of Sewers, drew upon the experiences and proposals of the past two generations and more to put together a plan which would meet their needs as they understood them. Its basic thrust was to reclaim lost outfalls – of Welland, Nene and Shire Drain. The sluice at the Horseshoe may perhaps best be understood as a sop to the Wisbech interest in return for their acceptance of the (possibly damaging) re-opening of Shire Drain. Burrell, who built the sluice, certainly believed in its efficacy, but for Bedford, its inclusion in his plan seems a political rather than an engineering decision; he didn't build its like on the Welland, a river at least equally given to 'landing up'.

At this time the Ouse outfall presented no problem;<sup>105</sup> what was needed in the southern fens was more efficient conveyance of water to that outfall. With two recent proposals to choose between, Bedford adopted Hunt's idea of a new straight cut for the western branch of the Ouse, eschewing the cheaper, but dangerously contentious proposals advanced in 1609 and 1618 by a small coterie of Isle of Ely commissioners despite the fact that Sir Miles Sandys, leader of that group, had become an Adventurer in his enterprise. Bedford renewed Popham's Eau, another part of the Hunt design, and a work favoured by the Ely faction.<sup>106</sup> However, he didn't go so far as to bank the lesser streams flowing into the Ouse from the east, or to provide the land eas along the inland edge of the fens which had also featured in Hunt's plan. The one major novelty

<sup>101</sup> Badeslade, *Navigation*, pp. 23–4.

<sup>102</sup> Dugdale, *Imbanking*, pp. 386–7.

<sup>103</sup> For this episode, see Kennedy, 'So glorious a work', pp. 146–68.

<sup>104</sup> Edmondes' Report.

<sup>105</sup> Except that its persistent growth in depth and breadth threatened to undermine the banks along its lower reaches.

<sup>106</sup> Kennedy, 'So glorious a work', p. 150.

in Bedford's work was a new cut for the South Ea (or Old Ea) from a point near Vincent's Cross on Cats Water to Clowes Cross, a cut with obvious bearing on the drainage of Bedford's own estate of Thorney (through which it passed) and of possible benefit also to the marshy fen ends of the townships of Elloe Wapentake.

We may now sum up the evidence from design. The projects Bedford carried out were those which the main factions within the Commissions for the Great Level had long believed to be crucial to the draining of their particular bailiwicks. He had added to these a number of other new cuts seen as vital to their particular regions by those Adventurers who were also local landowners and Commissioners. If this work resembled Vermuyden's proposals of 1630 – and we don't know that it did – it was not because Bedford had appropriated Vermuyden's design, but rather because Vermuyden had also chosen in 1630 to base his proposals on the known desires of the Country. The Commissioners themselves were the effective designers of the first general drainage of the Great Level.<sup>107</sup> Vermuyden was not the engineer in charge, and cannot be held responsible for the shortcomings of Bedford's work.

There is room, therefore, for a re-assessment of Vermuyden's thought and practice as a draining engineer which recognizes that when he became Director of Works in the Great Level in 1650, he had to work within constraints set by the 'Pretended Act' of 1649 which specifically prohibited any diversion of the waters of the Welland,<sup>108</sup> by the parsimony of his employers, and by the work already carried out in the Level under Bedford. In fairness to him, the question should be how well he did within these restraints, for he never had a free hand to do the work as he thought best – if the *Discourse* does indeed represent his final views on that matter.<sup>109</sup> There is also, I suggest, a case for reassessing the role of the Commissioners of Sewers, and especially of Bedford, first as the leading member of the Commission, and then as Undertaker in the Great Level, in shaping this most ambitious of all the drainage enterprises of the 1630s. I once held that the Commissioners' long suit lay in their ability to thwart projects for which they had no liking. However, I underestimated their commitment to the cause of a general draining, Bedford's tenacity and resourcefulness in pursuit of that goal, and above all, the Courts of Sewers' determination to maintain control of design decisions. In 1631, in the Great Level, the Country secured an undertaker of their own choosing, terms favourable to themselves as landowners and potential investors, and a design in accord with their views of what needed to be done. In the era of the personal rule, it was a notable achievement. It was also short lived. The 'why' of that is explored below.

<sup>107</sup> This may help to explain why the Commissioners were ready in 1636 to find that Bedford had fulfilled his contract when so much of the level was not winter ground, i.e. subject to winter flooding and so not fit to build on. See Burrell's testimony below, p. 47.

<sup>108</sup> C. H. Firth and R. S. Rait, *Acts and Ordinances of the Interregnum* (3 vols, 1911), II, pp. 133–4.

<sup>109</sup> Among the Bankes Ms at the Bodleian, there is a three-page holograph paper of Vermuyden's dated 1 Aug.

1639 and headed 'Further Considerations touching the worx of the fennes' (Ms 46, fos. 11–13). It doesn't seem to me to clarify or revise his ideas as given in the *Discourse* but it does give the figure of £128,000 for the total cost of the job, and suggests that the work should be done in three stages, beginning with the Deeping area. Vermuyden characteristically uses 'x' in place of 'ks', as in 'banx' and 'worx'.

## Epilogue

On 13 June 1636 a Commission of Sewers found Bedford's contract satisfactorily completed; on 11 August 1636 he was awarded the 95,000 acres promised him and began to divide it out to his participants and they to their sub-participants. On 12 October 1637 that award was amended to deal with alleged unfair allocation of the 95,000 acres and the award itself was again confirmed by a Court of Sewers. However, to turn these decrees into law and make them irreversible they required the king's assent. That assent was never given. Yet many new 'owners', including the King, were already cutting the necessary division ditches to demarcate land they took to be theirs. This is when complaints, disturbances and riots bloomed, as was inevitable in a project which brought with it such profound changes to existing communities and economies. The complaints were varied. Unfair allocation of land we have noted, one such complainant being the Bishop of Ely. Especially in what had been the drier parts of the level, that is, those to the east of the Great Ouse, the commoners were loath to give up two-thirds of their fen pastures when their remaining third had gained little by the drainage. Lindley's careful study of these riots shows them as essentially enclosure riots, with commoners filling up division ditches instead of breaking up hedges.<sup>110</sup> He discovered no rioting in Wisbech Hundred, one of the wettest parts of the level.<sup>111</sup> Nor did he find any attack made on the new major cuts and sluices. Drainage in itself might be welcomed or tolerated; losing up to two-thirds of one's common pastures was quite another matter.

Some participants were disgruntled for entirely different reasons. They and their sub-contractors had been promised under Bedford's contract that they would receive land 'fairly fit for arable, meadow or pasture'. This was perfectly plain and irrefutable. However when a good number of them found their land unfit for habitation (i.e. subject to winter flooding), it became clear that they had privately assumed that *their* piece would be arable. They clamoured to have the level made 'winter' ground rather than just 'summer' ground, that is, flood free the year round and thereby fit for habitation. This it wasn't in 1636. Its condition following Bedford's work is well described by Andrewes Burrell in testimony before the Commons Committee on the Fens.

... after the Earl of Bedford had made his works which were not finished, the main body of the Fens were not drowned in summer time for seven years together ... and were usually dry about the beginning of May ... with one year the first [of] April ... lands of his own in Wisbech and Elm that was not worth any thing before the works were made ... have been worth to him £300 [a] yeare by sowing of cole seed upon the land.<sup>112</sup>

Burrell was a staunch supporter of Bedford which makes all the more telling his admission that Bedford had not finished all the work he had intended to do when in June 1636 he applied

<sup>110</sup> Keith Lindley, *Fenland Riots and the English Revolution* (1982).

<sup>111</sup> Dugdale, *Imbanking*, pp. 356. Even marshlands were flooded on either side of the Wisbech outfall. Three marshland towns on the west side of the river contracted

to give two-fifths of an estimated 3,000 acres to have the whole drained to keep the land dry at least one foot under the soil.

<sup>112</sup> Harris, *Vermuyden*, p. 88.

for and got a verdict that he had fulfilled his contract. He had six years to complete his work, so why stop in 1636 with some work still undone? He was probably finding it more and more difficult to induce participants to pay their share of costs. An old hand like Vernatti was £650 in arrears and he was not the only delinquent.<sup>113</sup> Already there were unpaid workmen. As treasurer of the undertaking, Bedford may have thought it prudent to stop before the problem worsened.

Burrell's success with cole seed is also worthy of remark, considering how wet that area had been. To use the fens more intensively and to reap new wealth from crops such as cole seed or wheat was the very reason d'être of all the drainage projects of the 1630's. Burrell and his like were showing what could be done if only the drainage was more complete. Wealth so near and yet so far!

Charles saw the point. His own 12,000 acres near Whittlesey were barely fit for cultivation. He never got a penny from the duo to whom he farmed the task of fitting the land for leasing. Indeed, many lessees were willing to pay only a reduced rent or none at all.<sup>114</sup> What to do? Some time in September 1637 Charles approached Bedford to accept the task of making the level winter ground. Bedford declined and asked that the decrees in his favour receive royal assent. He did however agree to make specified improvements to drainage in the Whittlesey area and had that work begun.<sup>115</sup>

Charles was enthralled with the grandeur (and profit) of adding a whole new 'country' to his kingdom and dreamed of building a new town in mid-fen, designed by and named after himself. He was determined to see a full draining achieved. And no wonder. His 12,000 acres were but a small part of his stake in the drainage. A survey taken in 1604 of a part of the Great Level lying to the east of the Great Ouse shows that the Crown was then lord of the following fen towns: Northwold, Methwold, Brandon, Mildenhall, Soham, Fordham, Burwell (with Sir Francis Lovel), Bottisham, Waterbeach, Over, Erith, Colney and Bluntisham being part of the soke of Somersham, Wilberton, Strethem and Thetford.<sup>116</sup>

I cannot pinpoint the time when he or his advisers saw that the only way to proceed was to break Bedford's contract and begin again with a new one. It would not be easy to do, since Charles had approved Bedford's contract himself. Further, there must not be endless bickering over whether or not Bedford had fulfilled his contract. By 13 February 1638 a decision had been taken and a plan devised. The question of what should be done was referred to a committee of four: the Lord Treasurer, the Attorney General, the Solicitor General and the Surveyor General.<sup>117</sup> When they reported on 4 March 1638 it was to say that Bedford's law of tax had been illegal, and therefore all actions based on it were illegal too. Its flaw was that it had not listed every common and several fen to which the law applied.<sup>118</sup> This finding cut the tap root of Bedford's undertaking and of all the other five drainage projects then in being, as Bedford was not slow to point out. All began with a tax by the acre on common or several fen land and offered

<sup>113</sup> SP 16/413 nos 63 and 102; 415, no. 104; 420, no. 93.

<sup>114</sup> TNA, E 178/5970. This document includes questions to be investigated, and reports on the responses.

<sup>115</sup> Ibid. See also SP 16/403, p. 176 (pr. CSPD 1640, p. 178).

<sup>116</sup> BL, Add. Ms. 35,171. Some of these lordships may

have been alienated by 1637/8, but at that date there were other important royal lordships, such as Whittlesey and Crowland lying to the west of the river

<sup>117</sup> SP 16/323, pp. 246–7, pr. CSPD 1637–8, pp. 252–3.

<sup>118</sup> Bodl., Bankes Mss, 46/5.



no formula for translating this into a tax on individuals, towns or cattle. It couldn't be paid; that was the beauty of it. The whole level could then be judged delinquent. Under marshland customary law, Commissioners of Sewers could, as a last resort, sell the land of a person who couldn't or wouldn't pay a sewer rate. This power was now imported into the fens where no such custom had existed. Ten of thousands of acres of fenland were 'sold' to various undertakers as reward for draining a level. With parliament in abeyance, how else could a level-wide drainage be set up? The finding also had the merit of avoiding any debate over whether or not Bedford had fulfilled his contract. The latter knew he could not appeal the finding; the Council had long since ruled that suits related to sewer matters could only be heard before a Court of Sewers (appointed by the Crown) or at Council Table. The ordinary courts were out of bounds.

So on 12 April 1638 a large, newly-appointed Commission (hand-picked by the Queen, no less) found the drainage incomplete (not illegal!). A second sitting revoked the grant of land to Bedford and accepted the king's 'request' that he, Charles, become the Undertaker to complete the work. This 'Huntingdon Law' also awarded 40,000 acres of their original 95,000 to Bedford and his partners. These were 'afterwards agreed on, sett out and accepted by consent'.<sup>119</sup> Yet as late as May 1641 Bedford and his partners were entreating the House of Lords for possession.<sup>120</sup>

King and Council seemed oblivious to the unsettling effect these proceedings had on the Great Level. If Bedford's undertaking had been illegal from the start and his contract was now revoked, how could Charles give away 40,000 acres before fulfilling his own commitment? And who now owned the remaining 55,000? Charles certainly acted as if he still owned his 12,000. Who would decide about the rest and when? What happened to sub-contractors? Were they left to the mercy of the participant under whom they had invested? Could manorial lords keep the land they had taken as improvement or did it revert to common pasture? Commoners saw no reason why they shouldn't reoccupy all their former commons and began to do so. The level was left a legal no man's land. What actually happened from place to place when central authority failed, and lords, gentry and commoners were left to their own devices has still to be investigated.

To return to Charles's undertaking, we may note how grand in scope his contract was. It covered the fenny parts of the marsh lands and Deeping Fen, as well as the Great Level. Despite all the talk of winter ground, his commitment was still to make land 'fit for arable, meadow or pasture' though Vermuyden insisted that his intention was to make winter ground. All this was the height of folly. At the best of times Charles could not have scraped together the £128,000 Vermuyden told him the project would cost,<sup>121</sup> and these were not the best of times. The Scots were organizing resistance over that most explosive issue, right religion, and the situation there was going from bad to worse. These alarms did not completely drown Charles' project but it was nearly a year and a half after he became Undertaker that, on 19 September 1639, he appointed Vermuyden his agent for the draining.<sup>122</sup> It was 5 August 1640 before Vermuyden secured even conditional approval of his drainage plan.<sup>123</sup> From the very first he worked under almost impossible conditions. He was short both of time and money. As for money, the Council could

<sup>119</sup> Huntingdonshire RO, DDM16/57.

<sup>120</sup> Ibid. (last page).

<sup>121</sup> n. 111 above

<sup>122</sup> CSPD 1639, p. 510.

<sup>123</sup> CUL, CUR, 3.1.

do no better than earmark for him such dubious sources of funding as collection of old debts. Information about what he actually received is very confused, but it may have been less than £5,000. He soon had unpaid workmen. Yet he did accomplish rather more than Dugdale gives him credit for. An undated holograph report on a year's work and a second dated 5 October 1641 show that he had widened the Nene below the Horshoe Sluice, banked Morton's Leam on the north side, and begun the same on the south side. He had also set a sluice on Shire Drain and cut half of a 200-rod channel for the Nene through the salt marshes to deep water.<sup>124</sup> He was not one to give up easily; he was still at work in the fens in May 1642.<sup>125</sup> By then he was answering to the Lords, not to Charles.

Meanwhile the Short Parliament had come and gone. Far from supporting Charles' fen project, the Commons had refused to vote him any taxes at all until grievances, such as ship money, had been dealt with. The Long Parliament tended to be of two minds about drainage projects. The Commons, left to deal with a flood of complaints, took a very cautious approach, some members seeing them as a grievance in themselves. The Lords were more open to persuasion that the King's project deserved support, but before a meeting of minds could be reached civil war consigned any hope to limbo. Not until 1649 would the draining of the Great Level be taken in hand again and Vermuyden reappear on the scene.

<sup>124</sup> Bodl., Bankes Mss, 4/6. No address, no date but almost certainly the fall of 1640. Also 65/75, addressed to 'Your Lordships' and dated 5 Oct. 1641.

<sup>125</sup> *Commons' J.*, 25 Jan. 1642 and 2 May 1642. See also SP 16/491 no. 94 (28 July 1642) re workmen inevitably unpaid.