

# The Georgian Star

*Michael Hoskin*

In June 1767, three months after the death of his father, Jacob Herschel of Hanover took leave from his prestigious post in the Court Orchestra and went to visit his brother William in the fashionable English resort of Bath, where there were rich pickings for enterprising musicians. Jacob, the eldest son, was the most gifted of a talented family, and their sister Caroline tells us that

his stay must have been prolonged on account of waiting till he had had the honour of playing before their Majesties; for which (in consequence of having composed and dedicated a Set of Sonatas to the Queen) he was informed he would receive a summons.

Jacob and George III, King of Great Britain and Elector of Hanover, both understood the conventions of patronage: if the patron accepted the dedication, he was under obligation to reward the dedicator. Jacob's salary was increased by 100 thalers, and instructions given that this was not to exclude him from the increases that occurred whenever a musician quit the Court Orchestra.<sup>1</sup>

King George was an intelligent and courteous man, and he had been impressed by this first encounter with a Herschel. A decade later George Griesbach, eldest son of Jacob's eldest sister Sophia, arrived in London as a recruit to Queen Charlotte's band, and one evening he played a concerto by Jacob. The King asked who was the composer.

"My uncle." "Who is your uncle?" "Herschel, at Hanover." Here the King left me and went to tell the Queen whose nephew I was.<sup>2</sup>

Three years later, in March 1781, William Herschel was struggling to reconcile his professional work as a Bath musician with his amateur passion for astronomy. He was currently engaged in a systematic examination of all the naked-eye stars (and many more besides), partly to familiarize himself with the starry heavens, partly in the search for 'double stars'. To establish the distances of stars was one of the current challenges to astronomers, and the solution lay in measuring how much a star appears to move as we on Earth orbit the Sun: the more a star seems to alter its position in the sky, the nearer it is to the observer. The problem was that the stars were so very distant that this 'parallax' was minute, and almost impossible to measure with instruments that must warp over time with changes in temperature and humidity (to say nothing of the complications resulting from alterations in atmospheric refraction and so forth). Galileo had popularised a suggestion<sup>3</sup> that if two stars lay in almost the same direction from Earth, and if one star was near and the other distant, then the movement of the nearer measured relative to the distant would circumvent these problems; and Herschel was assembling a collection of double stars that astronomers might use in this way.<sup>4</sup>

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1 *Caroline Herschel's autobiographies*, ed. by Michael Hoskin (Cambridge, 2003; hereafter: *CHA*), 44, 109.

2 Michael Hoskin, *The Herschel partnership* (Cambridge, 2003; hereafter: *Partnership*), 50.

3 Harald Siebert, "The early search for stellar parallax: Galileo, Castelli, and Ramponi", *Journal for the history of astronomy*, xxxvi (2005), 251–71.

4 See Michael Hoskin, *The construction of the heavens: William Herschel's cosmology* (Cambridge, 2012), Part I, chap.

The instrument he was using was a 7ft Newtonian reflector of his own design and construction. He had ground and polished the mirror with his own hands, and by his dedicated practice at this art he had at last achieved a mirror of wholly exceptional quality.<sup>5</sup> As a result, during the evening of 13 March he was able to see immediately that the object he was then examining was no ordinary star, but “a curious either nebulous star or perhaps a comet”. His interest aroused, he returned to the object four days later, and found that it had already moved position relative to stars in the same field of view: it was therefore not a true star, which would have been so distant as to seem motionless, but a nearby member of the solar system.<sup>6</sup>

By this time, the musician-astronomer had come to the notice of several men influential in the scientific world. As long ago as 1774 he had met Thomas Hornsby, professor of astronomy at Oxford. More recently the Astronomer Royal, Nevil Maskelyne, had visited him in Bath.<sup>7</sup> His most loyal ally was Dr William Watson Jr, a local physician of distinction and Fellow of the Royal Society, who gladly communicated to the Society Herschel’s announcement of his observation of what mathematicians eventually showed to have the orbit of a planet, the first to be discovered in historic times. But the man with the greatest influence in British scientific life—and who had the ear of the King himself—was Sir Joseph Banks, the President of the Royal Society, who met Herschel when he attended a meeting of the Society in the spring of 1781.<sup>8</sup>

It was a sign of the extraordinary quality of Herschel’s telescope, that neither Maskelyne at Greenwich, nor Hornsby at Oxford, could with their professionally-made instruments distinguish the planet from an ordinary star; and it was some time before either could be certain as to which of the objects in that particular region of sky was deemed special. Within weeks of the discovery Maskelyne was inclined to the view that it was indeed a planet in a near-circular orbit; as much as a year later Hornsby still preferred to think of it as a comet.<sup>9</sup>

Whatever the truth, the discovery was significant enough for Herschel to be honoured in November 1781 with the Copley Medal of the Royal Society, and to be elected a Fellow soon afterwards. In January his first catalogue of no fewer than 269 double stars was read to the Society;<sup>10</sup> many of them defied resolution in the best telescopes of other observers. It was evident that an astronomical talent of quite exceptional quality had arrived on the scene. The discovery of the planet/comet was an isolated *tour de force* never to be repeated; the unprecedented list of double stars signalled an observer using exceptional instrumentation with long-term commitment.

Yet Herschel was an amateur, forced to spend most of his waking hours in his profession of music. Only eight days after first coming across the planet/comet, he had had to turn his at-

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2; and *idem*, “Herschel and Galileo”, *Actes du XIe Congrès International d’Histoire des Sciences*, iii (1968), 41–44.

5 On Herschel’s telescopes, see J. A. Bennett, “‘On the power of penetrating into space’: The telescopes of William Herschel”, *Journal for the history of astronomy*, vii (1976), 75–108.

6 The many accounts of this discovery include J. A. Bennett, “Herschel’s scientific apprenticeship and the discovery of Uranus”, in *Uranus and the outer planets*, ed. by Garry Hunt (Cambridge, 1982), 35–53.

7 Michael Hoskin, *Discoverers of the universe: William and Caroline Herschel* (Princeton, 2011; hereafter: *Discoverers*), 44.

8 William Herschel, “Memorandums from which an historical account of my life may be drawn”, RAS MS Herschel W.7/8.

9 Hoskin, *Discoverers*, 50; Constance A. Lubbock, *The Herschel chronicle* (Cambridge, 1933; hereafter *Chronicle*), 79–81.

10 William Herschel, “Catalogue of double stars”, *Philosophical transactions*, lxxii (1782), 112–62.

tention to a performance of a Handel oratorio.<sup>11</sup> Could anything be done to secure his financial future and enable him to dedicate himself wholly to astronomy?

Hornsby and Maskelyne were in their prime, and in any case Herschel was neither an academic nor a mathematician. But in 1768 the King had embarked on the construction of a private observatory at Kew, near London, specifically in order to view the transit of Venus across the face of the Sun that was to occur the following year. He equipped it with instruments by leading makers — Adams, Shelton and Sisson — and appointed as Superintendent his former tutor, Stephen Charles Triboudet Demainbray. Born in 1710, Demainbray was one of the more successful of the itinerant lecturers in ‘natural philosophy’ of the mid-century, and after teaching in France for some time he had settled in London in 1754, where the following year he was paid no less than £210 for giving a course of natural and experimental philosophy to the future King and his brother Prince Edward.<sup>12</sup> The viewing of the transit was a success, the King being attended by Demainbray, Jeremiah Sisson the instrument maker, George Wollaston and others (although the results of their observations were never published).<sup>13</sup> Thereafter, however, Demainbray looked on his post as a sinecure, and limited himself to recording the weather,<sup>14</sup> checking the clocks that provided the time at Parliament and other public buildings in London,<sup>15</sup> and perhaps giving a few lectures. By early 1782 he was in his seventies and frail in health. Here was a post ideally suited to Herschel, in effect that of astronomer to the Court with freedom to pursue his research except when the Royal Family wished to profit from his knowledge. But how best to direct the King’s mind in this direction? A precedent for the discovery of Herschel’s ‘star’ was Galileo’s discovery of the moons of Jupiter, and he had named them for the Medici family and been handsomely rewarded. Banks saw here an example to be followed: Herschel should name his ‘star’ for the King, and his allies would suggest to the King that the post at Kew — when it fell vacant — would be a suitable reward.

This well-laid scheme was overtaken by events: Demainbray died before the naming of the ‘star’ could be arranged. As Banks wrote to Watson on 23 February 1782:

I wished the new star, so remarkable a phenomenon, to have been sacrificed somehow to the King. I thought how snug a place his Majesty’s astronomer at Richmond [i.e., Kew] is and have frequently talked to the King of Mr Herschel’s extraordinary abilities. I knew Demainbray was old but as the Devil will have it he died last night. I was at the [royal] Levy this morning but did not receive any hopes. I fear [the time] has passed by which a well timed

11 Hoskin, *Discoverers*, 60–1.

12 On Demainbray, see Alan Q. Norton and Jane A. Wess, *Public & private science: The King George III Collection* (Oxford, 1993), chap. IV: “The career of S. C. T. Demainbray (1710–82)”. Demainbray was paid £210 on 14 May 1755 for a “Course of Natural & Experimental Philosophy for their Royal Highnesses” the Prince of Wales and Prince Edward (p. 106). The same year he was granted a pension of £100 from King George II, but had difficulty in securing payment, and so he was forced to return to giving courses of public lectures in London (pp. 106, 111). He petitioned, apparently without success, to be librarian to the Prince of Wales (pp. 106, 109).

An older account, based on family papers, is Gibbes Rigaud, “Dr. Demainbray and the King’s Observatory at Kew”, *The observatory*, v (1882), 279–85. According to this account, “When His Majesty George III came to the age of eighteen [1756], and governors and teachers were dismissed, Dr. Demainbray was pleased to have the sole trust of teaching him sciences till he came to the throne; Queen Charlotte, after her marriage with the King, also became his pupil and listened to his lectures in philosophy...” (p. 281).

13 The archives of Kew Observatory are held at King’s College London. The transit observations are in K/MUS 1/1.

14 K/MUS 1/7 contains daily temperature, barometric and rainfall readings taken at Kew between 1773 and 1783.

15 Rigaud, *op. cit.* (ref. 12), 282.

compliment might have helped if the old gentleman had chose to live long enough to have allowed us to have paid it.<sup>16</sup>

The following day, Herschel wrote to Banks thanking him for his advocacy on his behalf, and declaring his ambition that the new star should be connected to the King in whatever manner Banks should think best.<sup>17</sup>

The King's unwillingness to appoint Herschel to Kew was, it later transpired, because he had already promised the post to Demainbray's son.<sup>18</sup> An honourable man, he would not go back on his word; yet the commitment put him in a quandary as to just how else he could make it possible for Herschel to give up music for astronomy. King George had not needed Banks to tell him of Herschel's remarkable discovery: he had discussed it with Demainbray months before.<sup>19</sup> Not only that, but "Col<sup>l</sup> [John] Walsh in particular informed my Brother that from a conversation he had had with his Majesty it appeared that in the spring he [William] was to come with his 7 feet Telescope to the King".<sup>20</sup>

The King was more than happy to have the object named after him, but how was he to respond? The longer he pondered the problem, the more he looked forward to meeting the man of whom he had heard so much, and to seeing for himself how the heavens appeared when viewed through Herschel's telescope. As Watson told Banks on 27 March 1782,

It gives me likewise great pleasure to be able to inform you that since Dr Demainbray's death, the King has again twice spoken to Mr Griesbach in relation to Mr Herschel, & told him that Mr Herschel was to come to him as soon as the Concerts at Bath were over. These are very encouraging circumstances, & make me still hope that the King has some notion of making him Demainbray's successor....<sup>21</sup>

The next day, Caroline Herschel records, Griesbach "arrived to pay us a visit and brought the confirmation that his Uncle was expected with his Instrument in Town".<sup>22</sup> In his Memoranda for April 1782, Herschel notes that he "was informed by several that the King awaited" him.<sup>23</sup> Watson told Banks early in the month:

The King the first time he saw him [Griesbach] at Windsor asked him after his *uncles* at Bath, & how Mr Herschel's telescope went. To which Mr Griesbach answered that his Uncle was preparing them for the inspection of his Majesty. The King, you see, has very often made enquiries after Mr H since Dr Demainbray's Death, & indeed, I find since, oftner than I have

16 Lubbock, *Chronicle*, 112.

17 Herschel to Banks, 24 February 1782, copies of Banks letters in the British Museum (Natural History), made for Dawson Turner in 1833–34, D.T.C. 2, 94–95.

18 Lubbock, *Chronicle*, 113. There is little doubt that what Lubbock says is correct, although she cites no source, but just when the King made his promise publicly known is unclear. Certainly Watson continued to cherish hopes of Kew for many weeks to come, as we shall see.

19 RAS MS Herschel W.1/13.D.14, letter of Demainbray to Herschel, 12 August 1781. Cf. Hoskin, *Discoverers*, 59.

20 CHA, 64.

21 Letter in the British Museum — Natural History, Dawson Turner Collection, ii, 108, cited by Norton and Wess, *op. cit.* (ref. 12), 35.

22 CHA, 64.

23 Herschel, "Memorandums" (ref. 8).

mentioned to you, which makes me hope he has him in his eye yet....<sup>24</sup>

On 10 May Colonel Walsh wrote to Herschel:

In a conversation I had the Honour to hold with His Majesty the 30<sup>th</sup> ult<sup>o</sup> concerning You and Your memorable Discovery of a new Planet, I took occasion to mention that You had a twofold claim, as a native of Hanover and a Resident of Great Britain, where the Discovery was made, to be permitted to name the Planet from his Majesty. His Majesty has since been pleased to ask me when You would be in Town....<sup>25</sup>

In preparation for his London visit Herschel had devised a portable stand for the 7ft,<sup>26</sup> and an ambitious list of double stars to show the King;<sup>27</sup> and on the Monday 20 May he took the coach to London where he was to stay with Dr William Watson Sr in Lincoln's Inn Fields.<sup>28</sup>

How he spent the days immediately following we do not know, but on the Saturday he dined with Colonel Walsh in the company of Maskelyne and Alexander Aubert.<sup>29</sup> Aubert was a respected amateur astronomer, who had recently succeeded in confirming Herschel's claim that the Pole Star was a double.<sup>30</sup> He was to become another of Herschel's loyal allies, and in 1786 made him the exceptional gift of a timepiece by John Shelton, which keeps time to this day.<sup>31</sup>

On Sunday the 26th Herschel had an audience with the King and Queen, to whom he presented a drawing of the solar system in which the new planet doubtless featured prominently. "My telescope in three weeks time is to go to Richmond, and meanwhile to be put up at Greenwich."<sup>32</sup> At Greenwich it would be professionally tested against the instruments of the Royal Observatory; at Kew the King himself could compare it with the ones he had bought for his own observatory.

At this stage it seems that the King had said nothing about Demainbray's successor, and Herschel — and certainly Watson — were under the impression that the Superintendency was still undecided.<sup>33</sup> But first the Greenwich trial lay ahead, in which Herschel's home-made reflector would seek endorsement from the friendly but demanding Astronomer Royal. Accordingly, later on the Sunday Herschel took his reflector to Greenwich. To Caroline he wrote: "Tell Alexander [their brother] that everything looks very likely as if I were to stay here.... My having seen the

24 British Museum – Natural History, Dawson Turner Collection, ii, 118–19, cited by Norton and Wess, *op. cit.* (ref. 12), 35.

25 Walsh to Herschel, 10 May 1782, RAS MS Herschel W.1/13.W.5.

26 *CHA*, 65: "A new 7 f<sup>t</sup> Stand and Steps were made to go in a moderate sized box for to be screwed together on the spot where wanted."

27 Namely  $\gamma$  Vir,  $\gamma$  Leo,  $\pi$  Boo, 54 Leo, Castor,  $\alpha$  Her,  $\beta$  Cyg,  $\gamma$  And and  $\gamma$  Vir, RAS MS Herschel W.2/1.4, f. 12. Rightly or wrongly, Herschel assumed the King would be a serious observer and interested to see examples of Herschel's more challenging discoveries.

28 Caroline gives his day of departure as the Tuesday, *CHA*, 65.

29 Lubbock, *Chronicle*, 115.

30 Hoskin, *Discoverers*, 48.

31 Aubert to Herschel, 19 October 1786, RAS MS Herschel W.1/13.A.26.

32 Lubbock, *Chronicle*, 114.

33 Watson still entertained hopes as late as 29 June, when he wrote to Banks: "... nothing remains now to be done in order to gain him the Post he so much covets, than to inform the King of these particulars, & of Mr Herschel's ardent wishes to serve his Majesty by succeeding the late Dr Demainbray" (British Museum – Natural History, Dawson Turner Collection, ii, 144, cited by Norton and Wess, *op. cit.* (ref. 12), 35).

King need not be kept secret, but about my staying here it will be best not to say anything but only I must remain here till His Maj. has observed the Planets with my telescope.”<sup>34</sup> Since he warned Caroline in the same letter that she was unlikely to see him in less than a month, the “staying here” presumably refers to a permanent appointment that William anticipated, and this was no doubt the Superintendency at Kew.

On Wednesday the 29th Herschel assembled his telescope at Greenwich, ready for the trial. He took the opportunity to assess the opposition: “I tryed the acchromatic telescope of D<sup>r</sup> Maskelyne ... with [magnification] 920 very strong aberration & ill defined. My reflector in tollerable fine weather is hardly so bad with 3168. I tried also D<sup>r</sup> Mask. 6 feet Reflector of Shorts but it would bear no higher power than 3 or 400, upon  $\alpha$  Lyrae.”<sup>35</sup> The omens were favourable. On the Friday he attended the King’s regular concert at which George Griesbach performed. “The King spoke to me as soon as he saw me, and kept me in conversation for half an hour.”<sup>36</sup> The next two nights Herschel was at Greenwich. On Saturday 1 June he observed with Maskelyne and his assistant Joseph Lindley.<sup>37</sup> Herschel was more than pleased with the outcome. “D<sup>r</sup> M tried to see the small star of  $\epsilon$  Bootis in his Achromatic but with the deepest comon night piece could not perceive it. Nor could I see it with the same piece. We saw it both extremely well in mine.”<sup>38</sup> On the Sunday they were joined by Aubert, with equally satisfactory results. A delighted Herschel reported to his sister next day:

We have compared our telescopes together, and mine was found superior to any of the Royal Observatory. Double stars which they could not see with their instruments I had the pleasure to show them very plainly, and my mechanism is so much approved of that Dr Maskelyne has already ordered a model to be taken from mine and a stand made by it to his reflector. He is, however, now so much out of love with his instrument that he begins to doubt whether it *deserves* a new stand.<sup>39</sup>

On the Tuesday Herschel dined at Lord Palmerston’s, and on the Wednesday with Banks.<sup>40</sup> It seems he must have gone on to Greenwich after dinner with Banks, for he discovered a new double star that night.<sup>41</sup> On Thursday the 6th he was at the King’s concert. “As soon as the King saw me he came and spoke to me, about my telescope but he has not yet fixed a time when he will see it.”<sup>42</sup> A possible reason for the delay was the Court mourning that was shortly to begin, and Caroline was to send her brother suitable clothes. Herschel left his 7ft at Greenwich for the weekend, and went to visit Aubert. Now it was his turn to make trial:

... we have tried his Instruments upon the double stars and they would not at all perform what I had expected, so that I have no doubt but mine is better than any M<sup>r</sup> Aubert has; and if

34 Herschel to Caroline Herschel, 25 May 1782, RAS MS Herschel W.1/8.

35 RAS MS Herschel W.4/1.3.

36 Lubbock, *Chronicle*, 115.

37 Lindley, known to Herschel as Linley, was Maskelyne’s assistant from 1781 to 1786, Eric G. Forbes, *Greenwich Observatory, i: Origins and early history (1675–1835)* (London, 1975), 150.

38 RAS MS Herschel W.4/1.3.

39 Lubbock, *Chronicle*, 115.

40 *Ibid.*, 116.

41 RAS MS Herschel W.4/1.3.

42 Herschel to Alexander Herschel, 10 June 1782, RAS MS Herschel W.1/9.

that is the case I can now say that I absolutely have the best telescopes that were ever made.<sup>43</sup>

Which was no more than the truth.

For the rest of June, Herschel languished in London waiting on the King's pleasure, and making occasional visits to Greenwich. On Tuesday the 11th and Friday the 14th he was there making observations, and on the Saturday a distinguished company once more assembled at the Observatory to look through his telescope: Maskelyne, Aubert, Playfair (perhaps John Playfair, the Scottish mathematician and geologist), Professor Antony Shepherd of Cambridge, and John Arnold the great watchmaker. On the Sunday Herschel seems to have been able to observe alone with only Lindley for company, and he was again at work on each of the following three nights.<sup>44</sup>

The 7ft was to remain at Greenwich for some days more, but we are poorly informed as to how Herschel spent the time, for he relayed news to Bath in letters to Watson that are lost. Watson for his part was fearful that his friend's diffidence was causing him to miss an opportunity that might never come again. Banks had promised to approach the King on Herschel's behalf, but if necessary Herschel himself must make a move.

The King has shewn you every outward mark in his behaviour of predilection for you. But he might justly think that he ought previously to know that you are willing to accept of the place, before he makes you the offer. For want of knowing precisely your situation & wishes, how should he know but that you might be from your situation at Bath in such flourishing circumstances, as to make you above accepting of the Post of his Astronomer at Kew.... I should certainly take the first opportunity ... humbly to request that you might succeed the late D<sup>r</sup> Demainbray at Kew provided his Majesty thought of appointing [a] successor, & that you should look upon such a Post as the most happy event of your Life.<sup>45</sup>

Herschel's reply managed to pacify Watson, who replied on the 23rd: "you are perfectly right to remain quietly in Town & abide the event...." But Watson was concerned that Hornsby, who had not been at Greenwich to see for himself the excellence of Herschel's reflector, had only an indifferent opinion of Herschel because of mistakes the inexperienced amateur had made in his reporting of the positions and movement of the 'star'. Hornsby, Watson insisted, must be converted into an ally before he had the opportunity to offer the King a damaging assessment; and if this meant delaying the Kew meeting with the King, so be it.<sup>46</sup>

We hear nothing more of the Hornsby problem, which probably existed more in the mind of Watson than in reality. As we have seen, Hornsby had met Herschel as early as 1774 and had gone out of his way to be helpful,<sup>47</sup> and as a university professor he was no doubt able to discern a talent masked by limitations of education. But Watson's appeals to Herschel to take the initiative began to bear fruit. Writing on 29 June, Watson says he is glad that Herschel is

well convinced of the necessity that the King should be apply'd to. He has done every thing on his side to shew his partiality towards you & it cannot be expected that he should conde-

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43 *Ibid.*

44 RAS MS Herschel W.4/1.3.

45 Watson to Herschel, 12 June 1782, RAS MS Herschel W.1/13.W.16.

46 Watson to Herschel, 23 June 1782, RAS MS Herschel W.1/13.W.17.

47 Hornsby to Herschel, 22 December 1774, RAS MS Herschel W.1/13/H.23.

scend to offer before he knows that his offer will be accepted.<sup>48</sup>

He approves of Herschel's plan to approach Dr William Heberden as an intermediary. Heberden had been personal physician to the Queen since 1761, and if Banks failed to make the promised approach to the King then Heberden would be a second friend at Court.

It is likely that the King's reluctance to make an offer stemmed not so much from the need to maintain royal dignity in negotiations as from uncertainty as to what form of offer he could reasonably make. Caroline Herschel later recounted<sup>49</sup> that the possibility of her brother's being astronomer to the Court in Hanover was mooted, but as the proposed salary was only £100 per annum — less than a quarter the income Herschel was currently making in Bath — we hear no more of this. But the ideal solution now occurred to the King. Not only George Griesbach but his brother Henry were members of Queen Charlotte's band, entertaining guests during dinner at Buckingham House or Windsor Castle.<sup>50</sup> An astronomer resident near Windsor would solve the problem of how to entertain the guests when dinner was over, as well as guaranteeing instruction for the King when he was in residence. But was Herschel equal to the task? To decide this question the would-be professional astronomer was invited, not to Kew, but to Windsor Castle. Accordingly, on Tuesday 2 July Herschel set up his reflector at Queen's Lodge (where the Royal Family lived in preference to the dilapidated castle):

This evening His Majesty and all the Royal Family observed Jupiter Saturn and several double Stars with my 7ft Reflector. His Majesty had ordered three of his Instruments (viz a 10 or 12 ft Achromatic of Dollond's a 3½ Achromatic a Short's reflector) to be brought in order that they might be compared with mine; and my Telescope shewed the heavenly bodies much more distinct than the other Instruments. His Majesty saw ε Bootis with [magnification] 460 and the Pole Star with 932. The Queen found the Newtonian construction very convenient.<sup>51</sup>

His delighted letter next day to Caroline tells us more:

Last night the King, the Queen, the Prince of Wales, the Princess Royal, Princess Sophia, Princess Augusta, &c, Duke of Montague, Dr Heberden [Heberden], Mons Luc &c. &c, saw my telescope and it was a very fine evening. My Instrument gave a general satisfaction; the King has very good eyes & enjoys Observations with Telescopes exceedingly.

This evening as the King & Queen are gone to Kew, the Princesses were desirous of seeing my Telescope, but wanted to know if it was possible to see without going out on the grass, and were much pleased when they heard that my telescope could be carried into any place they liked best to have it. About 8 o'clock it was moved into the Queen's Apartments and we waited some time in hopes of seeing Jupiter or Saturn. Mean while I shewed the Princesses & several other Ladies that were present, the Speculum, the Micrometers, the movements of the Telescope, and other things that seemed to excite their curiosity. When the evening appeared to be totally unpromising, I proposed an artificial Saturn as an object since we could not have the real one. I had beforehand prepared this little piece, as I guessed from the

48 RAS MS Herschel W.1/13.W.18.

49 In a letter to Lady Herschel, wife of her nephew John, 3 February 1842, *Memoir and correspondence of Caroline Herschel*, by Mrs John Herschel, 2nd edn (London, 1879), 320–2.

50 In time all five of the brothers were to be members of the band. On this see the biography of their mother Sophia in Michael Hoskin, *The Herschels of Hanover* (Cambridge, 2007).

51 RAS MS Herschel W.4/1.3.

appearance of the weather in the afternoon [that] we should have no stars to look at. This being accepted with great pleasure, I had the lamps lighted up which illuminated the picture of a Saturn (cut out in pasteboard) at the bottom of the garden wall.

The effect was fine and so natural that the best astronomer might have been deceived. Their Royal Highnesses and other Ladies seemed to be much pleased with the artifice. I remained in the Queen's Apartments with the Ladies till about half after ten, when in conversation with them I found them extremely well instructed in every subject that was introduced and they seem to be the most amiable Characters. To-morrow evening they hope to have better luck & nothing will give me greater happiness than to be able to shew them some of those beautiful objects with which the Heavens are so gloriously ornamented.<sup>52</sup>

In short, the trial had been a great success. Herschel and the King were both possessed of a natural charm and got on well together, and no doubt the encounter gave Herschel ample opportunity to hint at how pleased he would be to be able to dedicate himself to astronomy. And so it was that within days the King sent to Herschel no less an emissary than General Heinrich Wilhelm von Freytag.<sup>53</sup> Herschel was invited to become astronomer to the Court at Windsor with a 'pension' of £200 per annum, free to pursue his researches, his only obligation being to live close to the Castle and to be available to the Royal Family and their guests on request.

Watson expressed his delight at the news, and encouraged Herschel to ask Freytag to intercede with the King should he have any counter-requests of his own.<sup>54</sup> Herschel, as Caroline tells us, had had no hesitation in accepting the King's offer, for he could not bear the thought of returning to the dreary round of musical performances and the endless lessons for pupils without ability.<sup>55</sup> For some days he lodged with George Griesbach while his 7ft remained at Queen's Lodge, and on the 9th and on each of the six nights from the 18th to the 23rd of July he used it to continue his search for double stars.<sup>56</sup> His days he evidently spent searching for accommodation that had buildings for workshops and space to erect his telescopes, and he quickly found what he wanted in the village of Datchet, a couple of miles from the castle.<sup>57</sup> This done, he returned to Bath where with the help of Caroline and their brother Alexander he packed his instruments and belongings in a matter of days, and arranged their transport to Datchet. On the night of 1 August all three siblings slept in the inn at Datchet, and they awoke on the 2nd to find the wagon had safely arrived.<sup>58</sup> The next evening Herschel made his first observations from his new home.<sup>59</sup> There was no time to lose: nearly 44 years of age, he was at last a professional astronomer.

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52 Lubbock, *Chronicle*, 118.

53 Lubbock, *Chronicle*, 119.

54 Watson to Herschel, 14 July 1782, RAS MS Herschel W.1/13.W.19.

55 *CHA*, 66.

56 RAS MS Herschel W.4/1.3.

57 Hoskin, *Discoverers*, 68.

58 Hoskin, *Discoverers*, 69–70.

59 RAS MS Herschel W.4/1.3.