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THE CANONMILLS GUNPOWDER MANUFACTORY AND A NEWLY  
DISCOVERED PLAN BY JOHN ADAIR

PETER G. VASEY

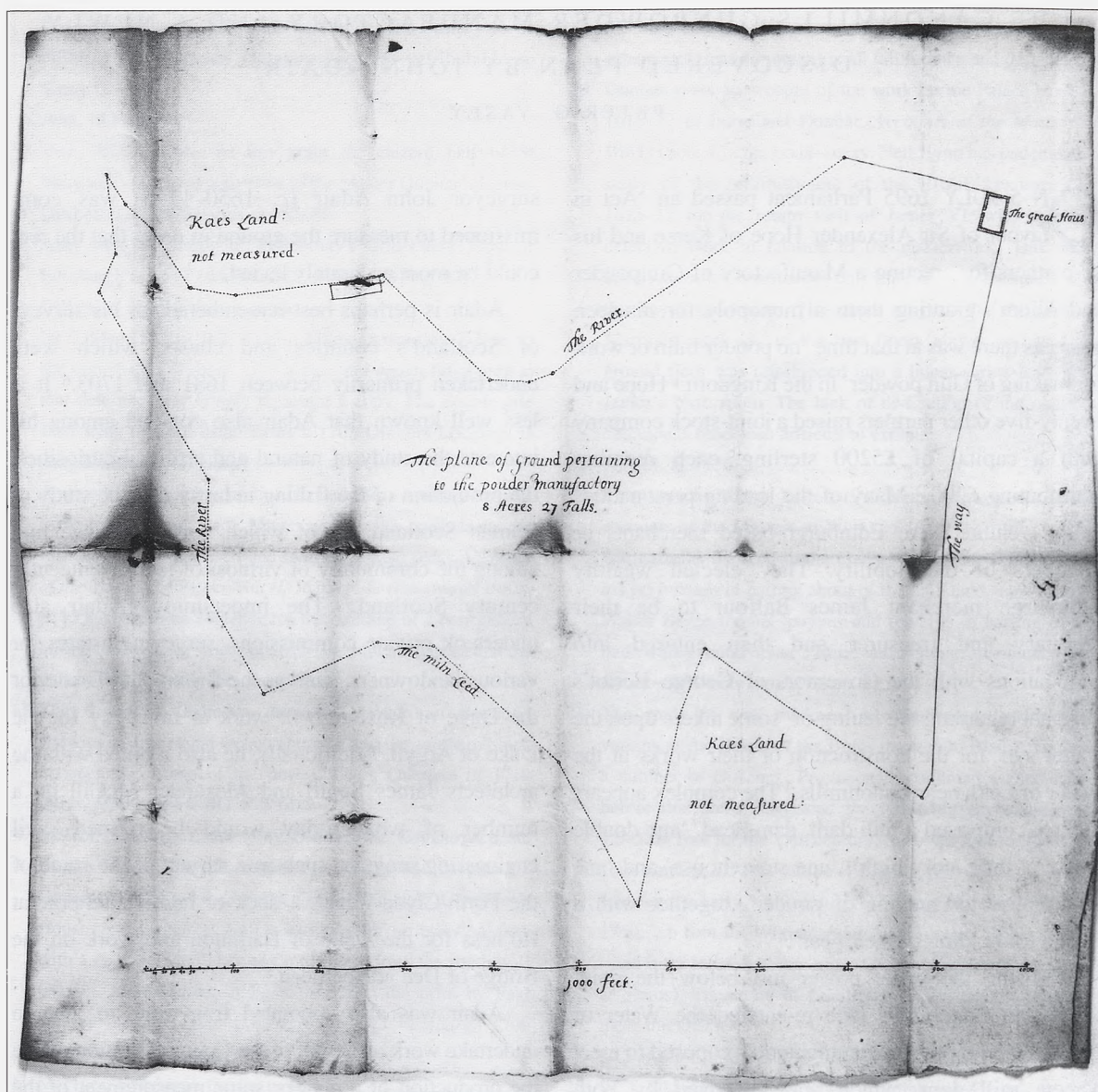
ON 5 JULY 1695 Parliament passed an 'Act in favour of Sir Alexander Hope of Kerse and his co-partners for erecting a Manufactory of Gunpouder and Allom', granting them a monopoly for nineteen years, as there was at that time 'no poudier miln or work for making of Gun powder' in the Kingdom.<sup>1</sup> Hope and twenty-five other partners raised a joint-stock company with a capital of £5200 sterling, each member contributing £200.<sup>2</sup> Many of the leading personalities in the venture were Edinburgh-based merchants or members of the nobility. They elected wealthy Edinburgh merchant James Balfour to be their secretary and treasurer and then entered into negotiations with the Governors of George Heriot's Hospital regarding the feuing of 'some aikers upon the water syd' for the construction of their works at the Water of Leith near Canonmills.<sup>3</sup> The complex appears to have comprised a mill dam, dam-head, 'ane double house of thrie story high', 'ane stove house' and 'ane work-house for making of poudier', together with a 'barne for holding of their gear'.<sup>4</sup>

Utilising the water power just below the point where the Canonmills lade re-entered the Water of Leith, the 'Gunpouder Manufactory' proposed to erect a new mill dam, which was approved by both Edinburgh Town Council and the Governors of Heriot's Hospital provided that the company undertook to make good any damage sustained.<sup>5</sup> By May 1696 the construction of the powder mill appears to have been complete, the company expending over £30,000 Scots. A rent of 3 bolls of grain per Scots acre (about 1/4 tonne per hectare) was agreed upon by both the Hospital and the proprietors of the Gunpowder Works but it appears that there was some disagreement over the *actual* acreage occupied and so the renowned

surveyor John Adair (c. 1650–1718) was commissioned to measure the ground in order that the rent could be more accurately levied.

Adair is perhaps best remembered for his surveys of Scotland's counties and coasts, which were undertaken primarily between 1681 and 1703.<sup>6</sup> It is less well known that Adair also counted among his interests the study of natural and artificial curiosities, the promotion of the fishing industry and the study of Roman Scotland, all of which, together, place him among the community of virtuosi of late seventeenth-century Scotland.<sup>7</sup> The impecunious Adair also undertook private commissions, surveying estates for various landowners, such as the Broxmouth Estate for the Duke of Roxburgh or work at Inveraray for the Duke of Argyll. Additionally, he also worked with the architects James Smith and Alexander McGill on a number of what today would be termed civil engineering projects, such as a survey of the route of the Forth-Clyde Canal, a dock or harbour scheme at Bo'ness for the Duke of Hamilton and work on the Bridge of Dee at Aberdeen.<sup>8</sup>

Adair was also appointed from time to time to undertake work on behalf of the Court of Session where the production of a plan or some measurement of the ground was required. In April 1706 he was instructed to prepare a measurement of 'the channels of the river & Cannonmiln taidame at the poudiermiln ground', which he did on the 27th of that month.<sup>9</sup> The rather spartan uncoloured plan, 36 cm square, in Adair's hand, has recently come to light (see figure). It is inscribed 'The plane of ground pertaining to the poudier manufactory [measuring] 8 Acres 27 Falls' (4.2 hectares).<sup>10</sup> The drawing shows 'Kaes [i.e. Kay's] Land not measured', 'The miln Leed' (from Canonmills), 'The River' (Water



John Adair's manuscript survey of the ground feued for the Gunpowder Manufactory from Heriot's Hospital, 1706. (By courtesy of the Governors of George Heriot's Trust; SRO, GD 421/9/49.)

of Leith), 'The Great Hous' and 'The way', and is at a scale of 80 feet to the inch. It is not easy to locate the area precisely on a modern-day map because the line of the Water of Leith has been straightened at various times to reduce erosion and remove bends, but it can be matched to ground shown on Robert Kirkwood's 'Ancient Plan of the City of Edinburgh' (published in

1817 but based on an original survey of 1759).<sup>11</sup> From this it can be seen that it represents the area between Powder Hall (marked here as 'The Great Hous') on the east and Beaver Hall/Logie Mill, lying to the south west; the 'way' is then the road between Canonmills and Leith, and north is therefore at the top left hand corner of the drawing.<sup>12</sup>

The plan was presumably made with a land-measuring chain and a plain table (a horizontal drawing board used in conjunction with a sighting rule and a compass) to locate a number of fixed points around the circumference of the level part of the ground (the 'plane of ground'). These points are joined by solid lines on the right side to indicate stone walls, and by dotted lines where the ground must have continued down slopes to the mill lade and river bank below the level ground.

The drawing is accompanied by Adair's holograph 'Account of the measure of the channels of the River & Cannonmiln tailldame at the poudermiln ground',<sup>13</sup> in which Adair has calculated the additional area of this sloping ground, divided into three main stretches (clockwise, from the foot of the plan):

The Taill Dame [*sic*] of Cannonmilns from Kaes land near the gate at the new dyke to the pouder-work miln-dame, seven hundred [and] twenty six foot in length and nine foot in breadth is .... 0 rood 19 fall 40 foot

The channel of the river as it now runs, from the sd miln dame to the point of the Stonybank that joyns the outmost part of Kaes land, north from the workhouse, four hundred and eighty one foot in length and forty four in breadth is .... 1 rood 21 fall 297 foot

The channel of the river from the grassy ground below the south east corner of the sd workhouse to the point of the eastmost stonewall, six hundred [and] fifty three foot in length and forty eight in breadth ... 2 rood 11 fall 204 foot

All which with the Stonybank and litle piece of grass lying along the waterside down from the workhouse, make one acre, one rood, twenty falls & one hundred and twelwe square foot .... 0 33 00 stonybank  
0 14 2[55] grass

Measured the 27 of April 1706 by me,

John Adair

The first stretch of bank is a nine-foot wide strip running for 726 feet from Kay's property along the Canonmills lade and into the Water of Leith as far as the recently constructed mill-dam and lade for the powder works. Although the dam is not marked on the plan, Adair's figures allow us to locate it accurately at the angle immediately before he has marked 'The River' at the left of the plan; the new mill lade presumably cut across the open ground to re-enter the river at the workhouse (the unnamed building shown in outline at the top of the plan). Below the dam the bank was wider, averaged by Adair as 44 feet along 481 feet of river bank. Beyond a further portion of Kay's property at the top left hand of the plan the river again formed the boundary and here the bank was 48 feet broad along a frontage of 653 feet. Two additional small pieces of land on either side of this second portion of Kay's property have also had to be considered – a piece of stony shore and a grassy section of bank beneath the workhouse. The total area of the banks came to 1 acre, 1 rood, 20 falls, 112 square feet (about 0.6 hectares). Measurement of the drawing with a planimeter has confirmed that the area given on the plan (8 acres 27 falls; 4.2 hectares) was the area within the surveyed boundary of level ground, so the total site size was about 9 acres 47 falls (4.8 hectares).

While not adding significantly to our overall knowledge of John Adair and his work, this particular plan does however show something of his surveying techniques when working on a small scale area such as that depicted and, in addition, demonstrates that new discoveries concerning Adair are still being made.

The fate of the 'Gunpouder Manufactorie' itself remains unclear. Certainly, by 1702 a petition to Parliament claimed that 'the making of powder had been brought to that perfection that no other nation

doth exceed us, & we are able to furnish His Majesty's Magazines & the whole Kingdom, with all sorts of Gun-powder at reasonable Rates',<sup>14</sup> the Company having brought in one 'Mr Petro', probably an Italian munitions expert, as 'Master of the powder work'. But by or shortly after 1706 the

equipment and works were being sold off, and at a meeting of the Powder Company officials in February 1708 it was resolved to clear 'bygone rents' due by them to the Treasurer of Heriot's Hospital.<sup>15</sup> It was not until 1794 that another gunpowder mill was built in Scotland, at Stobs Mill in Midlothian.<sup>16</sup>

## NOTES AND REFERENCES

My thanks are due to the Governors of George Heriot's Trust for allowing publication of the plan of the Gunpowder Manufactory ground. Dr Allen Simpson has given great assistance in helping to identify the layout of the ground and interpret Adair's surveying methods.

- 1 T. Thomson and C. Innes (eds), *The Acts of the Parliaments of Scotland*, 13 vols (Edinburgh 1814–76), IX, p. 420, 5 July 1695. There had been no gunpowder works previously in Scotland: an Act passed in 1690 in favour of James Gordon and partners had led to nothing.
- 2 Scottish Record Office (SRO), Register of Deeds, RD 4/80, pp. 753–759. The leading personalities were Sir Alexander Hope of Kerse, Sir Robert Dickson of Sornbeg, George Clerk junior and James Balfour, merchants in Edinburgh. See also William R. Scott, *The Constitution and Finance of English, Scottish and Irish Joint-Stock Companies to 1720* (Gloucester, Mass. 1968), vol. III, pp. 193–194.
- 3 SRO, Heriot's Hospital records, GD 421/9/44/1, 'Report – James Balfour'.
- 4 SRO, GD 421/9/49, 'Note of Company's property at Canonmills' (nd).
- 5 SRO, GD 421/9/44/2, 'Overtures anent the powder milnes and land therto belonging'.
- 6 See D. G. Moir (ed.), *The Early Maps of Scotland to 1850* (Royal Scottish Geographical Society, 3rd edn, Edinburgh 1973), vol. I, pp. 65–78; Allen Simpson, 'John Adair, Cartographer, and Sir Robert Sibbald's Scottish Atlas', *The Map Collector*, no. 62 (Spring 1993), pp. 32–36.
- 7 See Iain G. Brown and Peter G. Vasey, 'Arthur's O'on again: Newly discovered Drawings by John Adair and their Context', *Proceedings of the Society of Antiquaries of Scotland*, 119 (1989), pp. 353–360. For Adair and fishing see H. Coull, *The Scottish Sea Fishing Industry* (Edinburgh 1996).
- 8 See Peter G. Vasey, 'The Forth Clyde Canal: John Adair, Progenitor of Early Schemes', *Journal of the Railway and Canal Historical Society*, 30 (1992), pp. 373–377.
- 9 SRO, GD 421/9/49.
- 10 See A. D. C. Simpson and R. D. Connor, 'Interpreting Scots Measurement Units', in G. L. Pryde, *Dictionary of Scottish Building* (Edinburgh 1996), pp. 104–105. Adair's areas are expressed in Scots acres (0.510 hectares), roods, (square) falls and (square) feet, where the acre is 4 roods of 40 square falls and the fall is 18½ feet: this is in marked contrast to the later 18th century practice of dividing the square fall into 36 square ells, where the ell is 37 inches, and it reflects a Parliamentary injunction of 1663 which stipulated the use of the 12-inch foot instead of a smaller foot (at 100 to the Scots land-measuring chain of 24 ells) traditionally employed for measuring work.
- 11 For the line of the Canonmills mill lade as it rejoined the Water of Leith, and the positions of Beaver Hall and Powder Hall in 1759 and 1817, see the parts of Kirkwood's plans reproduced in Zella Ashford, 'The Lands of Warriston', *Book of the Old Edinburgh Club*, New Series 3 (1994), pp. 1–24, figs 2 and 5. Already by 1759 the bend in the river traversed by the powder mill lade had been straightened out but the western boundary of the area surveyed is easily identified.
- 12 The present article provides support for the belief that Powder Hall is so-named after the Gunpowder Manufactory: cf. Stuart Harris, *The Place Names of Edinburgh: Their Origins and History* (Edinburgh 1996), p. 504.
- 13 SRO, GD 421/9/49.
- 14 Petition to Parliament (SRO, PA 7/17), also quoted in Scott, *Joint-Stock Companies* (note 2), p. 194.
- 15 SRO, GD 421/9/49. For legal papers in actions by the Governors of Heriot's Hospital against tenants at the Powder Mills, 1699–1707, see GD 421/8/155.
- 16 John Shaw, *Water Power in Scotland 1550–1870* (Edinburgh 1984), p. 469.